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**FUNCTIONING OF ENTERPRISES-PARTICIPANTS OF THE
AEROSPACE CLUSTER OF THE SAMARA REGION**

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Abstract

Today, clusters are a promising form of organizing the economic system in a market environment. The work of clusters leads to an increase in the growth rates of individual sectors of the economy, as well as the overall socio-economic development of a particular territory, in particular, an increase in the standard of living of the population. The functioning of clusters, the result of which is the delivery of high-tech products to the market, also contributes to the development of an innovative component, which in modern conditions, in which, for example, the Russian economy is located, is of particular importance. The cluster formations that produce high-tech products include aerospace clusters. The effectiveness of the cluster as a whole largely depends on the success of the functioning of its constituent organizations. This article discusses the functioning of two significant participants in the innovative territorial aerospace cluster of the Samara region at the present stage. When analyzing the financial and economic situation of these organizations, a rating system was applied - a method for comparative evaluation of the activities of several enterprises in a sector, region or competitors according to a certain system of indicators reflecting their financial condition. In particular, the presence of a difficult financial and economic situation in a number of indicators of one of the key enterprises of the cluster – Public Joint-Stock Company “Kuznetsov” – is revealed. Using the same methodology, the results of the functioning of another important member of the cluster – Joint-Stock Company “Metallist-Samara” – were analyzed.

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1. Introduction

Nowadays, the development logic of the Russian economy determines the priority of the efficiency improvement for the operation of strategically important industries and clusters. The state authorities of the Russian Federation took certain steps to develop aviation and aerospace engineering: for example, in 2005, the strategy for the development of the aviation industry of the Russian Federation for the period up to 2015 was adopted; in 2006, the United Aircraft Corporation was established; in 2014, the state program for the development of the aviation industry began its realization. For a decade and a half, the volume of state funding for aircraft has increased many times. However, the competitiveness of the domestic aviation industry remains at a quite low level. The scientific, technical and production potential of the aviation industry does not correspond to the volume and structure of effective demand for aviation equipment (Isupov, 2014). Rocket and space engineering products are more competitive, but they face increasing pressure from foreign competitors, such as “SpaceX”. In spite of the existence of successfully operating organizations, there are those whose functioning is not efficient enough. It relates in particular to the innovative territorial aerospace cluster of the Samara region, which includes participants who are different in their characteristics.

2. Problem Statement

To date, the products of the aerospace cluster are widely in demand not only in the Russian but also in the world market. At the same time, cluster products are under the competitive pressure. In addition, many cluster members are dependent on the state defense order, which tends to decrease in the country as a whole. Therefore, it is important to analyze the financial and economic situation of the cluster participants to develop further recommendations to strengthen the competitive advantages of their products.

3. Research Questions

In the framework of this research, the following tasks are set:

- to calculate indicators for assessing the profitability (profitability) of economic activities;
- to calculate indicators for assessing the liquidity of assets;
- to calculate financial stability indicators.

As a research object the authors have chosen the following organizations: Public Joint-Stock Company “Kuznetsov” and Joint-Stock Company “Metallist-Samara”.

4. Purpose of the Study

This study is an attempt to assess medium-term results of the significant participants of the aerospace cluster of the Samara region at the current stage. One of them – PJSC Kuznetsov – is part of the cluster core; the state defense order and the development of natural gas supplies to consumers depend on the functioning of this enterprise. Another one is JSC “Metallist-Samara”, it belongs to suppliers of the

second level: in particular, the production process at the Joint Stock Company "Space rocket center "Progress" (which is also part of the cluster core) depends on this enterprise activities.

5. Research Methods

When working on the article, the authors used a systematic approach, historical, statistical and comparative research methods. In addition, a rating system was applied when analyzing the financial and economic situation of the considered organizations. It is a method of comparative evaluation of several enterprises of the industry, region or competitors on a certain system of indicators that reflect their financial condition.

6. Findings

Nowadays, there is a large number of scientific publications on the cluster organization of the economy (Bagley, 2019; Cusmano, Morrison, & Pandolfo, 2015; Ivanov, Afanas'ev, & Chulanova, 2019; Martin & Coenen, 2015) and others. Institutional context and cluster emergence are considered by Stepanova and Polyakov (2019), Gegechkori, Polyakov, Nikitina, and Chudaeva (2019), aerospace clusters are analyzed in the works of Isupov, Martyshkin, and Prokhorov (2015), Ivanenko and Ivanenko (2015). This paper attempts to trace the development dynamics of significant participants in the aerospace cluster of the Samara region – PJSC “Kuznetsov” and JSC “Metallist-Samara”.

