Modeling and forecasting development trends for crowd-funding services in Russia

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Abstract. Development of alternative methods of investing, in particular, crowd-funding and its different types, is, without any doubt, an international driving force of entrepreneurship which Russia can't ignore anymore and lose advantages from their implementation. The issue of development of crowd-funding services in Russia is considered in the article. Directions for developing crowd-funding, forecasting of the volume of the crowd-funding services market are presented in the article on the basis of correlation-regression analysis, also well-known platforms for crowd-funding are considered there. As a result of the analysis it is getting obvious that further such trends will gain momentum and scale out. Crowd-funding in Russia has already overcome the threshold of establishing and, for the moment, active growth is observed which doesn't stop even during the economic crisis. Therefore, the state can't ignore it anymore and that is why it actively tries to incorporate into this market. Not only as the main observer but the main regulator of crowd-funding relations. As crowd-funding in Russia is a relatively young phenomenon, ecosystem is not completely formed up in it. Thus, the authors note that crowd-funding is getting more interesting not only for young businessmen, startups and representatives of the state level, but it also arouses great interest in representatives of large brands. Further, such trends will only gain momentum and scale up.

1. Introduction
In the current market economy, the issue of attracting monetary funds for further development of business is of great importance. The existing ways of financing entrepreneurial activity are often not available at early stages and in total they have their own disadvantages: both dependency and pressure from the investor and 'high cost' of the method. The model of financing called ‘crowd-funding’ is all the more interesting and actual [1]. In the modern world, especially in developing countries, the word ‘crowd-funding’ is very popular and even new laws are being adopted in the field of investments which help to protect investors' interests from fraudulence. Crowd-funding is collective cooperation of people who voluntarily combine their money or other resources in order to provide financial support to some project or organization [2]. But in Russia development of crowd-funding is not as fast as it is in other countries. The advantages of crowd-funding are:
  – democratization of the process of supporting art and culture and also generating additional income for the entertainment industry;
  – supporting innovative solutions and startups which will also allow traditional intermediate parties find successful and talented people;
  – creating a transparent and efficient mechanism for public financing of projects.
The essence of a crowd-funding platform is that when an idea is placed on the site any person interested in this suggestion can help in implementing the goal by sending any amount of money for supporting of the project [3]. If in the preset time the company doesn't gather the specified amount of money then all the money is returned to the owners, and if the specified amount is gathered then the organization will be able to implement the idea. However, one should compare crowd-funding with charity. It differs from charity as it's a financial mechanism which presupposes that sponsors get a reward [4].

Crowd-funding is gathering money for financing a startup or an idea with the help of voluntary payments. It must be confessed that it is not a very popular instrument in Russian business. More than likely the reason is that there are no authors with worthy ideas into which people want to contribute [5].

The crowd-funding market in Russia has almost doubled over the last year. 11 billion rubles have passed through platforms for gathering ‘popular’ money funds. Crowd-funding is related to high-risk investments but it gives an increased revenues. Therefore, there is an explosive growth of this market on the background of tightening of bank requirements to borrowers. The volume of the crowd-funding market increased by 83% last year (from 6 bln rubles). The vigorous growth is, in particular, related to increasing requirements to citizens from the side of financial organizations. During the crisis, banks started to lend money only to those clients who have a good credit history. Many first-time entrepreneurs can't receive money without that and, as a result, they use collective financing, the crowd-platform Boomstarter notes [6]. The growth of the crowd-funding market which doesn't presuppose cooperating with intermediate parties is determined by fast growth of the Internet and systems of momentary remote transfers. Boomstarter thinks that the crowd-funding market volume in 2018 will amount to 14 bln rubles and in 2019 — 16 bln rubles. According to the Bank of Russia forecast the volume of transactions on the crowd-funding market will increase to 1 trillion rubles per year in 5 years. Now, 30 platforms of collective financing are working in Russia.

At that, in the Western world, crowd-funding is one of the main methods of gathering money and promoting startups. For instance, unusual projects appear every year on the Kickstarter, like levitating electronic clocks, and they gather much more money than the national projects [7].

The aim of this study is the analysis of development of crowd-funding services in Russia.

