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The impact of product and process innovations on financial results: An empirical study of Russian companies

O.M. Orlovtseva[1]
E.V. Gubanova[1]
[1] Kaluga Branch of the Financial University under the Government of the Russian Federation (Kaluga, Russia)

Abstract

The relationship between product and process innovation and financial performance remains largely unexplored, especially for Russian firms. An analysis of publications on this topic shows both a positive and a negative relationship. At the same time, there are no empirical studies based on Russian companies. This study was conducted on the basis of empirical data from 137 Russian companies. The study shows that investment in R&D has a positive effect on the financial results of the company; and the financial results of the companies depend on the type of innovation (product or process) that the companies carry out.

Conducting R&D and scientific research related to product and process innovations can increase the profitability of sales, which characterises the financial results of Russian companies. In addition, it was concluded that the relationship between process innovations and financial results is stronger than the relationship between product innovations and financial results, which means that it is more profitable to develop and implement process innovations.

Keywords: process innovations, product innovations, R&D, financial results, profitability.

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产品和流程创新对财务业绩的影响：对俄罗斯公司的实证研究

O.M. Orlovtseva[1]
E.V. Gubanova[1]
[1] 俄罗斯国立财政金融大学卡卢加分校 (俄罗斯，卡卢加)

简介

俄罗斯公司的产品和流程创新与财务结果之间的关系在很大程度上仍未被充分研究，特别是对于俄罗斯公司而言。对该主题的出版物进行的分析显示了正面和负面的关联。然而，基于俄罗斯公司的实证研究却很少。本研究基于对137家俄罗斯公司的实证数据进行了研究。结果表明，对研发的投资对公司的财务业绩产生了积极影响，而这些业绩则取决于公司所进行的创新类型（产品或流程）。

通过进行与产品和流程创新相关的实验设计和科学研究，能够提高俄罗斯公司的销售利润率，从而改善其财务业绩。此外，得出结论：流程创新与财务结果之间的关系比产品创新与财务结果之间的关系更为密切，因此，开发和实施流程创新更为有利。

关键词： 流程创新、 产品创新、科学研究和试验设计、 财务业绩、 盈利能力。

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Introduction

There are many studies devoted to the impact of innovation on different aspects of business activity: entry into international markets and efficiency of export activities [Peters et al., 2018; Fayazova, 2020]; efficiency and competitiveness [Garipova, 2011; Alvarez et al., 2015; Kozlov, Kadyrova, 2019]; productivity [Baumann, Kritikos, 2016; Trachuk, Linder, 2020; Domnich, 2022]. For example, the introduction of process innovations helps reduce costs and often leads to the introduction of product innovations. At the same time, many authors emphasise the relationship and mutual influence of product and process innovation and also confirm with empirical data that the most effective companies are those that manage to ensure synergy between product and process innovation [Homburg et al., 2019; Ehls et al., 2020; Malek et al., 2020; Linder, 2021].

At the same time, the relationship between innovation activity and financial performance remains under-researched, as the results of such studies tend to be contradictory. Thus, the authors of some works conclude that there is a positive relationship between innovative activity and the financial capabilities of companies [Criscuolo, 2009; Cassoni, Ramada-Sarasola, 2012; Acosta et al., 2015; Santi, Santoleri, 2017; Crowley, McCann, 2018; Edeh, Acedo, 2021], while others conclude that there is a negative relationship between them [De Loecker, 2011; Doran, 2012; Goedhuys, Veugelers, 2012]. There are no Russian empirical studies on this issue.

The purpose of this article is to empirically examine the impact of process and product innovation on the financial performance of Russian firms.

1. Research on the relationship between innovation and firm financial performance

The impact of innovation on financial performance can be both positive and negative. In the study [Pantagakis et al., 2012], the authors attempted to establish a relationship between the intensity of investment in R&D, calculated as the ratio of R&D expenditure to net sales, and the financial performance of companies involved in the development of software and hardware. To determine the results of the study, the company's return on investment and market capitalisation were measured. A study based on data from 39 companies in the European Union found a negative correlation between return on investment and R&D investment intensity. The authors explain this by saying that investments in R&D do not pay off immediately and do not always pay off in the current year due to the high uncertainty of the results.

As additional regressors in the model, the authors used the sales growth rate and the ratio of debt to assets as a feature of the capital structure [Pantagakis et al., 2012]. The researchers found a positive correlation between return on assets and sales growth, but a negative correlation between return on assets and the debt ratio. The researchers found a positive correlation between return on assets and sales growth, but a negative correlation between return on assets and leverage. The study found that to achieve maximum market value growth, a company must invest approximately 41% of annual revenues in research and development.

[Hall, 2011; Crespi, Zuniga, 2012] show that innovation helps to increase the efficiency of resource use, to introduce new technologies and to overcome the technological gap of weaker firms, thereby achieving better financial results.