The aerospace cluster of the Samara region consists of three parts – sub-clusters: rocket-space, aircraft-building, engine- and aggregate-building. PJSC "Kuznetsov" and JSC "Metallist-Samara" belong to the sub-cluster of engine and aggregates production as well as to the aircraft-building sub-cluster of the Samara region which also includes such organizations as the JSC “Aviaagregat”, OJSC "Agregat", OJSC "Gidroavtomatika", and federal state autonomous educational institution of higher professional education "Samara National Research University named after academician S.P. Korolev".

JSC "Metallist-Samara" was established by the decision of the founder on December 2, 1992. The main activities of the company are:

- production of components and products of the aviation equipment, medical equipment and consumer goods;
- production of special equipment;
- development and implementation of the best samples of equipment with high technical and economic indicators;
- production and sale of design, technological, estimate documentation s, etc.

JSC "Metallist-Samara" is an enterprise that produces combustion chambers for liquid rocket engines; sound-absorbing structures for aircraft engines; stationary gas turbine engine assemblies and other products. The development trends of this company generally correspond to industry-wide trends, which are determined by the following factors:

- a high degree of depreciation of fixed assets;
- a lack of funds for technical re-equipment;

- a lack of minimum required number of qualified personnel in a number of professions (positions).

Taking into account the high material consumption of products and the duration of the production cycle, the continuity of financing is extremely important for the smooth functioning of the enterprise. In modern economic conditions, it is the delay in payment for finished products by customers that poses the greatest threat to the enterprise. Forecasting the enterprise development is complicated by the fact that customers are not ready to conclude and finance long-term contracts, because they do not have the ability to clearly predict their need for the specific products.

PJSC "Kuznetsov" is an enterprise of the Russian military-industrial complex. Production and repair of engines for the Russian aviation, aerospace and navy forces are the most important activities for this company. The application scope for engines of the "NK brand" produced at PJSC "Kuznetsov" is diverse. A certain part of the Russian aircraft fleet, serving the highways of medium and long length, is presented by Tu-154 and Il-62 aircrafts, which are equipped with NK-engines. Almost all the long-range aviation of the Russian air forces is equipped with NK-engines: Tu-95, Tu-22MZ, Tu-160 aircrafts. In addition to engines for aircrafts, PJSC "Kuznetsov" also produces other products. Thus, the company has mastered the production of rocket engines, industrial engines are produced as a part of gas pumping units for main pipelines, as well as block-modular power plants. The prospects of the enterprise are largely determined by its presence in the structure of JSC "United Engine Corporation", which, in turn, is controlled by the state corporation "Rostec". To date, the Samara enterprise is loaded with work in the framework of the state defense order in connection with the need to supply upgraded engines for Russian long-range bombers.

The work of the enterprise is negatively affected by the high depreciation of fixed assets. Because of the high debt load of the company and stable unprofitable activity during the recent years, the company has financial risks in terms of the availability of obligations to repay credit debt with the existing difficulties in opening new credit products and attracting external debt financing. This risk forms the possibility of cash gaps and liquidity loss for the company. The main reasons for obtaining a net loss of PJSC "Kuznetsov" are the increase in the cost of sales of products, works, services, as well as high interest payments on loans.

Table 01 shows the financial condition of JSC "Metallist-Samara" and PJSC "Kuznetsov" for the last three years according to their annual financial statements. These calculations were made by the authors based on the rating system methodology tested on other members of the aerospace cluster. It is a method of the comparative assessment of activities of several enterprises in the industry, region or competitors according to a certain system of indicators reflecting their financial condition (Isupov, 2018).

