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## **ADAPTIVE MECHANISMS OF SMALL AND MEDIUM-SIZED ENTERPRISES IN RUSSIAN FEDERATION DURING SANCTIONS PERIOD**

### **Introduction**

In recent years, sanctions have become a prominent tool of foreign policy in the international business environment (Crozet, Hinz, 2020; van Bergeijk, 2021; Felbermayr et al., 2021). Countries around the world, especially Western countries with developed economies and democratic regimes, have increasingly resorted to economic sanctions, to exert pressure on target nations, typically with unfavorable domestic and international politics for other players of the international arena (Caruso, 2003; Felbermayr et al., 2021). The aim of such restrictions is typically to cause a maximum possible economic harm to undermine the political stability of the sanctioned state (Porter, 1979, Eaton, Engers, 1992). These instruments might take different forms, including export and import tariffs and bans, limitations on financial transactions opportunities, reduction or withdrawal of foreign direct investments etc. (Meyer et al., 2023). The sanctions cases have been witnessed and analyzed in various countries, such as Myanmar (Meyer, Thein, 2014), North Korea (Noland, 2009), South Africa (Porter, 1979), Iran (Haidar, 2017; Afshar Jahanshahi, Brem, 2020; Cheratian et al., 2022; Cheratian, Goltabar, 2023) where the restrictions notably affected the national economy.

Russia seems to be a unique case in the field of international sanctions compared to the previous cases. The third emerging (World Bank, 2023) and globalized economy, surrounded by both European and Asian markets, involved in close trade connections to the Western countries and well-established supply chains, has faced an unprecedented number of imposed sanctions after the beginning of the Special Military Operation in Ukraine on 24th of February 2022, which has definitely changed the national business landscape (Gaur et al., 2023). Despite the declared destructive effect of sanctions from the «senders'» states, the empirical evidence shows that the influence of these restrictions is not that clear. Firstly, the decline in GDP in 2022 was 2,7% (Rosstat,

2022), however in 2023 the growth of the same indicator was equal to 3,6% (Rosstat, 2023), which makes Russia the fifth economy of the world and means that it did not stop or degrade. Secondly, one of the recent papers on sanctions after 2022 concluded that there are no arguments that sanctions do work in the expected way, as Russia did not change its foreign policy or stop military action. Moreover, Russian firms do not seem to be suffering from the negative effect of sanctions, their strategic adaptation «dissipates» the impact of sanctions (Gaur et al., 2023). On the contrary, different studies argue that sanctions have negatively affected the Russian economy, especially such subjects as small and medium-sized enterprises. (Demiroglu, 2022; Kuzyk, Simachev, 2023). Thus, it becomes obvious that some of the firms were more successful in terms of their response to sanctions, while others suffered from the negative effect of all the Western restrictions.

It is important to mention that prior research on sanctions have traditionally examined the effect mostly on macroeconomic indicators, or political changes in the targeted country (Ghomi, 2022; Neuenkirch, Neumeier, 2015; Gurvich, Prilepskiy, 2015; Allen, 2008). The firm-level studies in the context of economic restrictions are very limited in the existing literature. The research on the response to sanctions, even if considered these firm-level actions, has mainly assessed the strategic decision of big companies, connected to the production of very important resources for the national economy (Abramova, Garanina, 2018). Indisputably, sanctions that were imposed on Russia by the USA and its allies significantly affected not only the important natural resources corporations, but also the small and medium businesses. Yet there is a noticeable lack of understanding the firm-level reaction of small and medium-sized enterprises during sanctions, even on the international level (Meyer et al., 2023). The ability of this sector to survive and even develop during periods of economic instability is crucial for the overall economic health of the country (Etemad, 2020). However, what is typical to small and medium businesses is that they receive less governmental protection during the period of sanctions. Moreover, they are limited to resources and debt capacity compared to big companies and their market presence is also bounded. Hence, sanctions, which lead to all the problems with logistics, international trade and business relationships, might have a severe effect on the more financially vulnerable organizations. Nevertheless, such businesses are usually more flexible, compared to large firms. They are capable of using the new opportunities, which are created by sanctions.

SMEs play an important role in the Russian economy. According to the figures of 2023, there are more than 6,3 million SMEs and individual entrepreneurs in Russia (National Tax Service of Russia, 2024) with approximately 30 million people in this sector, which equals to around 41% of the able-bodied population (RIA Rating, 2024). In comparison with the number of small and medium-sized enterprises before the beginning of Special Military Operation (SMO) in Ukraine, their number increased by almost 11% and reached 6,5 million, which is, by the way, on 8,3% more than before the COVID-19 pandemic. Hence, we can state that this sector continued its development after all the sanctions that were imposed on Russia and there is increased business activity among small and medium enterprises (SMEs).

What happened to this sector after the sanctions were imposed is that a lot of firms with established relationships with companies from Western countries, export and import connections have lost the access to targeted markets, technologies, international banking operations, raw materials and clients, who abandoned the Russian business environment after the beginning of the Special Military Operation in Ukraine. Not only SMEs involved in international activity have experienced the economic decline caused by sanctions. The indirect effect of economic restrictions of the West was also sensed

by companies specialized on the local markets. Most of the businesses are involved in different types of relationships with counterparties, and in many cases these connections also underwent noticeable changes and challenges, associated with increased costs or inability to fulfill the obligations. So, a lot of problems have been faced by SMEs since February of 2022. Therefore, in order to continue operating under a sanction crisis companies had to implement adaptation actions to reduce this influence.