The study [Ku et al., 2010] also confirmed the hypothesis that there is a non-linear relationship between R&D investment and company financial performance, which was measured in the study using Tobin's coefficient and return on assets. The study [Ku et al., 2010] also confirmed the hypothesis that there is a non-linear relationship between R&D investment and company financial performance, which was measured in the study using Tobin's Q and return on assets. The authors of the article [Vithessonthi, Racela, 2016] conducted a study based on data from non-financial companies traded on the US stock exchange. They found a negative relationship between the intensity of R&D investment and the financial performance of companies and concluded that R&D investment has a negative impact on the financial performance of economic entities in the short term. At the same time, a positive relationship was found between the intensity of investment in research and development and the value of the company, suggesting that innovation has a positive impact on long-term performance.

In the study [Chen et al., 2019], the authors assessed the correlation between the intensity of investment in R&D and the profitability of assets, which characterises the financial performance of the company. The study is based on information from 96 companies listed on the Taiwan Stock Exchange. In addition to the R&D intensity indicator, the explanatory variables included the natural logarithm of the value of assets as a measure of the size of the firm, the growth rate of the firm's assets, and the coefficient of financial dependence (the ratio of the value of liabilities to the value of assets) as a measure of the firm's capital structure. As a result of estimating the coefficients of the model, the researchers found a negative relationship between the intensity of R&D investment and the return on assets in the current period, but the relationship between the return on assets and the intensity of R&D investment with a lag of one and two years was positive. These results suggest a positive effect of R&D investment with a time lag.

Regarding the relationship between return on assets and other explanatory variables in the model, the authors of [Chen et al., 2019] found a positive correlation between current return on assets and return on assets with a one-year lag, firm size expressed as the natural logarithm of the value of its assets, and the growth rate of firm assets. The relationship between return on assets and the ratio of a company's liabilities to its assets is negative, i.e. companies with higher levels of debt have lower returns on assets than companies with lower levels of debt.

There are other papers that assess the relationship between different indicators of firms' financial capacity and their innovative activity. The results of these studies may vary depending on national characteristics, the choice of different dependent and explanatory variables, and the degree of innovation capacity of industries.

The analysis of the scientific literature allowed us to formulate the following hypotheses:

1) investment in R&D has a positive impact on the company's financial results;
2) companies' financial performance depends on the type of innovation (product or process) they undertake.

2. Research methodology

In order to examine the relationship between the innovative activity of Russian companies and their financial results, the authors of this article first conducted a survey and then an empirical study.

The purpose of the survey was to determine the main characteristics of the innovative activities of Russian companies for further research: types of innovations carried out, types of expenditures on innovations, methods of developing and implementing innovations, etc.

The participants in the survey were employees of Russian companies whose professional activities are directly related to the development and implementation of innovations.

The survey was a Google form that could be completed online by clicking on a link and consisted of 8 multiple choice questions. At the same time, participants were not limited in the number of answers to the question and had the opportunity to offer their own options if they were not satisfied with the ones suggested.

After conducting the survey and processing the results, the authors of the study were faced with a new goal - to identify the relationship between process and product innovation of Russian companies and their impact on financial results. To achieve this, a sample of 335 large Russian companies was selected and 137 companies responded (response rate of around 40%).

An important condition for a company to be included in the sample was that it had expenditure on research and development, provided that this work was completed by the end of 2022.

For each enterprise, information was collected on the R&D costs incurred in 2022 and the financial results achieved. The sources of information used were the annual accounts for 2022, namely form 2 'Report on the financial results', the notes to the annual accounts and statistical form 4 'Information on the innovative activities of the organisation'.

Once all the necessary information had been obtained, indicators for further research were calculated for each company, namely:

- the share of R&D costs related to product innovation in the turnover of the enterprise as a characteristic of the innovative activity of the enterprise;
- the share of R&D costs related to process innovations in the turnover of the enterprise as a characteristic of the innovative activity of the enterprise;
- return on sales as the ratio of net profit to company sales as an indicator characterising the financial results of the company.

The data obtained were summarised in two tables: the first and third indicators - in one table to confirm the first hypothesis; the second and third - to confirm the second hypothesis. Thus, at this stage, the study was conditionally divided into two sub-stages, but the algorithm of action for each of them was similar, except for the data used for analysis.

The analysis was carried out using the Excel programme: the = CORREL function was used to determine the correlation between the data studied (the share of R&D costs related to product or process innovation in the company's turnover and sales profitability) at each stage.

The authors of the study then carried out a regression analysis. As a result, two linear equations were obtained, the analysis of which makes it possible to assess the presence or absence of a relationship between the innovative activity of Russian companies and their financial results:

