

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
 Federal State Autonomous educational institution of higher education
"NATIONAL RESEARCH TOMSK POLYTECHNICAL UNIVERSITY"
 YURGINSK TECHNOLOGICAL INSTITUTE

Yurga Technological Institute
 Training direction 38.03.01 "Economics"

GRADUATE QUALIFICATION WORK

Work theme
Analysis of the financial and economic activities of a manufacturing enterprise

UDC 658.012.12:658.14.012.12

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Docent UTI TPU	Tilepenko E.Yu.	PhD, Docent		

EXPECTED LEARNING OUTCOMES

Competency code	Competency name
General cultural competences	
QA(U)-1	The ability to use the basics of philosophical knowledge to form a world outlook
QA(U)-2	The ability to analyse the main stages and regularities of social historical development to form a civic position
QA(U)-3	The ability to use the basics of economic knowledge in various activities
QA(U)-4	The ability to use the basics of legal knowledge in various fields of activity
QA(U)-5	The ability to communicate in oral and written form in Russian and foreign languages to solve problems of interpersonal and intercultural interaction
QA(U)-6	The ability to work in a team with tolerance for social, ethnic, religious and cultural differences
QA(U)-7	The ability to self-organise and self-educate
QA(U)-8	The ability to use the methods and means of physical education to ensure proper social and professional activity
QA(U)-9	The ability to use first aid methods, methods of protection in emergency situations
General professional competences	
BPC(U)-1	Is able to solve standard tasks of professional activity on the basis of information and bibliographic culture with application of information and communication technologies and taking into account basic requirements of information security
BPC(U)-2	Is able to collect, analyse and process data needed to solve professional problems
BPC(U)-3	Is able to choose the tools for economic data processing according to the task at hand, analyse the results of calculations and justify the conclusions drawn
BPC(U)-4	Is able to find organisational and managerial solutions in professional activities and is prepared to take responsibility for them
Professional competences of graduates	
PC(U)-1	Is able to collect and analyse the raw data required to calculate economic and socio-economic indicators that characterise the activities of business entities
PC(U)-2	Is able to calculate economic and socio-economic indicators characterising the activities of business entities on the basis of standard methodologies and the current legal and regulatory framework
PC(U)-3	Is able to carry out the calculations required for the economic parts of the plans, justify them and present the results of the work according to the standards of the organisation
PC(U)-4	Is able to build standard theoretical and econometric models based on the description of economic processes and phenomena, to analyse and interpret the results meaningfully
PC(U)-5	Is able to analyse and interpret financial, accounting and other information contained in the accounts of enterprises of various forms of ownership, organisations, departments, etc. and use the information to make managerial decisions
PC(U)-6	Is able to analyse and interpret domestic and foreign statistics on socio-economic processes and phenomena, identify trends in socio-economic indicators
PC(U)-7	Is able, using domestic and foreign sources of information, to collect the necessary data, to analyse it and to prepare an information review and/or an analytical report
PC(U)-8	Is able to use modern technical tools and information technology to solve analytical and research problems
PC(U)-9	The ability to document business transactions, conduct cash accounting, develop a chart of accounts for an organisation and generate accounting entries based on this chart of accounts
PC(U)-10	The ability to make accounting entries for the sources and results of the organisation's inventory and financial liabilities
PC(U)-11	Ability to draw up payment documents and make accounting entries for the accrual and transfer of taxes and levies to the budgets of different levels, insurance contributions to non-budgetary funds
PC(U)-12	The ability to record the results of economic activities for the reporting period in the accounting records, to prepare accounting and statistical reporting forms, tax declarations
PC(U)-13	The ability to organise and implement the organisation's tax accounting and tax planning

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Yurga Technological Institute
 Training direction 38.03.01 "Economics"

I APPROVE:
 PLO leader

 (Signature) (The date) (Tilepenko E.Yu.)