Typically, during economic disruptions firms, especially SMEs, tend to cut costs in order to have an ability to survive. However, the period of current sanctions provided SMEs with a lot of new opportunities. Mass withdrawal of Western companies from the market, different types of bans to technological solutions, a bigger emphasis on import substitution, demand from both local and new international markets gave a chance for businesses to search for new profit inflow. Indisputably, such a development of a company is impossible in most of the cases without strong innovative focus and effective human resource policies. Hence, growth-oriented actions might be the factor that positively influenced the company's effectiveness during sanctions.

Thus, small and medium-sized enterprises chose different strategies to overcome the effect of sanctions. As a result, some of these actions were more «successful» than the others. As the sanctions' pressure from the USA and its allies, according to what can be seen now, will only expand in the nearest future, it is necessary to understand how companies act to stay effective and win a competition on the market.

Therefore, we initiate the research agenda by focusing on how effectively small and medium-sized firms adapt to the new business environment caused by sanctions and address the following research question: «How the implementation of response strategies of SMEs influenced the firm's performance in the period of sanctions?». To the best of our knowledge, it is the first research that analyzes the effectiveness of the firm-level response to sanctions imposed in 2022.

We concentrate our study on the relationship between a firm's performance and the adaptation strategies that are used by companies. These actions are closely connected to the measures analyzed in previous research (Cheratian et al., 2022). We also try to determine whether the firms' basic characteristics, its international orientation, governmental support or other actions that might have influenced the short-term response to sanctions.

The data that is used for the analysis is collected among Russian small and medium-sized enterprises from different federal districts by the authors of the current research in 2024 through the online questionnaire. The data collection process is organized with great support from the Federal Centre of National Project of Russia «My business». As a result, 129 Russian SMEs took part in the survey. In order to test the hypothesis, we use the ordered logistic regression method in order to check the dependency between the firm performance and strategies implemented by SMEs.

Our paper makes significant theoretical contributions. By applying the combination of behavioral theory of the firm and resource-based view on business under sanctions, we obtain new findings that might be well generalizable for the future research on international sanctions beyond the specific context. Moreover, using the certain classification of adaptation protective mechanisms in the context of sanctions, we develop the understanding of the more preferable actions under such a particular case of the business environment instability called sanctions.

Talking about the managerial implications, we provide valuable insights for policymakers and business leaders. This knowledge might identify the strategies of SMEs that might be used in such types of crises to overcome it more efficiently and suggest governmental authorities the ways to improve the support measures for such companies or implement similar measures in the future.

The following hypotheses are formulated:

**Hypothesis 1.** SMES, which invested in R&D in the period of sanctions, showed a better performance in the short-term period, compared to other firms.

**Hypothesis 2.** SMES, which invested in IT in the period of sanctions, showed a better performance in the short-term period, compared to other firms.

**Hypothesis 3.** SMEs, which increased the number of employees in the period of sanctions, showed a better performance, compared to other firms.

**Hypothesis 4.** SMEs, which increased the employee's salary in the period of sanctions, showed a better performance, compared to other firms.

**Hypothesis 5.** SMEs, which increased the spendings for employees' training in the period of sanctions, showed a better performance, compared to other firms

## **Data and Method**

In order to get the information on how firms adapt to the new business environment in the period of sanctions, we improved the model used in the Iranian study (Cheratian et al., 2022; Cheratian, Goltabar, 2023) and specified it to the Russian context. The current model is used to check the interdependencies between the firm's performance and strategies that are being implemented as a response of Russian SMEs to sanctions of Western countries. In this chapter we describe how the data was collected, what method is used to get the results and which variables are included in the model.

### **Data collection and sample**

So as to collect the data on Russian Small and Medium-sized enterprises, we used the online-questionnaire that was based both on the vast literature on the topic (Cheratian et al., 2022; Cheratian, Goltabar, 2023) and several steps of the adaptation of questions. It was done by receiving feedback from pilot groups and experts.

The online questionnaire was spread among Small and Medium-sized Enterprises of Russia with support from the national project «My business» in spring 2024, when firms had finished calculating their main financial indicators for the last year's period. The main sources, where the questionnaire was spread, were social networking sites, such as VKontakte or Telegram. As a result, 129 complete answers were received. 7 out of 8 federal districts are presented in the total sample. We collected data on different sectors of work. Thus, 63 manufacturing companies and 66 service businesses took part in our sample and survey. That is, the sample was collected balanced with the distribution of about 49% of the data from manufacturing companies and 51% of companies from the service sector. Obviously, we might have faced the issue of non-random sample, as not all the companies of Russia use online resources of national project «My business» and not all SMEs take part in online surveys. However, all the firms that are in this sample are diverse, in terms of their activities, federal districts and strategies they use, which is why we assume that the dataset to be reliable enough for the analysis. The distribution of the main characteristics of firms according to our received answers can be seen in Appendix 1 and 2.

Being limited to resources, we were not able to receive a huge amount of data. By monitoring the situation connected to data collection, we may state that the response rate was very low-less than 1 percent. However, the data that was received for the study is unique — it cannot be found in any open sources, which makes our study significant for the field of sanctions, and especially the Russian case. During the data processing and analysis steps Excel and Stata were used.

## Method of analysis

For our research we use the Ordered Logistic Regression (OLR) model, because it allows us to analyze the relationship between multiple independent variables and a dependent variable, which is factorial and ordinal, reflecting the percentage of change in revenue from 2022 to 2023.