$$ROS = 1.8227Iprod + 0.1921, \quad (1)$$

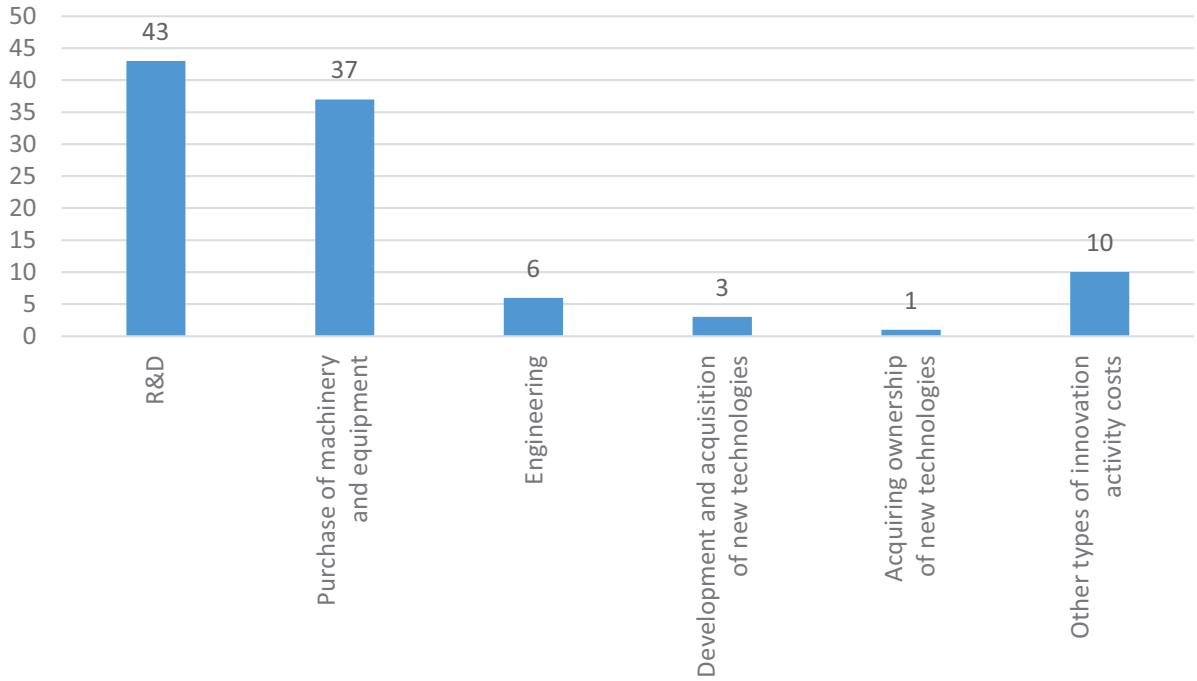
$$ROS = 1.8235Iproc + 0.116, \quad (2)$$

where *ROS* – company sales profitability, *Iprod* – R&D costs related to product innovation as a percentage of company sales, *Iproc* – R&D costs related to process innovation as a percentage of company sales.

3. Research results: the impact of product innovation on the financial results of Russian companies

One of the questions that interested the authors of this study was related to the costs that companies incur in the innovation process: 'What types of innovation costs predominate in your company?' (Fig. 1).

Fig. 1. Distribution of answers to the question 'What types of innovation costs are prevalent in your company?' (% of respondents)



Source: compiled by the authors.

According to the survey results, research and development of new products, services and methods of their production, new production processes, account for the largest share of costs (43% of respondents). A large share of innovation expenditure is also related to the purchase of machinery, equipment and other fixed assets used in innovation activities (37 %). 10% of respondents chose other costs associated with carrying out innovation activities (other costs in this case include marketing and branding, design, staff training, etc.).

Respondents were then asked to select the priority type of cost incurred by their company (product or process innovation costs). The study found that 59% of respondents incur product innovation costs and 41% incur process innovation costs. This is due to the nature of the business, its current needs and other factors. It should also be added that product innovation is often more expensive to create and implement than process innovation, and therefore costs more.

According to Rosstat, only 4.5% of domestic organisations spent on product innovation in 2022[1].

With regard to product innovation, respondents were asked the following question: 'Who develops product innovations for your organisation?' (Fig. 2).

From Fig. 2 we can see that 44% of companies develop innovations on their own, 26% use the help of third party organisations to develop product innovations, 23% prefer to collaborate with other companies and only 7% create innovations by transforming products created in another organisation. The next question asked of respondents related to factors that have a negative impact on innovation activity (Fig. 3).

According to the majority of respondents, the most common factor slowing down the innovative activity of Russian companies is the high cost of innovation (76% of respondents), followed by the delayed impact of research and development (43%). These factors are real and many foreign studies have been devoted to them. It is worth noting that the high cost of innovation, if successful, pays off and has a positive impact on the company's financial results.

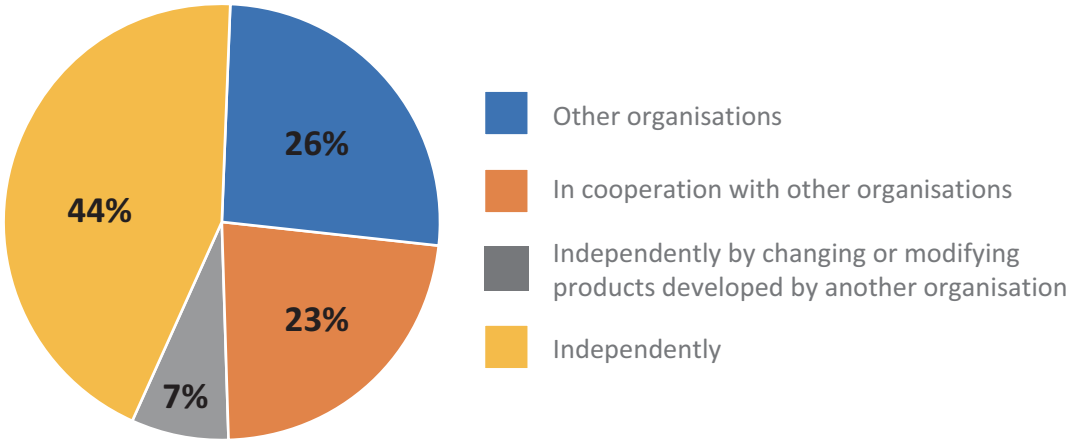
Respondents were also asked to answer a question on the impact of innovation activity on the performance of their enterprise (Fig. 4).

