XII Всероссийская научно-практическая конференция

Математические модели современных экономических процессов, методы анализа и синтеза экономических механизмов.

Nikishina A. L., Korosteleva T. S. Investment analysis of implementation of the online banking system in the VTB International Financial Group / A. L Nikishina, T. S. Korosteleva // Математические модели современных экономических процессов, методы анализа и синтеза экономических механизмов. Актуальные проблемы и перспективы менеджмента организаций в России: сб. ст. XII Всерос. науч.-практ. конф. / Ин-т проблем упр. им. В.А. Трапезникова Рос. акад. наук.; Самар. нац. исслед. ун-т им. С.П. Королева, под ред. Д.А. Новикова – Самара: Изд-во СамНЦ РАН, 2018. - С. 73–79.

INVESTMENT ANALYSIS OF IMPLEMENTATION OF THE ONLINE BANKING SYSTEM IN THE VTB INTERNATIONAL FINANCIAL GROUP

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Annotation: The article mentions the urgent issue of application and development of information technologies in the enterprise, as well as assessing their implementation. The authors conduct an analysis of the investment project (including risk analysis) for the modernization of the online banking system in the VTB Group. Offered method will let to minimize risk of such type projects due to complex analysis before implementation.

Keywords: investment analysis, online banking, efficiency of investment projects

Digital transformation is a popular topic nowadays. Rapid technologies development lead to the creation of new business instruments, force businesses for constant improvement of existing technologies. That is why the question of investing in new systems for any enterprise seems interesting for research.

In this work the investment in online banking system for one of the Russian banks – VTB - is considered.

In October 1990, with the participation of the State Bank of the RSFSR and the Ministry of Finance of the RSFSR, the Foreign Trade Bank (Vneshtorgbank or VTB) was established. In 1994, VTB entered the 425th place in the list of the 1000 most capitalized banks in the world of The Banker magazine.

The strategy of VTB Group for 2017-2019 was approved by the Supervisory Board in December 2016. There the following key objectives were defined:

- increase of the Group's profit up to more than 200 billion rubles. and development of the leading positions in the Russian banking market;

- integration and optimization of the Group's structure - construction of a single universal bank;

- large-scale technological modernization [1].

For the first 9 months of 2016, VTB has spent 8.69 billion rubles on IT. 1.37 billion rubles of this amount were spent on purchasing equipment for the development of computer systems, telecommunications infrastructure and workplace infrastructure.

Table 1 - List of works included in investment

Workdescription	Cost (millionRUB)
The creation of architecture of communication between system and other bank services	3
The development and implementation of information security measures	13.5
The development and creation of automated working places	17
The development of electronic signatures support	2.5
The design and creation of user interface	41
System documentation	3
Rights (intellectual) on program codes	-
Sum	**85**

This project is considering the refactoring of the current Internet Banking System to a new architecture.

In 2010 HandyBank published the information about additional bank income from 1 card, that is used with online bank – and it was 178 rubles in 1 month, on 6 transactions [4].

To calculate the overall income from internet bank, we have to know the number of operations during the month. The number of operations, that are performed in mobile application of VTB (as a part of internet bank) from 2016 increased in 2,5 times and has reached 13 million/quarter. Calculations of the income for the optimistic scenario per year are displayed below.

$$\frac{178}{6} * \left(\frac{13\,000\,000}{4}\right) * 12 = 1157 \text{ million per year}$$

The overall income (costs are already considered) of VTB in 2016 was 49 529 million.

During the project there are not additional expenses besides initial investments. The project supposes the creation and introduction of the IT system on the cost, that was laid in the tender sum.

Based on the data above, we can calculate DCF, NPV, IRR and PI.

The interest rate of refinancing (discount rate) established by the Bank of Russia from 30.10.17 is 8,25%. From 18.12.2017 till 9.02.2018 the interest rate is 7,75%, that is why for the second period we took this amount.

In the beginning of 2016, number of transactions in the biggest Russian bank, Sberbank, was about 15 million. The volume of its actives is twice bigger than VTB (on the state of 01.08.17) [5, 6].

The number of operations, that are performed in mobile application of VTB (as a part of internet bank) from 2016 increased in 2,5 times and has reached 13 million/quarter.