Ordered logistic regression will provide the possibility to identify the relative importance of each of our independent variables, such as increasing/reducing the number of workers; R&D, IT, HR (both salaries/training) expenditures and explain the variation in the dependent variable (Onder, 2022). Because of this it will be possible to identify which factors have the greatest impact on the dependent variable percent change in revenue growth from 2022 to 2023 and can help to inform decision-makers of SMES, who faced the negative consequences of sanctions and the 2022 crisis due to Russia's special military operation in Ukraine. The use of OLR will allow us to obtain reliable results that will take into account a set of factors in the company's external and internal environment that may have affected its adaptation to the crisis, efficiency and financial results. In our case, these factors are expressed in the control variables of the firm's age, size, main activity, marketing expenditures, the use of governmental support, the level of internationalization and other factors related to the firm. This approach provides a more nuanced understanding of how different factors interact to influence firm revenue, offering a more robust and insightful analysis of causal relationships in the business context. Our use of this model and the obtained results with conclusions will become a useful tool for the formation of business strategies, crisis measures and providing valuable insights for managers and owners of small and medium-sized companies into the factors that influence revenue generation.

Our collected data is a sample of 129 companies that contains several explanatory variables. That is, our dependent variable will rarely be explained by a single factor, since crisis management is a complex approach. Moreover, in order to obtain unbiased estimation of the model and reliable results, it is necessary to take into account those factors that we cannot estimate, but they will affect the dependent variable. That is, it is necessary to construct not just a linear regression that has one dependent and independent variable. In this case the ordered logistic regression model holds out the promise of providing just what we want to know: The effect of SMEs' crisis strategies on firm performance during the sanctions period, holding constant other factors that are beyond our control. The formula and calculation of ordered logistic regression is as follows (Stock, Watson, 2015):

$$\text{Logit}(p) = \beta_0 + \beta_1 \cdot X_1 + \beta_2 \cdot X_2 + \dots + \beta_n \cdot X_n, \quad (1)$$

where  $p$  — is the probability of the event occurring;  $\beta_0$  — is the intercept term;  $\beta_1, \beta_2, \dots, \beta_n$  — are the coefficients of the predictor variables  $X_1, X_2, \dots, X_n$ .

## Measures

This part elaborates on the variables on which the further econometric analysis was conducted to test the hypotheses. We had a dependent variable, independent variables and control variables for a more accurate analysis and results. It is important to mention that not all the answers we received from SMEs were transformed into variables, such as, for instance, the exact industry the firm operates in. This is due to the fact that this would not create any profit for a current model, as the industries are different. The list of variables is presented in Appendix.

*Dependent variable*

The dependent variable that determines how effectively a firm managed to adapt to sanctions is the percent change in revenue growth from 2022 to 2023. The decision about such a choice of the dependent variable is explained by the fact that 2022 was used by companies to implement the adaptation actions very fast, and during the following year they were able to get the first results from the strategic steps.

The dependent variable is named as *Y\_SG\_ordered*. The dependent variable is a factor variable from 1 to 4, where 1 means decreased revenue by more than 20%, 2 — revenue decreased by up to 20%, 3 — revenue increased by up to 20%, and 4 — revenue increased by more than 20%.

*Independent variables:*

Independent variables that are used in the model represent the crisis strategies that firms implement to overcome the period of sanctions. Unlike the previous study that used the similar model (Cheratian et al., 2022), we observe both sides of such actions: cost-reducing (meaning decreased activity) and growth-oriented (active position). For the independent variables, we used a scale from 1 to 3. According to the scale, 1 is a decrease (or elimination of this type of cost), 2 is no change (or no such costs at all), and 3 is an increase in spendings. The following variables were entered as independent variables: *RD*, *IT*, *Staff*, *Salary* and *Learning*. Regarding research and development, 1 — is a decrease in investments in this area, 2 — means that these costs remained unchanged, and 3 — is an increase in R&D expenditures. Similarly for *IT*, *Salary* and *Learning* variables. As for the staff variable, 1 means a decrease in the number of staff, 2 means that the company left it unchanged, and 3 means that the business deliberately increased its staff. Thus, this choice of variables will allow us to test two sets of hypotheses related to innovation and Human resources development.

Almost all the variables are based on the vast research on sanctions (Cheratian et al., 2022). Learning is a new variable that is added to our model as investment in the development of staff could become crucial for SMEs in terms of implementation of all the adaptation measures.

It is important to mention that we did not use the subjective evaluation of how large was a particular cost reduction or increase. It is again connected with our sample size, as we would not be able to get significant results with that.

*Control variables*

The control variables are firm's age, size, main activity, owner's education, the use of the governmental support (both financial and non-financial), level of internationalization (export as an activity of the firm before 2022, export to the EU or the USA before 2022; import dependency before 2022; the re-orientation of new international markets), the firm's activity re-orientation and federal districts.

Next, consider the control variables, which were introduced for more unbiased estimation and will increase the explanatory power of the model. Having studied previous studies and analyzed the situation in the Russian SME sector, the following variables were selected.

The variable responsible for whether the company used consulting services is called «Consulting» (Cheratian et al., 2022). The variable is binary and reflects the presence of assistance of such companies in making decisions about business strategy in response to the imposed sanctions.

Next, we introduce into the model a group of control variables that were responsible for international activity of the company. These variables will also be binary. In our model we take into account the presence of exports before (*Exporter\_to2022*) and after the imposed sanctions (*Export\_now*). These variables were introduced because the sanctions affected

the supply and sales chains of goods and materials. Depending on whether the company had business relations with the countries that imposed sanctions, the crisis response to sanctions and adaptation strategies change. To a greater extent, this affected companies that exported goods or materials from the European Union, as Europe has not had a single package of sanctions that could have a tangible effect on companies that had Europe as one of their key markets. Therefore, we introduced the variable *Export\_EU*. And the variable *Export\_reor* in order to understand whether the company had to reorient itself and change markets and sales geography. Nevertheless, exporting firms showed better results during sanctions than non-exporting, as these firms are often more active and open to new opportunities (Haidar, 2017). Though it has not been covered by previous papers we analyzed, import dependency could have also been a factor that influences the firm's adaptation and performance during sanctions. Subsequently, the *Export\_EU* variable, which has the greatest influence among export variables and correlation with the dependent variable, was selected for inclusion in the model. This choice of this variable alone allows us to exclude multicollinearity and create a more reliable model. We found this out by constructing a correlation matrix before model estimation, checking all the assumptions before analysis, which are described in the methodology.