As a result of the analysis of the answers to this question we can conclude that innovative activity has an impact on various spheres of activity of Russian enterprises. In particular, according to 78% of the respondents it allows to maintain traditional sales markets, according to 67% of the respondents - to improve the quality of goods, works, services, according to 60% of the respondents - to reduce the time of interaction with consumers or suppliers, etc.

To explore the relationship between product innovation and financial performance, it was decided to examine the relationship between R&D costs related to product innovation as a percentage of sales and sales profitability.

[1] https://rosstat.gov.ru/statistics/science.

Fig. 2. Distribution of answers to the question 'Who develops product innovations for your organisation?' (% of respondents)



Source: compiled by the authors.

This was done by calculating the average of the company indicators by industry. On the basis of the data from the 2022 annual accounts, the estimated indicators for each company were determined: aggregated results of research and development (line 1120 of the balance sheet and notes), turnover (line 2110 of the profit and loss account), net profit (line 2110 of the profit and loss account).

Table 1 presents aggregated information on Russian companies' spending on product innovation in 2022 by industry.

In 2022, spending on product innovation ranges from 450,605,431 to 6,346 thousand rubles. The largest expenditures on product innovation were made by gas extraction enterprises (450,605,431 thousand rubles), oil extraction and refining enterprises (300,006,727 thousand rubles), and ferrous and non-ferrous metallurgy enterprises (101,156,735 thousand rubles).

Table 2 provides information on the average financial results of Russian companies in 2022.

After collecting all the necessary information from each company's annual accounts, the R&D costs related to product innovation were calculated as a percentage of the company's turnover and the return on turnover. The initial data are presented in Table 3.

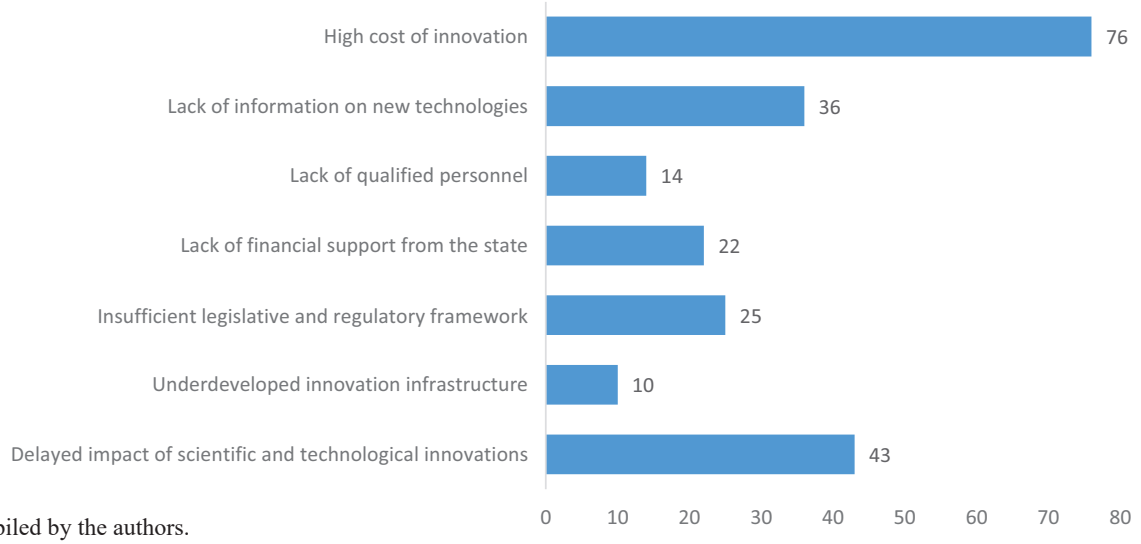
Analysing Table 3, we can conclude that the average share of R&D costs related to product innovation in the turnover of the companies in the sector will be 1.22% in 2022. The average return on sales of the companies studied is 21.43%.