THE TASK
for the performance of the final qualifying work

In the shape of:

Diploma work (thesis project / work)
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Student:

Group	Full name
Z-17B60	Andriyashevsky Nikolay Nikolaevich

Work theme:

Analysis of the financial and economic activities of a manufacturing enterprise	
Approved by order of the director	

The deadline for the student's completed work:	15/05/2021
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TECHNICAL TASK:

Initial data for work	The object of the study is a limited liability company Service Center "Metrology" The subject of the research is the financial and economic activities of the organization Service Center "Metrology" LLC.
List of questions to be researched, designed and developed	In the course of writing a work, it is necessary to solve the following questions: - consider the theoretical aspects of analyzing the effectiveness of commercial activities; - to analyze the economic activity of the organization LLC Service Center "Metrology"; - to study the procurement and sales activities of LLC Service Center "Metrology"; - to propose activities aimed at improving the organization's performance.
List of graphic material	1 Purpose and objectives of the thesis 2 Business objectives 3 Types of activity of LLC Service Center "Metrology" 4 Technical and economic indicators of the organization 5 Revenue from the sale of products 6 Production costs of LLC Service Center Metrology from 2020 - 2020 7 The total economic impact of ways to improve

	LLC Service Center "Metrology" 8 Conclusion
Consultants for the sections of the final qualifying work (with indication of sections)	
Section	Consultant
"Financial management, resource efficiency and resource conservation"	Docent UTI TPU, Lizunkov V.G.
Social responsibility	Senior Lecturer UTI TPU, Rodionov P.V.

Date of issue of the assignment for the performance of the final qualifying work according to the linear schedule	30/12/2020
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The task was given by the head:

Position	Full name	Academic degree, title	Signature	The date
Docent UTI TPU	Lizunkov V.G.	Candidate of Pedagogical Sciences		

The student accepted the assignment:

Group	Full name	Signature	The date
Z-17B60	Andriyashevsky Nikolay Nikolaevich		

**TASK FOR SECTION
"SOCIAL RESPONSIBILITY"**

Student:

Group	Full name
Z-17B60	Andriyashevsky Nikolay Nikolaevich

Institute	Yurga Technological Institute		
Education level	Bachelor	Direction	38.03.01. "Economy"

Initial data for the section "Social responsibility":

<p>1. Description of the workplace (work area, technological process, mechanical equipment) for the occurrence of:</p> <ul style="list-style-type: none"> - harmful manifestations of factors of the working environment (meteorological conditions, harmful substances, lighting, noise, vibration, electromagnetic fields, ionizing radiation) - dangerous manifestations of production factors environment (mechanical nature, thermal character, electrical, fire nature) - social emergencies 	<p>The object of the research will be the workplace of the chief specialist of the property department of the committee for the management of municipal property of the city of Yurga of the Administration of the city of Yurga.</p> <p>The office is a room with an area of 12 m² (3 × 4). Light environment parameters - class 2; the intensity of the labor process - grade 1. The final class of working conditions is class 2.</p> <p>Harmful and hazardous production factors:</p> <ul style="list-style-type: none"> - to increase efficiency, it is necessary to alternate the period of work and rest, according to the type and category of labor activity; - lack of illumination. It is required to replace the existing artificial lighting system in accordance with the calculations.
<p>2. List of legislative and regulatory documents on the topic</p>	<ul style="list-style-type: none"> - Sanitary and Epidemiological Rules and Regulations SanPiN 2.4.6.2553-09 Sanitary and epidemiological requirements for the safety of working conditions for workers under 18 years of age. - SanPiN 2.2.2 / 2.4.1340-03 Hygienic requirements for personal computers and work organization. - Order of the Ministry of Health of the Russian Federation dated January 28, 2021 No. 29n. - Order of the Ministry of Health of the Russian Federation of March 21, 2016 No. 125n.