Then we include variables *Import\_before* and *Import\_now*, going with the same logic as export variables.

Governmental support of SMEs was part of governmental policy during the period of sanctions and might have influenced the firms' performance. Thus, variables representing whether SMEs used both financial and non-financial support measures of the state are added to the model (*gov\_finance*, *gov\_non\_finance*).

In addition to the core business of the company, it is important to consider the activities that are the driver of business efficiency and profitability. Therefore, marketing activity was chosen as a control variable (*Marketing*), because with a competent marketing strategy it is possible to reduce the damage from sanctions and even increase profitability (Cheratian et al., 2022). Moreover, some companies had to reorient to a new market or type of activity and marketing cannot be ignored as it helps to adapt to the market. The *Reorientation* variable is responsible for reorientation.

It is very important to take into account the basic characteristics of the company, as the time of presence in the market and the size of the company will affect the speed of adaptation to sanctions and the decisions and strategies taken. We have included in the model the variable of age (*Age*), size (*Size*) and the field where the firm operates in (*Industry\_Services*). Moreover, in the case of SMEs, more often than not, the manager who is the owner of the company plays a key role. His education can play a role in the effectiveness of the adaptation and the chosen strategy (Doms et al., 2010). We have introduced the variable *Higher\_education\_manager*. Federal districts as a variable were also added to the model in order to account for the potential effect of them on firms' performance under sanctions, however the limited sample size might not allow to catch the significant effect of them.

Therefore, having described all the variables that will be included in the logistic regression model, we have obtained the following model equation:

$$\begin{aligned} \text{Logit}(P(Y_{SG\_ordered} \leq j)) = & \beta_0 + \beta_1 \cdot RD + \beta_2 \cdot IT + \beta_3 \cdot Staff + \\ & + \beta_4 \cdot Salary + \beta_5 \cdot Learning + \beta_6 \cdot Controls \end{aligned} \quad (2)$$

## Results

Since we have logical regression, we interpret the odds ratio rather than the coefficients. This indicator estimates the relationship between the predictor variable and the response variable.

- After logistic regression, significant variables were identified that are interpretable:
- Increased adaptation to sanctions leads to a 1,96 times higher chance of revenue increase than revenue decrease.
  - A rise in research and development expenses results in 2,05 times increase in the likelihood of revenue growth.
  - An increase in the number of employees leads to a 1,97 times higher chance of increasing revenue.
  - Odds ratio of variable export activity with EU countries 0,28 hence the odds are more likely to decrease revenue.  $1/0,28 = 3,57$  therefore the chances of revenue decrease are 3,57 times higher than the chances of revenue increase.
  - Manufacturing companies are 3,07 times more likely to increase revenue than service companies are.

The final step of the statistical analysis and the model is the interpretation of the marginal effect (Table 1).

Table 1

		Marginal effects				
		Delta-method		z	P> z	[95% Conf. Interval]
		dy/dx	Std. Err.			
Sanctions_adaptation		-----				
	_predict	-----				
	1	-.0715575	.0224078	-3.19	0.001	-.115476 -.027639
	2	-.034448	.0116931	-2.95	0.003	-.057366 -.01153
	3	.0111412	.009953	1.12	0.263	-.0083663 .0306487
	4	.0948643	.026198	3.62	0.000	.0435172 .1462113
RD		-----				
	_predict	-----				
	1	-.0757915	.0322272	-2.35	0.019	-.1389556 -.0126274
	2	-.0364863	.0166344	-2.19	0.028	-.069089 -.0038835
	3	.0118004	.0110071	1.07	0.284	-.009773 .0333739
	4	.1004773	.0406732	2.47	0.013	.0207593 .1801954
Staff		-----				
	_predict	-----				
	1	-.0716339	.0365149	-1.96	0.050	-.1432017 -.0000661
	2	-.0344848	.019504	-1.77	0.077	-.0727118 .0037423
	3	.0111531	.0098568	1.13	0.258	-.0081658 .0304721
	4	.0949655	.0497655	1.91	0.056	-.0025731 .1925042
Export_EU		-----				
	_predict	-----				
	1	.1322055	.0523939	2.52	0.012	.0295153 .2348958
	2	.0636442	.0267957	2.38	0.018	.0111255 .1161628
	3	-.0205839	.0191848	-1.07	0.283	-.0581854 .0170177
	4	-.1752658	.0643983	-2.72	0.006	-.3014842 -.0490474
Industry_services		-----				
	_predict	-----				
	1	-.118321	.0423445	-2.79	0.005	-.2013146 -.0353273
	2	-.0569601	.0216718	-2.63	0.009	-.0994361 -.0144841
	3	.0184221	.0165005	1.12	0.264	-.0139182 .0507624
	4	.1568589	.0518213	3.03	0.002	.055291 .2584269

The marginal effect shows not only the probability of an increase or decrease in revenue, but also the extent to which revenue will change. The marginal effect will demonstrate how each factor of interest depends on the predictive variables.