A regression analysis was then carried out, resulting in a linear regression equation:

$$ROS = 1{,}8227Iprod + 0{,}1921. \quad (3)$$

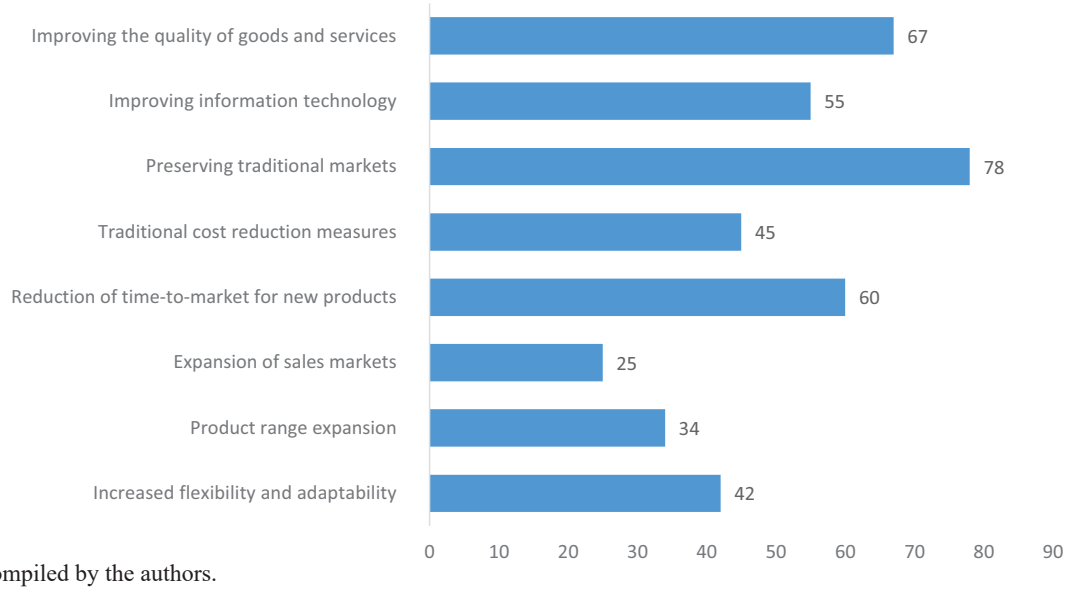
Analysing the regression equation, we can draw the following conclusions:

Fig. 3. Distribution of answers to the question 'What factors hinder innovation in your company?' (% of respondents)



Source: compiled by the authors.

Fig. 4. Distribution of answers to the question 'What results does innovation bring to your company?' (% of respondents)



Source: compiled by the authors.

Table 1
Expenses of Russian companies on product innovation in 2022

Sector	Number of sample companies	Average company expenditure on research and development related to product innovation by industry (thousand rubles)
Gas production	7	450605431
Petroleum extraction and refining	22	300006727
Ferrous and non-ferrous metallurgy	9	101156735
Heavy engineering	5	33170567
Pharmaceutical industry	16	4984037
Chemical and petrochemical	14	1509873
Electric power industry	8	741143
Nuclear industry	2	716688
Aerospace industry	3	353806
Defence industrial complex	24	216596
Automotive industry	3	180725
Transport industry	4	160297
Building materials production	7	50073
Telecommunications	3	8621
Food industry	10	6346
Total	137	

Source: compiled by the authors.

Table 2
Financial results of Russian companies in 2022 (thousand rub)

Sector	Average sales revenue	Average net profit
Gas production	6388987167	2684456626
Petroleum extraction and refining	785977975	220947263
Ferrous and non-ferrous metallurgy	792927899	278191681
Heavy engineering	855897262	313662262
Pharmaceutical industry	1963646793	18763461
Chemical and petrochemical	528497978	149293771
Electric power industry	7593831523	602930206
Nuclear industry	60639706	1102689
Aerospace industry	350588729	17630466
Defence industrial complex	190106300	50856772
Automotive industry	770347840	272910012
Transport industry	1888308109	513220494
Building materials production	1069309679	142659528
Telecommunications	2389317290	635468324
Food industry	103032996	6421178

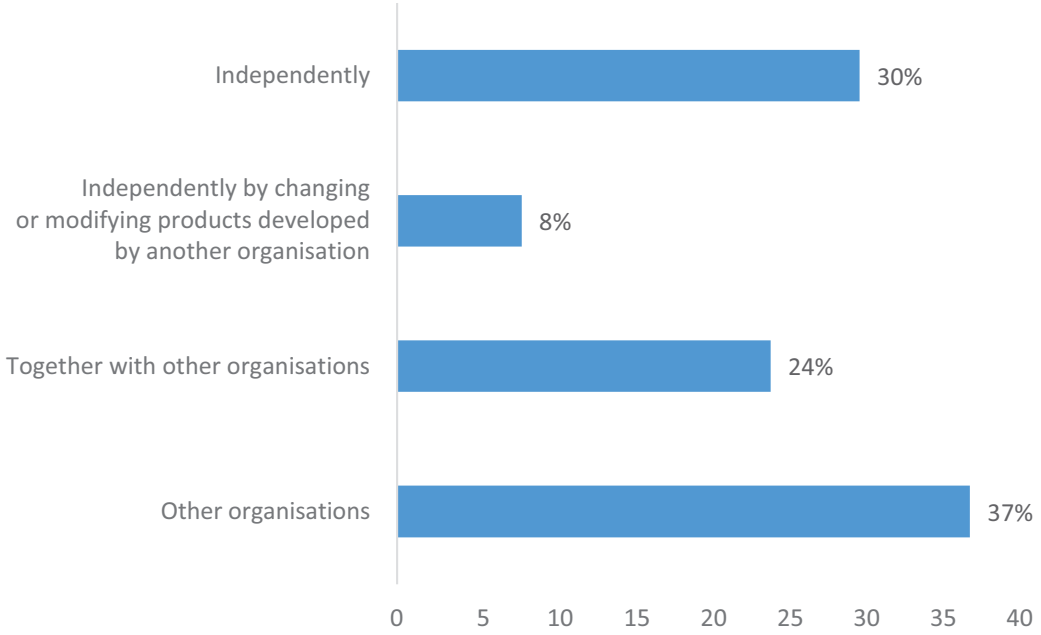
Source: compiled by the authors.