So free cash flow for the optimistic scenario is:

$$\frac{178}{6} * \left(\frac{13\,000\,000}{4}\right) * 12 = 1157\ million\ per\ year$$

To create pessimistic scenario, we divided number of operations in Sberbank operations by the factor of actives volume and get 1.9 million of operations.

$$\frac{178}{6} * \left(\frac{1\,900\,000}{2}\right) * 12 = 347.1\ million\ per\ year$$

For the basic scenario we should take current Sberbank number of operations (50 million) divided by the factor – 7,3 million.

$$\frac{178}{6} * \left(\frac{7\,300\,000}{4}\right) * 12 = 694.2\ \text{million per year}$$

Table 2 – Basic scenario

Calculation of net present value (million rub.)						
Year	2018	2019	2020	2021	2022	2023
Periodnumber	0	1	2	3	4	5
Investments INV, million RUB	-85					
Free cash flow, million RUB	-85,00	694,2	694,2	694,2	694,2	694,2
Discountingcoefficient	1	0,0825	0,0775	0,0775	0,0775	0,0775
Discounting cash flow, million RUB	-85,00	641,29	597,93	554,92	515,01	477,97
NPV, million RUB	-85,00	556,29	1154,2	1709,15	2224,1	2702,12

So the NPV equals 2085.88 then IRR = 817% and PI is 40.835 (table 3).

Table 3- Indicators for the basic calculations

Index name	Value	Norma
NPV	2085.88	More than 1
IRR	817%	Better the higher IRR
PI	40.83	More than 1
PP	Less than 1 year	Better the smaller PP

The payback period and discounted payback period is 1 year as it can be seen from the graph.

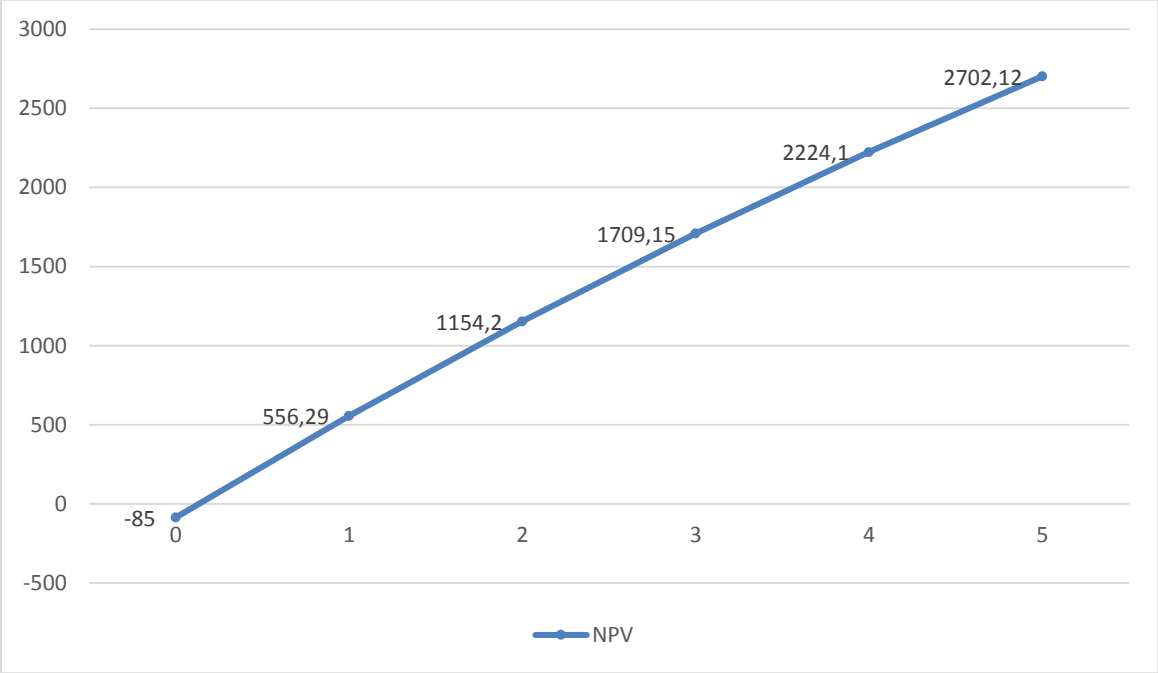

Figure 1 – NPV graph

The project seems positive, but we must understand that it is possible only in the case of stable positive cash flow. To understand project risks we should perform risk analysis. In the current paper we use scenario risk analysis for the simulation of possible situations during the project realization.

During the research, negative, basic and positive scenarios were calculated according with data, described above.

Then, we evaluated the risk level for this project. Standard deviation and variation coefficient can show is the project stable or not. For three scenarios of cash flow change these indicators were calculated for 10 years of project implementation. Results of calculation are represented in the table 4.