1. Sanctions adaptation
  - Increase in ability to adapt to sanctions leads to a decrease in the probability that revenue is shrink by more than 20% by 7,15%.
  - Increase in ability to adapt to sanctions leads to a decrease in the probability that revenue shrink by up to 20% by 3,44%.
  - Increase in ability to adapt to sanctions leads to an increase in the probability that revenue grew by more than 20% by 9,48%.
2. RD's spending
  - Increase in RD's spending leads to a decrease in the probability that revenue is shrink by more than 20% by 7,57%.
  - Increase in RD's spending to sanctions leads to decrease in probability that revenue shrink by up to 20% by 3,6%.
  - Increase in RD's spending to sanctions leads to increase in probability that revenue grew by more than 20% by 10%.
3. Staff
  - Increase in staff leads to decrease in probability that revenue is shrink by more than 20% by 7,16%.
  - Increase in staff to sanctions leads to decrease in probability that revenue shrink by up to 20% by 3,45%.
  - Increase in staff leads to an increase in the probability of revenue increase that it grew by more than 20% by 9,49%.
4. Export activity in the EU
  - Presence of export activity in the EU leads to an increase in the probability that revenue is shrink by more than 20% by 13,2%.
  - Presence of export activity in the EU leads to an increase in the probability that revenue shrink by up to 20% by 6,4%.
  - Presence of export activity in the EU leads to a decrease in the probability that it grew by more than 20% by 17,52%.
5. Manufacturing sector
  - Belonging to the manufacturing sector decreases the probability that revenue is shrink by more than 20% by 11,8%.
  - Belonging to the production sector decreases the probability that revenue is shrink by up to 20% decrease by 5,7%.
  - Belonging to manufacturing leads to an increase in the probability that revenue grew by more than 20% by 15,68%.

After the analysis, which consisted in the construction of an ordered logistic regression, we can draw conclusions about whether the hypotheses of the study were proved or rejected.

The hypothesis that the increase in research and development costs was confirmed. SMEs that invested in this area increased their chances of revenue growth by 2,05 times. Moreover, the probability that the company's revenue will increase by more than 20% due to investments in research and development increases by 10%.

Employee engagement also has a positive effect on revenue growth, this hypothesis was confirmed. According to the logistic model of the company that increased the number of employees has 1,97 times more chances to increase revenue. Reducing the number of employees causes the company's revenue to decrease, by 7,16% decreases the probability of revenue decrease by more than 20% and by 3,45% decreases the probability of revenue decrease to 20%.

Moreover, it was observed that the presence of exports with EU countries decreases the probability of revenue increase by 3,57 times. The probability that the revenue

decreases by more than 20% increases by 13,2% and that it decreases by less than 20% increases by 6,4% (Table 3). In this case it is obvious that the company that did not export their goods to Europe, have better results, and for those that were characterized by such activity can lead to the fact that the probability of revenue increase by more than 20% decreases by 17,52%.

An important aspect of the financial performance of the company was the sector in which the firm operates. Companies from the service sector were worse adapted to the sanctions, the strategies were less effective. For a company in the manufacturing sector, the probability of more than 20% decrease in revenue decreased by 11,8%, and less than 20% decrease in revenue probability decreased by 5,7%. Between 15,58% increase in the probability of revenue increase of more than 20% for companies that are manufacturing, not service sector.

## Discussion

In our paper, we have managed to identify the factors which have positively affected the firms' performance during the period of sanctions. Strategies that were implemented by small and medium-sized enterprises reflected the particular actions that were done in order to overcome the negative effect of severe economic restrictions. The research has shown that both innovative and human resource factors, which were analyzed in the literature review, have become important in terms of successful adaptation of companies during sanctions. This «successful» adaptation, as we can see from the results section, is strongly connected with the way companies improved its revenue indicator, which provides the additional proof for the reliability of such a firm's performance evaluation.

To begin with, strategies of small and medium-sized enterprises that are described in the current paper are associated with the protective mechanisms that are typically used by companies in the period of crises from the classification of (Mierin, Markovskaya, 2021). Assuming the strategies of the companies as mechanisms from both sides of «decreased activity» and «active position» (in the form of stable institutional form orientation), we were interested, whether firms are more likely to ensure its long-term orientation rather than just survive during the sanction crisis. Our findings have shown that this «active position» among Russian SMEs, which ensures the institutionally stable form of a company in the future is not the individual case — it is a general trend. This might lead us to the conclusion that firms in big and emerging economies, facing the sanction crisis, are more likely to be focused on long-term stability when they implement protective adaptation mechanisms. Moreover, the mechanism of division of responsibility between a firm and a state had no significant effect on companies' performance, which reveals the necessity of additional concentration on the support measures that might be suggested by the state to SMEs. Observing such a behavior of the most vulnerable economic sector of the country as a trend, we, as some of other scientists (Pape, 1997; Gaur et al., 2023), pose the question on the effectiveness of sanctions. If the goal of most of such restrictions is to damage the economic stability and cause a significant fall of a business activity in a sanctioned state, then strategic orientation of the firm will not be the most popular adaptation mechanism if these sanctions truly work. Hence, the effect of such restrictions that are imposed on emerging economies from the developed Western states is not the one that is expected — small and medium-sized enterprises choose not to suffer from the limitations caused by sanctions, but to use this opportunity of ensuring the future stability of a firm.

In general, two out of our five hypotheses, which were stated in our research, have been proven by the statistical analysis of the current paper. By applying the ordered

logit method, we have managed to notice the significant positive effect of increased investment in R&D and number of employees on the firms' performance.