Table 3
Statistical data (%)

Sector	R&D costs related to product innovation as a percentage of company turnover	Return on sales
Gas Production	7.05	42
Petroleum extraction and refining	3.95	8
Ferrous and non-ferrous metallurgy	4.23	27
Heavy engineering	1.76	27
Pharmaceutical industry	0.25	1
Chemical and petrochemical	0.14	13
Electric power industry	0.39	27
Nuclear industry	0.14	28
Aerospace industry	0.04	37
Defence Industrial Complex	0.03	28
Automotive industry	0.18	6
Transport industry	0.02	35
Building materials production	0.08	2
Telecommunications	0.00	5
Food industry	0.00	35

Source: compiled by the authors.

Fig. 5. Distribution of answers to the question 'Who develops process innovation for your organisation?' (% of respondents)



Source: compiled by the authors.

1. If the share of R&D costs related to product innovation in the company's sales is 0, the minimum return on sales is 19.21%.

2. The coefficient of Iprod indicates the degree to which sales profitability is dependent on R&D costs related to product innovation as a percentage of sales. In our case, this coefficient is 1.8227, which indicates a fairly high correlation between the indicators studied, i.e. the higher the share of R&D costs related to product innovation in sales, the higher the profitability of sales.

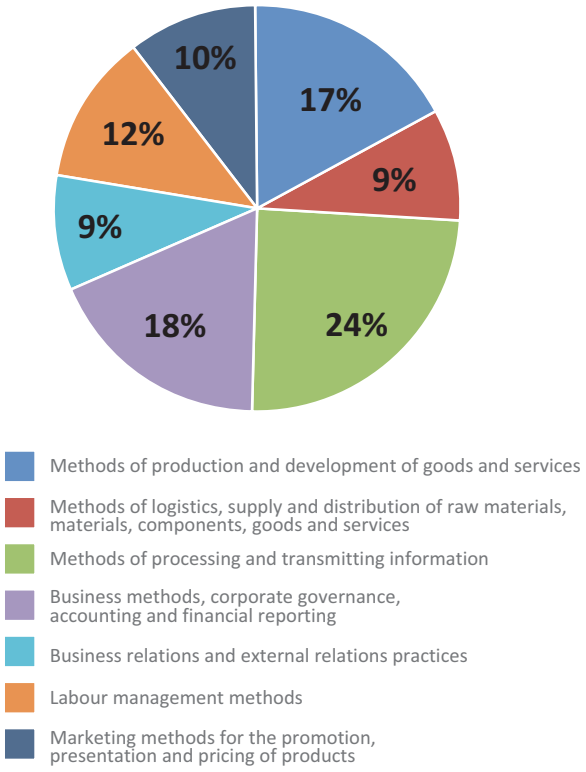
Thus, by analysing the relationship between the share of completed R&D costs related to product innovation in sales and the profitability of sales of Russian companies, the authors found that this relationship is present, positive and statistically strong. Consequently, conducting R&D related to product innovation can increase the profitability of sales, i.e. the revenues of Russian companies.

4. The impact of process innovations on the financial results of Russian companies

One of the questions asked of respondents was: 'Who develops process innovations for your organisation?' Respondents' answers are shown in Fig. 5.

To develop process innovations, 37% of companies use the help of third parties, 30% develop innovations themselves, 24% prefer to collaborate with other companies and 8% create process innovations by changing or modifying the products of other organisations.

Fig. 6. Distribution of answers to the question 'What types of process innovation is your company implementing?' (% of respondents)



Source: compiled by the authors.

Table 4
Expenses of Russian companies on process innovation in 2022

Sector	Number of sample companies	Average cost of R&D related to process innovation per company in the industry (thousand rubles)
Gas production	7	459376426
Petroleum extraction and refining	22	188293285
Ferrous and non-ferrous metallurgy	9	161668167
Heavy engineering	5	93198302
Pharmaceutical industry	16	76676948
Chemical and petrochemical	14	64548921
Electric power industry	8	61244838
Nuclear industry	2	51955611
Aerospace industry	3	46942082
Defence industrial complex	24	36278171
Automotive industry	3	16368424
Transport industry	4	15852212
Building materials production	7	7704331
Telecommunications	3	6001255
Food industry	10	1162721

Source: compiled by the authors.

A similar question was asked about product innovation. Comparing the responses, we can conclude that Russian companies are more likely to trust other organisations to develop process innovation than product innovation.

Answers to the question: 'What types of process innovation does your company undertake?' are shown in Fig. 6.