List of questions to be researched, designed and developed:

<p>1. Analysis of the factors of internal social responsibility:</p> <ul style="list-style-type: none"> - the principles of the corporate culture of the studied organization; - labor organization and safety systems; - development of human resources through training programs and training and professional development programs; - Systems of social guarantees of the organization; -provision of assistance to employees in critical situations. 	<ul style="list-style-type: none"> - observance of labor protection rules; - the possibility of personnel development through training and professional development programs; participation in social programs; - organization and procedure for carrying out preventive vaccination measures within the framework of the national calendar of preventive vaccinations; - briefings on safety at the workplace; - briefings on fire safety.
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<p>2. Analysis of the factors of external social responsibility:</p> <ul style="list-style-type: none"> - promoting environmental protection; - interaction with the local community and local authorities; - Sponsorship and corporate charity; - responsibility to consumers of goods and services (production of quality goods) - readiness to participate in crisis situations, etc. 	<p>Sources and means of protection against hazardous factors existing in the workplace (electrical safety, conditions for high-altitude work, etc.). Fire and explosion safety (reasons, preventive measures, primary fire extinguishing means) - activities that motivate environmental protection; A responsibility. An operational headquarters has been created to prevent the penetration of COVID-2019.</p>
<p>3. Legal and organizational issues of ensuring social responsibility:</p> <ul style="list-style-type: none"> - Analysis of legal norms of labor legislation; - analysis of special (typical for the investigated field of activity) legal and regulatory legal acts; - analysis of internal regulatory documents and regulations of the organization in the field of the investigated activity 	<p>Examine the following documents: Fire safety instructions, labor protection.</p>
<p>List of graphic material:</p>	
<p>If necessary, submit sketch graphic materials for the design assignment (mandatory for specialists and masters)</p>	

<p>Date of issue of the task for the section on a line chart</p>	
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The assignment was given by the consultant:

Position	Full name	Academic degree, title	Signature	The date
Senior Lecturer UTI TPU	Rodionov P.V.	PhD.		

The student accepted the assignment:

Group	Full name	Signature	The date
Z-17B60	Andriyashevsky Nikolay Nikolaevich		

The abstract

Final qualifying work contains 85 pages, 6 figures, 31 tables, 30 sources.

Keywords: enterprise, commercial activity, procurement, sales, management system, solvency, liquidity, financial stability, economic activity.

The study of the effectiveness of commercial activities of trade organizations is relevant for modern business in Russia. Analysis of the effectiveness of the organization includes an interconnected system of movements of financial resources, which are caused by management decisions, and a dynamic system.

The purpose of the thesis is the improvement and analysis of the financial activities of the organization, the study of the management models of the organization and the development of measures to improve the work of the Service Center Metrology LLC.

Object of study - Limited Liability Company Service Center «Metrology».

The subject of the study is the financial and economic activities of the organization Service Center Metrology LLC.

To realize the goal it is necessary to solve the tasks set:

- to consider the theoretical aspects of analyzing the effectiveness of commercial activities;
- to analyze the economic activities of the organization Service Center Metrology LLC;
- to study the procurement and sales activities of the Service Center «Metrology»;
- proposal of measures aimed at improving the organization's activities.

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Introduction

The study of the effectiveness of commercial activities of trade organizations is relevant for modern business in Russia. Analysis of the effectiveness of the organization includes an interconnected system of movements of financial resources, which are caused by management decisions, and a dynamic system. The success of a dynamic system directly depends on the decisions made, investments, production activities and the received funding.

The study of the effectiveness of commercial activities is necessary to increase the competitiveness of the organization, ensure investment attractiveness, create effective asset management, and respect the interests of the organization and partners.

The purpose of the study is to improve and analyze the financial activities of the organization, study the management models of the organization and develop measures to improve the work of LLC Service Center "Metro-Logia".

The object of the research is the limited liability company Service Center Metrology LLC.

The subject of the research is the financial and economic activities of the organization LLC Service Center "Metrology".

Research objectives:

- consideration of the theoretical aspects of the analysis of the effectiveness of commercial activities
- analysis of the economic activity of the organization LLC Service Center "Metrology";
- study of procurement and sales activities of LLC Service Center "Metrology";
- proposal of measures aimed at improving the organization's performance.