Table 4 - Comparison of scenarios

Indicator	Abbreviation	Pessimisticscenario	Basic Scenario	Optimisticscenario

Discountrate, %	**r**	7,75%	7,75%	7,75%
Net present value, million RUB	**NPV**	1000,44	2 086	3 533
Probability of scenario	**p**	0,1	0,8	0,1
Weighted value of NPV, million RUB	**NPV*p**	100,04	1668,70	353,31
Expected value of NPV, million RUB	**NPVe = ∑NPV*p**	2 122		
Standard deviation, , million RUB	**SD**	1 663,41		
Coefficient of variation	**CV**	0,783865622		

As we can see, the variability is high – 78%, what is explained by great difference between optimistic and pessimistic scenario. Despite this fact the expected value of NPV remains high too and this shows the stable project profitability.

During the work, two affected risks were identified and measures of risk mitigation were offered.

Two main risks for the project are: the accident big change of the discount rate and the second one –is a decrease in number of operations performed by users in online bank. These risks can be mitigated. The first one connected to the discount rate can be mitigated in the case of rate incensement by the bigger number of operations in online bank.

The second one is also mitigated by introduction of better marketing and advertising itself. The advertisement of the service introduces new users and lead the rise in the number of operations, and as a result, positive cash flow.

For this purpose authors offer two instruments for marketing: Google Adwords (online promotion) and newsletters sending (by emails) based on the pessimistic scenario.

As a result (after Google Adwords and newsletters cost calculation and the calculation of new pessimistic scenario with marketing), we got that after additional marketing implementation, NPV for pessimistic scenario become higher (from 1000to 1007million RUB). An in the 3d year of project implementation it will be more profitable with marketing than without (table 5)

Table 5 - Comparsion of pessimistic and scenario with marketing

Year	Pessimisticscenario, NPV	Scenario with marketing, NPV

1	211,54	225,48
2	488,02	521,87
3	744,62	803,32
4	982,76	1070,47
5	1203,77	1323,92

Despite this positive effect, the standard deviation and CV became higher too (table 6). This happens because of the structure of standard deviation and variation coefficient formulas– there is direct dependency CV and SD from NPV expected (risk-adjusted): the higher expected NPV, the higher SD and CV.

Table 6 – NPV with MailChimp and AdWords costs

Indicator	Abbreviation	Pessimisticscenariowith marketing	Basic Scenario	Optimisticscenario
Discountrate, %	**r**	7,75%	7,75%	7,75%
Net present value,million RUB	**NPV**	1007,89	2 086	3 533
Probability of scenario	**p**	0,1	0,8	0,1
Weighted value of NPV, million RUB	**NPV*p**	100,78	1668,70	353,31
Expected value of NPV, million RUB	**NPVe = ∑NPV*p**	2 123		
Standard deviation, million RUB	**SD**	1 665,53		
Coefficient of variation	**CV**	0,784589557		

The only way, when scenarios with marketing would have smaller CV, than without it – when the probability of pessimistic scenario grows. But in that case CV would be more than 1, what means the greatest risk and uncertainty.

In the end, the project with additional marketing is riskier anyway, but will bring company greatest income. The decision of to take this risk or not (because we can not eliminate the risk in this case) is the open question for the manager. Usually this depends on company's needs – do they need stable but smaller income or uncertain but higher one and the key to this question is in the company's strategy.

The VTB group strategy based on three points including "Modernization - a leap in the development of a modern client-oriented bank due to a large-scale technological transformation", so we can assume, that manager from VTB would take on this risk and implement system with marketing.

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ИНВЕСТИЦИОННЫЙ АНАЛИЗ ВНЕДРЕНИЯ СИСТЕМЫ ОНЛАЙН БАНКИНГА В МЕЖДУНАРОДНОЙ ФИНАНСОВОЙ ГРУППЕ ВТБ

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Аннотация: Статья посвящена проблеме применения и развития информационных технологий в банковской сфере, а также оценки их внедрения. Авторы проводят анализ инвестиционного проекта (включая анализ рисков) по модернизации системы онлайн банкинга в группу ВТБ.В результате работы предложена и применена методика анализа и оценки инвестиционного проекта в сфере интернет- банкинга. Предложенная методика позволит минимизировать риски данного типа проекта благодаря его комплексной оценке до этапа реализации.

Ключевые слова: инвестиционный анализ, онлайн-банкинг, эффективность инвестиционных проектов

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