Russian companies engage in different types of process innovation depending on their needs, type of activity and other factors. According to the survey results, the majority of companies develop and implement new ways of analysing and disseminating information (24% of respondents), new ways of doing business, corporate governance, finance and accounting (18%), new ways of producing and developing goods and services (17%). According to Rosstat, only 4.3% of organisations had costs for process innovation in 2022[2].

Similar to the study of the relationship between product innovation and financial performance of Russian companies, the relationship between process innovation and financial performance was also investigated. For this purpose, additional information on R&D costs for process innovation was selected from companies' annual reports.

Table 4 provides information on Russian companies' expenditure on process innovation R&D by industry in 2022.

Expenditures for R&D related to process innovations in 2022 range from 459,376,426 thousand rubles to 1,162,721 thousand rubles. The largest expenditures on product innovations were made by gas extraction enterprises (459,376,426 thousand rubles), oil extraction and refining enterprises (188,293,285 thousand rubles), and ferrous and non-ferrous metallurgy enterprises (161,668,167 thousand rubles). It is worth noting that the turnover and net profit of companies in these industries are also the highest of all companies in the sample. In addition, they occupy a leading position in terms of R&D costs related to product innovation. A comparison of the costs of product and process innovation incurred by the largest Russian companies in 2022 allows us to draw the following conclusions:

1. The largest expenditures on product and process innovation in 2022 were made by companies in gas extraction, oil extraction and refining, and ferrous and non-ferrous metallurgy.

2. Most Russian companies spend more on process innovation than on product innovation.

To determine the impact of process innovation on the financial performance of Russian companies, the relationship between the share of process innovation R&D expenditure in sales and sales profitability was also examined. For this purpose, the share of process innovation R&D costs in sales was calculated for each company. The initial data are shown in Table 5.

Analysing the table, we can conclude that the average R&D expenditure on process innovation as a percentage of sales will be 5.29% in 2022. This is 4.07% more than the average R&D expenditure for product innovation as a percentage of sales.

It is worth noting that the ratio of spending on process innovation to the financial results of enterprises is higher than the ratio of spending on product innovation to the financial results by 3.24%, i.e. the relationship between the financial results of Russian enterprises and process innovation is stronger than with product innovation.

A regression analysis was then carried out, resulting in a linear regression equation:

$$ROS = 1{,}8235Iproc + 0{,}116. \quad (4)$$

[2] https://rosstat.gov.ru/statistics/science.

Table 5
Statistical data (%)

Sector	Research and development costs related to process innovation as a percentage of company turnover	Return on sales
Gas production	2.95	42
Petroleum extraction and refining	6.05	8
Ferrous and non-ferrous metallurgy	6.77	27
Heavy engineering	3.24	27
Pharmaceutical industry	4.75	1
Chemical and petrochemical	4.86	13
Electric power industry	8.61	27
Nuclear industry	6.86	28
Aerospace industry	8.96	37
Defence industrial complex	5.97	28
Automotive industry	5.82	6
Transport industry	8.38	35
Building materials production	1.92	2
Telecommunications	2.20	5
Food industry	2.00	35

Source: compiled by the authors.

Analysing the regression equation, we can draw the following conclusions:

1. If the R&D costs associated with process innovation as a percentage of the company's sales is 0, the minimum return on sales is 11.6%.

2. The coefficient of Iproc indicates the degree of dependence of sales profitability on the share of R&D costs related to process innovation in sales. In our case, the coefficient is 1.8235, which indicates a fairly high relationship between the indicators studied, i.e. the higher the share of R&D costs associated with process innovation in sales, the higher the profitability of sales.

When analysing the existence of a relationship between the share of the cost of completed R&D related to process innovations in sales and the profitability of sales of Russian companies, we found that this relationship is present, positive and at the same time statistically strong. As a result, conducting R&D related to process innovation can increase the profitability of sales, i.e. the revenues of Russian companies.

Thus, after a study devoted to the analysis of the relationship between the innovative activity of Russian companies and their financial results, we can conclude that the relationship between the studied characteristics is indeed present, positive and at the same time statistically strong. It should be noted, however, that process innovation has a slightly greater impact on the financial results of Russian companies than product innovation.

The results confirm both hypotheses: that there is a relationship between product innovation and the financial performance of Russian companies, and that there is a relationship between process innovation and the financial performance of Russian companies. It was concluded that the relationship is slightly stronger in the second case, which means that it is more profitable to develop and implement process innovations, as they have the greatest impact on the financial results of Russian companies.

5. Conclusions and application of the results obtained in the practical activities of Russian companies

The empirical study confirmed both hypotheses:

- investment in R&D has a positive impact on the company's financial results;
- the financial performance of companies depends on the type of innovation (product or process) they undertake.

The results of the study indicate that investment in R&D has a positive impact on a company's financial performance. Undertaking research and development related to product and process innovation can increase the profitability of sales, which characterises the financial performance of companies. It was also concluded that the relationship between process innovation and financial performance is stronger than that between product innovation and financial performance, which means that

it is more profitable to develop and implement process innovation.