1 Literature review

1.1 Essence and tasks, methodology for analyzing the effectiveness of commercial activities of a trading enterprise

Commercial activity is a complex application of techniques and methods that provide the greatest benefits of trading operations for all partners and take into account the interests of consumers.

The main purpose of a commercial activity is to generate profits through satisfying customer demands and high service. This goal is important both for organizations and for individuals who carry out the sale and purchase of goods and services. [12, p. 22]

The main participants in commercial activities are businesses and consumers. This statement is based on the fact that income is important to entrepreneurs, and goods and services that satisfy their needs are important to consumers. Consequently, consumers are the most important business entity.

Conducting an assessment of the effectiveness of the organization's commercial activities is necessary for planning economic activities, identifying the reasons for non-fulfillment of planned targets, finding reserves to improve the efficiency of the organization's activities, and determining the strategy for its development. The assessment allows you to see the degree of adaptation of the organization to market conditions, contributes to the development of strategies and tactics for the behavior of events and to improve management efficiency. It allows business entities to identify the strengths and weaknesses of their activities, and also concentrates its most promising and profitable areas [19, p. 174].

For the successful functioning of a trading organization, it is necessary to carry out a deep analysis of its activities, taking into account the changes taking place in the market. This allows the organization to maintain stability, profitability and competitiveness, and also ensures its development.

Conducting a systematic and in-depth analysis of commercial activities contributes to:

- fast, high-quality and professional assessment of the effectiveness of the commercial activities of the organization and departments;
- accurate and timely identification and accounting of factors affecting the profit of the organization;
- determining the costs of commercial activities and changes occurring in them;
- finding optimal ways to solve the problems of commercial activities of a trade organization and making a profit [19, p. 256].

One of the most important indicators of the effective activity of a trade organization is profit. It reflects the full result of the organization's activities, namely: the volume of goods sold, their range, labor productivity, costs, non-productive costs and losses.

To characterize the economic efficiency of a trade organization and conduct a comparative analysis, the absolute value of profit and its level should be established. The profitability of a trade organization is characterized by the level of profit, it can be calculated using formula 1:

$$\text{Profit level} = P / R * 100\%, (1)$$

where P is the profit of a trade organization for a certain period (in total);

P - expenses of the trade organization (in total).

Other performance indicators are: profit-to-payroll ratio; the amount of profit attributable to one employee of the organization; the ratio of profit and fixed and circulating assets.

The end result of a trade organization's activities is the cost of products sold. Thus, the effectiveness of the commercial activity of a trade organization can be expressed by a generalizing indicator, which is calculated according to formula 2:

$$\text{Efficiency} = \text{"cost of services sold"} / \text{"real distribution costs"}, (2)$$

The trade organization needs to be able to carry out competent planning and management of commercial activities, as well as its analysis. Planning means defining the goals of the organization, as well as finding ways to implement them.

1.2 Procurement Performance Research

Procurement logistics is based on material flow management in the course of providing the organization with the necessary resources.

The purchase of material resources and goods is an important and responsible function in the production and economic systems at any level of activity. The purchase of material resources and goods that satisfy their own needs, or for subsequent sale, is carried out by business entities. trade organizations operating in the field of trade purchase products for their further sale.

There are four objectives of the organization's procurement activities:

procurement with a minimum amount of fixed and circulating assets;

2. reduction of operating costs;

3. elimination of interruptions in trading activities due to product shortages;

4. formation of conditions for solving marketing problems.

The objectives of the organization's procurement activities are:

- purchase of products that meet all the requirements and ensure their efficient consumption, with the exclusion of unreasonable losses;

- purchase of quality products;

- delivery of products in full;

- strict adherence to the terms of the purchase of products;

- establishment of a rational size of batches of products;

- organization of cost-effective and timely delivery and unloading of products;

- strict incoming control over the quantity and quality of incoming products;

- improving the document flow accompanying the procurement.

Procurement logistics allows you to ensure the timely procurement and delivery of products.

There are seven stages and procurement technologies:

- 1) setting the needs for a specific product;
- 2) selection of suppliers;
- 3) order processing;
- 4) control over the fulfillment of the terms of the contract;
- 5) receipt of products;
- 6) posting of products;
- 7) control of accounts [19, p.62].