The tasks of the study:
- we will consider methodological recommendations for implementing crowd-funding;
- we will analyze the market of crowd-funding services.

2. Research methodology

There is no unified methodological crowd-funding elaboration. It can be divided according to the following categories:
1) According to the aim of the crowd-funding project (a business project, a political, social, creative project);
2) According to the type of reward for sponsors (a reward, capital, debt).

Let us consider the second category in detail, especially according to types of reward for sponsors, table 1.
Table 1. Categories of reward for sponsors.

| Reward type | Peculiarity |
|-------------|-------------|
| Reward      | The most popular crowd-funding type. It presupposes giving presents and other prizes to those who agree to finance the idea. |
| Capital     | This type presupposes selling a small percentage of the business or suggests a share in the company within the framework of long-term investments. |
| Debt        | This is a new type of crowd-funding. You ask for money in exchange for a share in the future enterprise or for return of investment promises. |

Crowd-funding can be used for financing various business-ideas. Let us enumerate several most popular directions:

– business startups;
– book publishing;
– films projects;
– entrepreneurs;
– scientific research;
– charity.

Thus, everything that needs financial support is listed above.

All crowd-funding sites are different but their scheme of work is approximately the same:

– we create a new account;
– we make a short description of the project;
– we specify how much money is required for implementing the project;
– we calculate expenditures for presents for investors.

3. Result

Let us analyze the crowd-funding services market on a quarterly basis and its forecasting on the basis of correlation-regression analysis. The volume of the crowd-funding services market is used for analysis.

The following factors have been used for estimation as independent variables:

– GDP (x1);
– inflation rate (x2);
– the amount of debt securities issued on the domestic market (x3);
– direct investments into the RF (x4);
– medium accounting price for gold (x5);
– the amount of credits, deposits and other invested assets granted to organizations, private individuals and credit organizations (x6).

When multifactor models are being developed the requirement of possibly lesser correlation of factors included in the model should be satisfied [8, 10].

The crowd-funding services market estimation on a quarterly basis has the following original data for the factors and the resulting index presented in table 3.

As a result of analysis, data on close connection between the factors and the resulting index of the crowd-funding market volume were obtained. One can conclude from these data that the strength of connection for the “inflation rate” factor is low; therefore this factor is excluded from the analysis of the crowd-funding services market volume. The remaining factors have moderate connection with the resulting index [9, 11].

The next stage of the analysis of the crowd-funding services market is forming a regression which includes 5 factors. It is necessary to check the parameters for materiality and the model for
signification. Traditionally, such check presupposes using Fisher's F-test and Student's t-test. The table value of Fisher's F-test is equal to 3.59. If $F_{calc} = 26.44$ the model is significant. The following results if $T_{tabl.} = 2.1$ are obtained. Calculation of factual values of criteria are presented in table 2.

| Factor | $T_{tabl.}$ | $t$ statistics | Signification |
|--------|------------|----------------|----------------|
| GDP    | 2.10       | -3.57          | Inessential    |
| The amount of debt securities issued on the domestic market, rubles | 2.10 | 0.16 | Inessential |
| Direct investments in the RF | 2.10 | 1.97 | Inessential |
| The medium accounting price for gold | 2.10 | 0.44 | Inessential |
| The amount of credits, deposits and other invested assets granted to organizations, private individuals and credit organizations | 2.10 | 3.57 | Essential |

Predicted values beginning from the 1st quarter of 2018 to the 1st quarter of 2021 were calculated; they are presented in figure 1.

![Figure 1. The volume of the crowd-funding market, mln rub.](image-url)
Table 3. Basic data for the crowd-funding model.