Talking about the positive association between R&D expenditures as an adaptation strategy and firm's performance in the period of sanction crisis caused by the Special Military Operation in Ukraine, we may state that by this SMEs potentially develop their VRIO<sup>1</sup> (value, rarity, imitability, and organization) resources — capabilities that lead to the overall competitive advantage of the firm in the national landscape. By developing the domestic substitutes for the unavailable technological solutions from the sanctioning states, Russian firms managed to foster the competitive edge in their field, ensuring stable institutional form in future, which is associated with the mechanism of «active position» when firms outperform their rivals by increased investments. This allows such SMEs to increase their performance even in the short-term period in comparison with companies who do not invest in technological development. The dynamic capabilities of companies are created by learning and adapting to the changing technological landscape. Increased investments in R&D activities of Russian SMEs during the sanction crisis can be definitely considered as risky behavior. When the future is not stable at all, any additional spending might lead to a company's vulnerable position in terms of any further potential costs. However, business leaders of Russian small and medium-sized firms are more likely to take this risk, and as we can see, it is justified. Hence, at some point entrepreneurial orientation and consciousness of the progressive adaptation need of SMEs' decision makers become determinants of company's success in the period of sanctions, which complements the current knowledge on behavior theory of the firm. These findings regarding R&D expenditures are new for the current literature on sanctions as previously these costs were not significant (Cheratian et al., 2022). Thus, we state that investments in R&D in the period of sanctions can predetermine the company's success in emerging economies of the same structure as Russia, though it is kind of a risky adaptation mechanism. On the contrary to the previously mentioned study (Cheratian et al., 2022), IT investments have not shown a positive impact on the firm's performance in Russia. Though many firms used this strategy as an adaptation strategy during the sanction crisis, the effect of these expenditures on companies' performance is not significant.

Analyzing results connected to human resources of SMEs, we get a more complex picture on the current situation connected with the sanction crisis. Increasing the number of employees by Russian SMEs is the measure that shows the significant growth of revenue, which means that firms

outperform their rivals. Downsizing, which is considered to be the typical measure during a crisis, does not work the same during the period of sanctions. In the previous research there is no precise understanding of how downsizing affects the firm's ability to persist sanctions (Cheratian et al., 2022). There is an opinion that recruitment costs are not essential at all during the economic disruptions (Lai et al., 2016). We broaden the current knowledge in HRM policies and posit that additional recruitment allows SMEs to perform better during sanctions. Theoretically, it means that small and medium-sized firms rather invest in human resources to ensure the stability and prosperity of the firm. Skilled workforce is highly significant for the implementation of adaptation strategies, connected to innovations or growth of the company in the period of sanction crisis, which is why SMEs decision-makers are oriented on retaining talent. At some point, investing in such a resource as employees is also a risky behavior of SMEs management as it demands additional costs, while SMEs are limited in terms

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<sup>1</sup> VRIO — a type of business analysis developed by Barney (1991).

of financial resources. Thus, growth-oriented SMEs that increase spendings on hiring new employees show better results. Such adaptation strategies as increase of salary and learning expenditures, though were used by a lot of companies from our sample, did not show significant influence on the firm's performance. Previous paper on firm-level response to sanctions showed that decrease in salary negatively affected the firm's performance (Cheratian et al., 2022). By the descriptive statistics of our sample, we are able to see that decreasing salaries or learning expenditures were not the popular measures of Russian SMEs. For instance, more than a half of observed SMEs have increased salaries for their employees. However, as results were insignificant for these variables, we cannot say that the salary increase of employees has motivated them to ensure the firm's best performance. Talking about learning expenses, we may predict that companies' focus was to hire already skilled employees, rather than investing a lot of money on additional learning and that allowed them to perform better. We have to remember that SMEs are more vulnerable in terms of financial position than big corporations. That is why it is not possible to spend a significant amount of money on every aspect that is related to the HR-policy.

Therefore, we state that the risky adaptation strategies of SMEs during sanctions that turn out to be significant are connected to each other. When a company starts investing in new technological solutions, they need people who can implement those actions. That is why they hire additional workforce to overcome the lack of skilled employees who will be ready to operate with new technologies. Hence, SMEs increase their performance in the short-term, at the same time maintaining the future stability and growth, as they become more developed and flexible. These resources and dynamic capabilities that companies acquire turn out to be extremely significant in the period of sanctions.

Additionally, most of the control variables that were studied in this paper were not significant in terms of its influence on the dependent variable of SMEs' performance. Nevertheless, we can see that manufacturing firms have performed much better than service ones. This can be probably explained by the fact that demand in goods in particular, has risen both from the government and the people who are no longer able to consume the Western alternatives.

Unlike in the previous studies, exporting activity has not shown a significant relationship with the firms' performance in the period of sanctions (Haidar, 2017). On the contrary, companies who exported their goods in European Union countries or the USA before 2022, showed worse performance compared to those who did not. This might be explained by the fact that Western markets could generate a lot of profit for some SMEs and it is not easy for them to quickly fill the local or other exporting markets to cover the lost value.

## Conclusion

In this study, we have examined the impact of implementation of certain strategies on the firm's performance of Russian Small and Medium-sized enterprises. We managed to answer the research question about how the actions that firms had already taken influenced their revenue stream. In general, we can say that the companies' policy of investing, rather than cutting business costs, have been beneficial for SMEs during the current period of sanctions. Additional spendings on technology and employees do influence the firm's performance in a positive way in the context of severe economic restrictions. The results of the current paper show the common trend that can be observed in Russia after the beginning of a Special Military Operation in Ukraine. Having the data from almost all the federal districts of Russia, we may state that finding of this

research may be generalized for the whole country, and moreover, for the big emerging economies, which might face similar economic restrictions in the future.