1.3 Analysis of the sales activities of the organization

Production and consumption of products usually do not coincide either in time or in space. Even releasing products that have a wide variety of consumer properties, an organization may not get real commercial success, since it irrationally organizes its distribution and sales.

Marketing activities are characterized by three factors:

- 1) sales define the sphere of activity of the manufacturer;
- 2) the definition of a clear indication of the orientation of activities for the sale or production of products;
- 3) channels are established for the distribution (sale) of manufactured products [27, p.313].

The impact of the external environment is a factor influencing the sale of products. Any organization carries out its activities in accordance with certain economic regulations. The organization is influenced by four independent spheres: the global economy, the national or local economy, the consumer market and the sales market itself.

Another aspect of the external environment affecting the sale of products is the influence of uncontrollable external factors, such as:

- habits and inclinations of consumers;
- competition;
- trading traditions;
- state control.

When planning sales, you should identify and take into account the problems, use the opportunities associated with the presented factors. This should be reflected in the marketing policy of the organization [13, p.57].

With a more effective sales policy of competing firms, the organization must carry out a complete modernization of its own sales system, thereby increasing its competitiveness, or specialization of production.

The most important characteristic of a market economy is the competition between the subjects and objects of the market. An organization is considered uncompetitive if its products do not have their own sales market [12, p.87].

The high competitiveness of the organization guarantees high profits in market conditions. Competitiveness management implies the use of aggregate measures of systematic product improvement, continuous search for new sales markets, improvement of service [10, p.112].

Sales analysis examines the sales data in detail. The objects of analysis can be sales volumes, price, categories of buyers, organization and methods of sales, interaction with partners, ways of supplying goods.

Analyzes the quantitative indicators of sales by product and region, as well as all factors that affect the size of sales. These factors include the organization of the distribution network, the effectiveness of advertising and sales promotion tools, the choice of the sales market, the time and methods of entering the market.

During the analysis of the sales system, the effectiveness of all elements of this system is revealed, and the performance of the sales market is assessed.

During the analysis of distribution costs, the actual sales costs across all distribution channels are compared with the plan indicators. This allows you to detect unreasonable costs, eliminate losses that arise in the course of commodity circulation, and increase the profitability of the organization [27, p.471].

The basis of any analysis is reliable information. The basis of control over sales activities is income and costs. It is quite problematic to trace and highlight them.

The costs of sales activities that relate to certain segments of the market cannot be distributed, they are classified as intractable.

The amount of profit and the profitability of the organization directly depend on the efficiency of sales activities. With an increase in the cost of production, you can get a large profit. In the case when the market grows, you can increase sales, but there is a risk of losing market share. Sometimes organizations do not consider this factor.

2 Object and research methods

2.1 General characteristics of LLC Service Center "Metrology" and its main activities

The history of the company begins on November 29, 2012, at the initiative of Evgeny Viktorovich Koche-garov, the Metrology Service Center LLC was organized.

Full corporate name: Limited Liability Company Service Center "Metrology", abbreviated name - LLC Service Center "Metrology".

Location of the Company: Russian Federation, Kemerovo region, the city of Yurga, st. Highway, 40.

Official site of LLC Service Center "Metrology": [www. http://www.spark-interfax.ru/kemerovskaya-oblast-yurga/ooo-servisny-tsentr-metrologiya-inn-4230006276-ogrn-1124230001279-6e7a8754a2a148578e43d62d0b9dfa84](http://www.spark-interfax.ru/kemerovskaya-oblast-yurga/ooo-servisny-tsentr-metrologiya-inn-4230006276-ogrn-1124230001279-6e7a8754a2a148578e43d62d0b9dfa84)

Main activities of OOO Servisny tsentr Metrologiya:

The main activity according to OKVED.