| Period          | The volume of the crowd-funding services market, mln rub. | GDP, bln rub. | The amount of debt securities issued on the domestic market in rubles, mln rub. | Direct investments in the RF, mln dollars, USA | The medium accounting price for gold, rub/g | The amount of credits, deposits and other invested assets granted to organizations, private individuals and credit organizations, mln rub. |
|-----------------|----------------------------------------------------------|---------------|---------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------|
| 1 quarter, 2014 | 45.0                                                     | 17,390.2      | 9,618,734                                                                       | 11,450                                         | 1464.51                                  | 30,559,819                                                                         |
| 2 quarter, 2014 | 45.0                                                     | 19,128.0      | 9,812,800                                                                       | 12,083                                         | 1451.88                                  | 32,667,642                                                                         |
| 3 quarter, 2014 | 45.0                                                     | 20,758.6      | 9,893,768                                                                       | -59                                            | 1492.88                                  | 33,728,887                                                                         |
| 4 quarter, 2014 | 45.0                                                     | 21,922.9      | 10,181,323                                                                      | -1,443                                         | 1835.58                                  | 34,888,476                                                                         |
| 1 quarter, 2015 | 51.7                                                     | 18,568.5      | 12,090,040                                                                      | 2,269                                          | 2487.93                                  | 33,414,781                                                                         |
| 2 quarter, 2015 | 51.7                                                     | 19,857.6      | 12,433,077                                                                      | -469                                           | 2023.9                                  | 33,720,009                                                                         |
| 3 quarter, 2015 | 51.7                                                     | 21,966.8      | 12,765,086                                                                      | -227                                           | 2279.94                                  | 34,766,332                                                                         |
| 4 quarter, 2015 | 51.7                                                     | 22,839.8      | 12,912,356                                                                      | 5,281                                          | 2343.58                                  | 35,176,500                                                                         |
| 1 quarter, 2016 | 1,500.0                                                  | 18,815.9      | 13,310,220                                                                      | 64                                             | 2845.7                                  | 35,710,897                                                                         |
| 2 quarter, 2016 | 1,500.0                                                  | 20,429.6      | 13,318,902                                                                      | 7,468                                          | 2659.77                                  | 36,198,177                                                                         |
| 3 quarter, 2016 | 1,500.0                                                  | 22,721.2      | 13,854,654                                                                      | 4,284                                          | 2772.18                                  | 36,614,517                                                                         |
| 4 quarter, 2016 | 1,500.0                                                  | 24,076.9      | 13,981,716                                                                      | 20,723                                         | 2470.07                                  | 37,800,220                                                                         |
| 1 quarter, 2017 | 2,750.0                                                  | 20,090.9      | 15,128,919                                                                      | 4,844                                          | 2302.77                                  | 38,213,972                                                                         |
| 2 quarter, 2017 | 2,750.0                                                  | 21,691.1      | 15,667,731                                                                      | 13,161                                         | 2311.45                                  | 39,423,741                                                                         |

Thus, the following results were obtained during the research:

1) the model has been developed related to the influence of GDP volumes debt securities issued on the domestic market, direct investments, medium accounting price for gold and the amount of credits, deposits and other invested assets granted to organizations, private individuals and credit organizations on the volume of crowd-funding services market.

2) the model has been tested for quality which has demonstrated that the selected factors explain the resulting index up to 93%.

3) forecasting has been performed on the basis of which we can conclude that positive dynamics of the crowd-funding services market is expected and the volume of the crowd-funding services market will be equal to 6 284.8 rubles by the 1st quarter, 2021, according to the forecast data.

Therefore, one can conclude that increasing the amount of collective financing influences the increase in volume of the crowd-funding services market.

4. Conclusion
Crowd-funding in Russia has already overcome the threshold of establishing and, for the moment, active growth is observed which doesn't stop even during the economic crisis [12–14]. Therefore, the state can't ignore it anymore and that is why it actively tries to incorporate into this market. Not only as the main observer but as the main regulator of crowd-funding relations. As crowd-funding in Russia is a relatively young phenomenon, ecosystem is not completely formed up in it [15, 16].
Thus, we can see that crowd-funding is getting more interesting not only for young businessmen, startups and representatives of the state level, but it also arouses great interest in representatives of large brands. Further, such trends will only gain momentum and scale up.

5. Directions for further research
Further development of crowd-funding services consists in the fact that it is necessary to create platforms which can help to solve the problem of distrust among people as those who have made contributions can clearly see what their money has been spent for and, moreover, they can monitor the entire process of implementation of the project in the Internet. Also, it is necessary to elaborate laws in this field. That is, lack of legal framework prevents this sphere from developing on a national basis.

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