The general trend that we found for the case of sanctions against Russia is the fact that those SMEs who invested in R&D activities, substituting the solutions that are no longer available and hired people responsible for the implementation of all the technological process within a firm, performed better and managed to earn more money in a very short-term period compared to those who did not.

The understanding of how different strategies influence the firm's performance during the sanction crisis gives a strong theoretical contribution to the resource-based view, behavioral theory and broadens the understanding of protective adaptation mechanisms specified for the sanction context. In general, protective adaptation mechanisms of «active position» that are oriented on the stability of a firm in future, are a choice of SMEs during sanctions. Cost-cutting measures seem to be ineffective and unpopular even among the most financially weak segment of the economy. The mechanism of division of responsibility, though being used by some companies, is not the determinant of success. Thus, by increased spendings on technological development and employees, who can ensure all this, SMEs create new VRIO-resources, enhancing the competitiveness and effectiveness. This means that for Russia and the same economies survival mechanisms are not the choice when they face severe sanctions — they rather utilize new opportunities created by restrictions from the opponents. Hence, entrepreneurial orientation and risk become the main part of SMEs' success in the reality of economic restrictions. Moreover, the improved model of firm-level response to sanctions was presented, which might be used for further research.

Talking about the managerial implication of the current study, we are sure that this research is truly applicable and relevant for both small and medium-sized enterprises leaders and policy makers. Taking into account the fact that the pressure from the sanctioning states will most probably rise in the nearest future, the understanding of strategies that are used by the most successful companies in terms of their performance may navigate Russian SMEs in the new direction. The empirical evidence shows that firms who are oriented on stable institutional form in the future by investing in very important resources adapt better in comparison with those who decide to decrease their activity and choose the survival path. What is more, these findings might predetermine the change in the business environment of Russia, where the competition will be affected by firms' investments into crucial resources, which could lead to the big technological development with increased value of employees in the labor market. Additionally, these findings might be applied by the firms from emerging economies that will face a sanction crisis in the future, if there is going to be one.

The policy implications on this research indicates the necessity of revision of governmental support in the period of current sanctions. As both financial and non-financial measures of state's support have not shown significant positive influence on the firm's performance in the short-term period as a trend, we can suggest the implementation of more support opportunities for SMEs is needed. This does not mean that support measures do not work well, we are identifying the possible direction of improving and broadening them. Thus, some new measures might be connected to our results, meaning that there might be additional stimulation of companies investing in the development of new technologies. Certainly, this might lead to less dependence from the technologies from abroad and make the country a competitive player on the international arena. Furthermore, there might be some support to those companies who improve the conditions for their employees.

Thus, by analyzing the strategies implemented by SMEs and its effect on their results, we cover a very important topic that has been barely analyzed before, especially for the context of the current sanctions, both empirically and theoretically.

It is important to say that our study has several limitations. One of the main limitations of our study is the sample size of Russian SMEs. As we are limited to resources for the research and access to those firms, we were not able to reach the bigger number of companies. This also led to the necessity of cutting down the revenue categories for the dependent variable. Moreover, our research

primarily relied on social networks of federal and regional organizations associated with the national project «My business, which may introduce the sample bias. Nevertheless, the respondents represented the huge diversity among federal districts and industries, which is why the results are reliable. We have got a delimitation of chosen strategic actions that might influence the firm's performance in the period of sanctions. We are concentrated mainly on strategies connected to technological development and human resource and do not consider some of other strategies, related to, for instance, production actions of SMEs. This creates a way to improve further research on that topic.

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**Appendix 1**

Table A1

**Descriptive statistics**

Total sample — 129 firms											
Innovative activity of the firm											
<i>R&amp;D expenditures</i>						<i>IT expenses</i>					
Decreased expenses		Left expenses unchanged or did not have such costs		Increased expenses		Decreased expenses		Left expenses unchanged or did not have such costs		Increased expenses	
18		70		41		7		72		49	
HR Changes											
<i>Staff</i>			<i>Salaries of workers</i>			<i>Learning</i>					
Deliverately decreased number of workers	Left unchanged	Deliverately increased number of workers	Deliverately decreased salaries	Left unchanged		Deliverately increased salaries	Decreased expenses	Left expenses unchanged or did not have such costs		Increased expenses	
17	84	28	6	56		67	14	73		42	
Basic Characteristics of the firm											
<i>Size</i>		<i>Industry</i>		<i>Age</i>		<i>Federal District</i>					
Small-sized firm	96	Manufacturing		63		From 0 to 5 years	12	NWFD		26	
						From 6 to 10 years	28	CFD		38	
Medium-sized firm	33	Service		66		From 11 to 15 years	25	SFD		5	
						From 16 to 20 years	33	PFD		11	
						>20 years	31	UFD		12	
								SibFD		28	
								DVFD		9	
Governmental support after the beginning of SMO											
<i>Financial Support</i>						<i>Non-financial Support</i>					
Company used financial support		53				Company used non-financial support		52			
Company did not use financial support		76				Company did not use non-financial support		77			
International activity of the firm											
<i>Export activity before SMO</i>		<i>Export activity after SMO</i>		<i>Export to EU and US before SMO</i>		<i>Export reorientation after SMO</i>		<i>Import before SMO</i>		<i>Import now</i>	
Yes	54	Yes	51	Yes	37	Yes	25	Yes	64	Yes	36
No	75	No	78	No	92	No	104	No	65	No	93
Other measures											
<i>Consulting</i>			<i>Marketing</i>			<i>New business direction after SMO</i>					
Used such services		Did not use such services		Decreased expenses	Left expenses unchanged or did not have such costs	Increased expenses	Opened new direction of business after SMO		Did not do that		
37		92		15	52	62	68		61		
Personal evaluation of sanctions and adaptation of firms											
<i>Influence of sanctions on the firm (subjective evaluation) — Likert scale</i>						<i>Successful adaptation of the firm (subjective evaluation) — Likert scale</i>					
1	2	3	4	5	1	2	3	4	5		
18	20	40	25	26	6	8	40	45	30		