62.09 Activities related to the use of computers and information technology, other.

Additional activities:

- 45.2 Maintenance and repair of vehicles;
- 62.0 Development of computer software, consulting services in this area and other related services;
- 62.02 Consulting activities and work in the field of computer technology;
- 63.1 Activities for data processing, provision of services for the placement of information, the activities of portals in the information and communication network Internet;
- 63.11.1 Activities for the creation and use of databases and information resources;
- 95.1 Repair of computers and communication equipment.

LLC Service Center Metrology cooperates with a number of firms and associations: OJSC EvrazHolding, OJSC Novolipetsk Metallurgical Plant, OJSC Mechel, OJSC Nizhny Tagil Metallurgical Plant, OJSC Ural Steel, OJSC SUEK ”, MC“ Kuzbassrazrezugol ”, MC“ South Kuzbass ”, HC“ Siberian Business Union ”.

Competition with other enterprises contributes to the development of the competitiveness of LLC SERVICE CENTER "METROLOGY", and as a consequence to the creation of new weighing equipment. The main competitors are: ZAO Tenrosib, ZAO Mettler-Toledo Vostok, South Ural Weight Plant, OOO Tenzo-M.

The most important element of the external environment is the state, it, with the help of laws and state regulation bodies, influences the organization. The state influences the trade, production, economic and transport activities of the organization.

Documents ensuring the normal functioning of the organization:

- 1) the constituent documents of the organization, changes and additions made and registered in the prescribed manner;
- 2) minutes of meetings of the founders of the organization, with a decision on its co-building;
- 3) document of state registration of the organization;
- 4) documents confirming the rights of the organization to the property on its balance sheet;
- 5) internal documents of the organization;
- 6) regulations on branches and representative offices of the organization;
- 7) documents related to the issue of bonds and other issue-grade securities of the organization;
- 8) minutes of meetings of participants and the audit commission of the organization;
- 9) lists of affiliated persons of the organization;
- 10) conclusions of the audit commission, auditors, state and municipal bodies of financial control;

11) other documents that are provided for by the legislation of the Russian Federation, decisions of the meeting of participants and the general director of the organization.

These documents can be viewed with the permission of the General Director at the request of members of the organization or officials of government bodies.

2.2 Analysis of the economic activity of LLC Service Center "Metrology"

Currently, the analysis of the economic activities of the organization is of great importance. Generalizing parameters of the organization are the main technical and economic indicators. This analysis reflects the financial and economic, innovation, commercial and social spheres of activity. Separate indicators can characterize any direction of the organization's internal and external economic activities.

To analyze the activities of LLC SERVICE CENTER "METROLOGY", you should investigate all the activities of the organization. This will allow to objectively evaluate the results and identify the possibility of further improving the efficiency of the organization. The accountant, with the permission of the director of the organization, provided accounting documents for 2010-2016.

Next, you should consider the technical and economic indicators of the organization for 2018-2020.

Table 1 - Technical and economic indicators of the organization, according to the materials of which the work is being carried out for 2018-2020. LLC Service Center "Metrology"

Indicator name	ед. изм.	2018	2019	2020	2019	2020	2020 в % к 2016
1	2	3	4	5	6	7	8
1 Revenue from the sale of products (net of VAT)	tr	263 721	356 361	406 398	505 544	406 924	54%
2 Cost of products sold	tr	202 465	229 539	257 200	377 331	289 398	43%
3 Gross profit (clause 2 - clause 3)	tr	61 256	126 822	149 198	128 213	117 526	92%
4 Level of gross profit to revenue from sales of products	tr	23	36	37	25	29	24%