Table 01. Indicators values for the assessment of the financial condition of enterprises in the aerospace cluster of the Samara region for 2016-2018

Enterprise	Year	Indicator								
		1 Evaluation indicators for the profitability of the economic activity			2. Asset liquidity indicators		3 Financial stability indicators			
		1.1 Profitability of assets (return on assets), %	1.2 Return on current assets, %	1.3 Return on production assets, %	2.1 Absolute liquidity coefficient	2.2 Current liquidity coefficient	3.1 Financial independence coefficient	3.2 Financial stress coefficient	3.3 Maneuverability coefficient	3.4 Coefficient of provision with own working capital
"Metallist-Samara" JSC	2016	-0,3	-0,3	-0,4	0,06	1,36	0,26	0,73	0,62	0,18
	2017	2,5	2,8	3,6	0,12	1,45	0,23	0,75	0,47	0,13
	2018	2,2	2,6	3,3	0,11	1,43	0,25	0,71	0,46	0,13
	The average value	1,5	1,7	2,2	0,10	1,41	0,25	0,73	0,51	0,15
PJSC "Kuznetsov"	2016	-14,4	-23,3	-22,8	0,19	0,74	0,11	0,88	-2,56	-0,45
	2017	-7,8	-11,6	-13,6	0,56	2,0	0,07	0,92	-3,80	-0,39
	2018	-7,0	-10,3	-12,8	0,62	3,0	0,14	0,86	-1,26	-0,24
	The average value	-9,7	-15,1	-16,4	0,46	1,91	0,11	0,89	-2,54	-0,36

Source: authors on the basis of accounting data of enterprises.

As a result of the study, we found that the indicators of profitability assessment for the economic activity of JSC "Metallist-Samara" had a negative value in 2016 and positive values in 2017 and 2018, as 2016 ended with a loss of 11.4 million rubles, and in recent years, the company received a profit of about 100 million rubles. The return on assets was 1.5% on the average for the three analyzed years. The return on current assets was 1.7% and the return on production assets was 2.2%. The enterprise effectively uses assets, the capital invested in production, both own, and borrowed, working capital and production funds. The indicators are slowly improving, but they are quite low and the company should work in the direction of their growth.

The average value of the absolute liquidity coefficient is 0.1 instead of the recommended value from 0.2 to 0.5, i.e. JSC "Metallist-Samara" will not be able to immediately repay its short-term liabilities with cash and easy-to-realize short-term financial investments. The second analyzed indicator of the asset liquidity assessment is the current liquidity coefficient. It reaches the optimal value – more than 1 (it is 1.41), i.e. it allows providing current payable liabilities with current assets.

The third group of indicators of the financial stability has both positive and negative results. The coefficient of the financial independence was 0.25 on average for an enterprise. The recommended value is 0.5, and the higher it is, the higher is the financial independence. Thus, the financial independence of the enterprise from external sources is still not high enough.

The next factor – financial stress – is on average 0.73, instead of the recommended value of no more than 0.5. Exceeding the recommended level indicates a high dependence on external financial sources. The maneuverability coefficient for an enterprise is 0.51, which positively characterizes the mobility degree of the own capital, i.e. the enterprise has sufficient financial opportunities for maneuvering. The coefficient of provision with own working capital is on average 0.15, which exceeds the normative index of 0.1 and positively characterizes the replenishment of the working capital.

The second analyzed enterprise of the aerospace cluster of the Samara region is PJSC "Kuznetsov". It worked all three years, from 2016 to 2018, with losses and, accordingly, all profitability indicators have negative values. For example, the return on assets amounted to 9.7%, the return on production assets was 16.4%, which indicates the inefficient use of the own and debt capital, production assets of the enterprise.

The liquidity assessment indicators of the company's assets have positive values, which means that there are sufficient opportunities to repay its short-term and long-term liabilities if necessary. The company's absolute liquidity coefficient averaged 0.46 over three years (the recommended value is 0.2-0.5), and the current liquidity coefficient was 0.91 (the optimal value is more than 1).

The following four analyzed indicators of the financial stability of the enterprise: the financial independence coefficient, financial stress indicator, the maneuverability coefficient, the coefficient of provision with own working capital are negative, which characterizes the high dependence of PJSC "Kuznetsov" from external financial sources, lack of own funds, small opportunities for maneuvering in the production.

7. Conclusion

Most of the analyzed indicators positively characterize the financial and economic activity of JSC "Metallist-Samara", however, profitability indicators are still low; the company may have problems with repayment of short-term liabilities, independence from external financial sources. At PJSC "Kuznetsov" the majority of indicators negatively characterize its financial and economic activity. It, in particular, testifies to inefficient use of the capital, high dependence of the enterprise on external financial sources. Only opportunities to repay their obligations are assessed as sufficient.

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