## Appendix 2

Table A2

## Descriptive statistics for the used variables

Variable	Type	Description	Values inside the variable	N	Mean	sd	Min	Max
<i>Y_SG_ordered</i>	Categorical	Revenue indicator ranged in 4 categories representing the difference in revenue for the year 2023 In comparison to 2022	1 – revenue decreased by more than 20% 2 – revenue decreased from 0 to 20% 3 – revenue increased from 0 to 20% 4 – revenue increased by more than 20%	129	2,78	1,05	1	4
<i>Sanctions_influence</i>	Categorical	Variable indicating how sanction affected the business	Likert scale: 1 – very insignificant 5 – very significant	129	3,15	1,29	1	5
<i>Sanctions_adaptation</i>	Categorical	Variable indicating the opinion of how successfully company adapted to sanctions	Likert scale: 1 – very unsuccessfully 5 – very successfully	129	3,66	1,05	1	5
<i>RD</i>	Categorical	Variable indicating whether company decreased, left unchanged or increased spendings on R&D after the beginning of SMO	1 – reduced or eliminated the cost 2 – cost was left unchanged 3 – increased costs	129	2,18	0,65	1	3
<i>IT</i>	Categorical	Variable indicating whether company decreased, left unchanged or increased spendings on IT after the beginning of SMO	1 – reduced or eliminated the cost 2 – cost was left unchanged 3 – increased costs	129	2,33	0,58	1	3
<i>Staff</i>	Categorical	Variable indicating whether company decreased, left unchanged or increased number of employees after the beginning of SMO	1 – Deliberately reduced staff 2 – Left unchanged 3 – Deliberately increased staff	129	2,09	0,59	1	3
<i>Salary</i>	Categorical	Variable indicating whether company decreased, left unchanged or increased spendings on salary after the beginning of SMO	1 – The salaries were reduced 2 – Left unchanged 3 – Deliberately increased	129	2,48	0,59	1	3
<i>Learning</i>	Categorical	Variable indicating whether company decreased, left unchanged or increased spendings on learning after the beginning of SMO	1 – reduced or eliminated the cost 2 – cost was left unchanged 3 – increased costs	129	2,22	0,63	1	3
<i>Consulting</i>	Binary	Variable indicating whether company used consulting services after the beginning of SMO or not	1 – Firm used consulting services 0 – did not use consulting services	129	0,29	0,45	0	1
<i>Export_EU</i>	Binary	Variable indicating whether company exported to the EU or the USA before the beginning SMO or not	1 – Firm exported to EU or the USA before the beginning of SMO 0 – did not export	129	0,29	0,46	0	1
<i>Export_reor</i>	Binary	Variable indicating whether company reoriented its export activity after the beginning of SMO or not	1 – Firm has re-oriented export markets after the beginning of SMO 0 – did not do that	129	0,2	0,4	0	1

<i>Import_before</i>	Binary	Variable indicating whether company imported something from the USA or the EU before the beginning of SMO or not	1 – Firm imported something from the EU and the USA before the beginning of SMO 0 – did not import	129	0,5	0,5	0	1
<i>Import_now</i>	Binary	Variable indicating whether company import goods from the EU or the US after the beginning of SMO or not	1 – Firm imports something from the EU or the US now 0 – Does not do that	129	0,28	0,45	0	1
<i>Marketing</i>	Categorical	Variable indicating whether company decreased, left unchanged or increased spendings on marketing after the beginning of SMO or not	1 – Reduced marketing costs 2 – Marketing costs were left unchanged 3 – Increased marketing costs	129	2,36	0,68	1	3
<i>Reorientation Iyes Ino</i>	Binary	Variable indicating whether company has opened new business direction after the beginning of SMO or not	1 – Firm has opened new direction after the beginning of SMO 0 – Did not do that	129	0,53	0,5	0	1
<i>Size</i>	Binary	Variable indicating whether company is a small-sized company or a medium-sized firm	1 – Middle-sized enterprise 0 – Small-sized enterprise	129	0,26	0,44	0	1
<i>Age</i>	Categorical	Variable ranged in 5 categories indicating the age of the firm	1 – from 0 to 5 years 2 – from 6 to 10 years 3 – from 11 to 15 years 4 – from 16 to 20 years 5 – more than 20 years	129	2,8	1,4	1	5
<i>Industry_services</i>	Binary	Variable indicating whether company is a manufacturing company or a service firm	1 – manufacturing company 0 – service company	129	0,49	0,5	0	1
<i>High_educ_manager</i>	Binary	Variable indicating whether a business owner has a higher education or not	1 – the manager has the higher education 0 – the manager does not have a higher education	129	0,94	0,24	0	1
<i>Gov_finance</i>	Binary	Variable indicating whether company used the financial governmental support after the beginning of SMO or not	1 – firm has used the financial governmental support after the beginning of SMO 0 – did not use it	129	0,42	0,49	0	1
<i>Gov_non_finance</i>	Binary	Variable indicating whether company used the non-financial governmental support after the beginning of SMO or not	1 – firm has used the non-financial governmental support after the beginning of SMO 0 – did not use it	129	0,4	0,49	0	1

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