Since the first hypothesis about the impact of R&D investment on financial performance is confirmed, companies should focus on finding funding for R&D investment. It could be:

- attracting external investors: a company can attract external investment by selling or issuing shares or bonds to raise additional funds to finance innovation;
- loan: a company may take out a loan from a bank or other financial institution to obtain the funds it needs;
- government grants and subsidies: a company can apply for a grant or subsidy from government organisations that fund innovative projects;
- partnership: a company can partner with another company that is willing to invest in innovation;
- crowdfunding: a company can use crowdfunding platforms to raise money from the general public for its project;
- deferred payment: a company may negotiate additional time to pay its debts to suppliers or creditors in order to gain more time to develop innovations;
- leasing: a company can lease the equipment it needs instead of buying it, saving money that can be used to fund innovation.

In addition, the results of the study showed that for Russian companies, the relationship between process innovation and financial performance is higher than that between product innovation and financial performance. In this regard, companies should encourage process innovation by:

- training and development of employees: The company must invest in the training and development of its employees so that they can better understand new technologies and processes and adapt to changing market demands;
- collaboration with external experts: the company can attract external experts to help develop innovative ideas and projects;
- implementing innovative methods and technologies: the company can use new methods and technologies such as design thinking, agile, blockchain and artificial intelligence;
- forming partnerships: a company can form partnerships with other companies or start-ups to jointly develop new products and technologies;
- use of innovative financing models: A company can use innovative financing models such as crowdfunding, venture capital, ICO and others to raise funds to develop new ideas and projects;
- establishing an innovative culture: The company must develop an innovative culture so that employees can freely and dynamically generate and experiment with new ideas.

Product innovation also has a positive impact on financial results, which is why it is necessary:

- to focus on customer needs and solving their problems: The company must focus on solving the problems and needs of its customers in order to develop innovative products and services that will be in demand;
- to create a stimulating environment: Companies need to provide a comfortable and motivating work environment for employees, where they can freely express their ideas and receive feedback;
- to train and support employee development: The company should provide employees with access to training and development so that they can continue to develop their skills and knowledge about new products and services;
- to organise employee participation in innovation projects: the company should organise internal innovation projects or participate in external projects - this will help stimulate innovative ideas and enable employees to create new products for the company.

One of the ways to stimulate innovation in Russian companies is the development in Russia of the concept of open innovation, which involves going beyond the organisation and interacting with external experts, start-ups, scientific and educational institutions to create new products, processes or services. However, it is worth noting that the open innovation model is still in its infancy in our country. To date, certain elements of the national innovation system have already been put in place: activities and institutions in the legal and financial fields, innovation infrastructure, etc., which create a favourable climate for innovation.

At the moment, only large companies are interested in the new business model. They want to increase their competitiveness through innovation, which involves improving existing products and technologies rather than creating new ones. It is necessary to extend the use of open innovation to small and medium-sized enterprises and to improve the interaction between all participants in the innovation process. To this end, the government has created a system of development institutions that provide financial, information and advisory support to innovative projects at all stages of the cycle. This system is called the ‘innovation lift’.

In addition, technology platforms act as a mechanism for interaction between participants in the innovation process. A technology platform is understood as a communication tool whose purpose is to intensify efforts aimed at creating promising commercial technologies, new products (services), attracting additional resources

for research and development based on the participation of all stakeholders (business, science, government, civil society), improving the regulatory framework in the field of scientific, technical and innovative development.

Thanks to the technology platform, it is possible to build interaction to solve strategic problems of scientific and technological development between different organisations and institutions. To this end, each platform will identify research and development priorities, scientific cooperation mechanisms, consortia and training programmes, assess directions for the development of scientific infrastructure, and establish standards and certification systems.

In summary, the Russian market is constantly changing and companies that want to develop and grow must be prepared for constant changes in the environment in which they operate. In order to compete and succeed in the market, companies must not only improve their processes, but also innovate their products.

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About the authors

Oksana M. Orlovtseva
Candidate of economic sciences, associate professor, head of the Department of Economics, Finance and Humanities, Kaluga Branch of the Financial University under the Government of the Russian Federation (Kaluga, Russia).
Research interests: business analytics, financial management, investing in innovation.
omorlovtseva@fa.ru

Elena V. Gubanova
Candidate of economic sciences, associate professor, associate professor of the Department of Accounting and Management, Kaluga Branch of the Financial University under the Government of the Russian Federation (Kaluga, Russia). SPIN: 8710-5253; ORCID: 0000-0001-7922-8400.
Research interests: innovative activity of Russian companies, tools and methods of strategic development.
evgubanova@fa.ru

作者信息

Oksana M. Orlovtseva
俄罗斯国立财政金融大学卡卢加分校经济学、金融与人文学科系主任 (俄罗斯，卡卢加），经济学博士、副教授。
科研兴趣领域：商业分析、财务管理、创新投资。
omorlovtseva@fa.ru

Elena V. Gubanova
俄罗斯国立财政金融大学卡卢加分校 (俄罗斯，卡卢加），经济学博士、副教授，科学工作副主任。SPIN: 8710-5253; ORCID: 0000-0001-7922-8400.
科研兴趣领域：俄罗斯公司的创新活动、战略发展的工具和方法。
evgubanova@fa.ru

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