Continuation of table 1

(item 4 * 100 / item 2)	tr	13 277	19 093	27 625	33 530	25 432	92%
5 Selling expenses	tr	23 991	28 639	33 987	32 330	34 400	43%
5 Administrative expenses	tr	0	0	0	0	0	4%
7 Level of expenses to proceeds from the sale of products (clause 6 + clause 7) / clause 2	tr	23 988	79 090	87 586	62 353	57 694	141%
8 Profit (loss) from sales	tr	9	22	22	12	14	56%
9 Return on sales (p. 9 * 100 / p. 2)	tr	-1 279	-1 012	959	-1 157	-2 263	77%
10 Operating income and expenses (+/-)	tr	-5 181	-3 329	-9 562	-17 722	-16 909	226%
11 Non-operating income and expenses (+/-)	tr	17 528	74 749	78 983	43 474	38 522	120%
12 Profit (loss) before tax (clause 9 + clause 11 + clause 12)	%	7	21	19	9	9	42%
13 Profitability before tax (item 13 * 100 / item 2)	tr	7 137	15 184	11 839	9 903	4 366	-39%
14 Income tax and other mandatory payments, total:	tr	10 391	59 565	67 144	33 571	34 156	229%
15 Profit (loss) from ordinary activities (clause 13-clause 15)	%	4	17	17	7	8	113%
16 Profitability from ordinary activities (p.16 * 100 / p.2)	tr	2 215	-6 276	-6 631	-946	-5 751	-360%
17 Extraordinary income and expenses	tr	12 606	53 289	60 513	32 625	28 405	125%
18 Net profit (uncovered loss) (clause 16 + clause 18)	tr	5	15	15	6	7	46%
19 Net profit margin (clause 19 * 100 / clause 2)	tr	102	172	192	232	240	135%
20 Average headcount	tr / person	2 586	2 072	2 117	2 179	1 696	-34%
21 Production per employee	tr	21 977	29 697	33 867	42 129	33 910	54%
22 Average annual cost of fixed assets	tr	12	12	12	12	12	0%

Analysis of technical and economic indicators showed:

1) Revenue from the sale of products in 2017 increased by 92,640 thousand rubles, and in 2018 by 50,037 thousand rubles. This is due to an increase in production volumes and an increasing demand for weighing equipment. In 2019, revenue increased by 99,146 thousand rubles. This is due to the growth in sales of innovative equipment to specialized enterprises. In 2020, the company's revenue decreased by

98,620 thousand rubles. This is due to a decrease in the volume of orders for the production of innovative equipment.

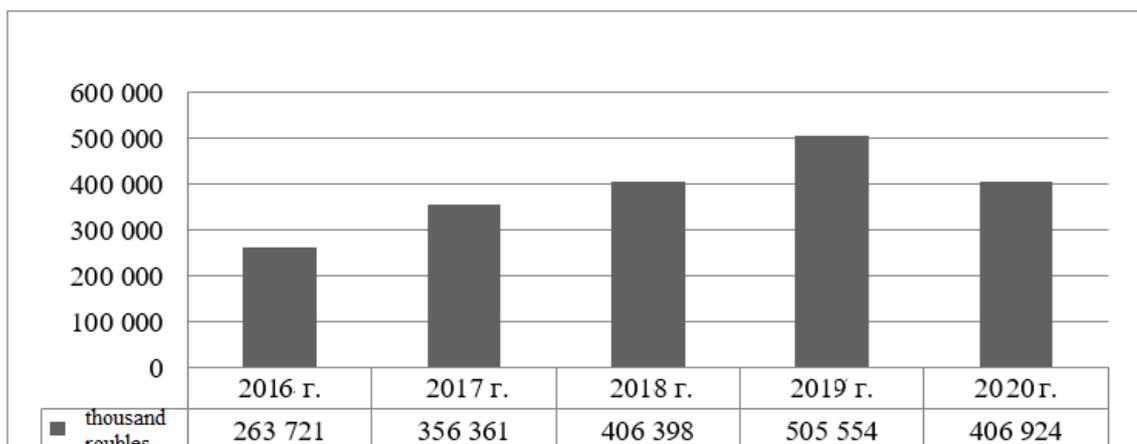


Figure 1 - Revenue from the sale of products

2) The cost of the equipment produced increases, which is associated with changes in the cost of materials, an increase in production costs, selling and management costs. This, in turn, affects the decrease in gross profit in 2019. The cost of production in 2020 decreased by 87,933 rubles. Gross profit for 2020 compared to 2018 increased by 92%. This is due to an increase in production volumes, and an increase in labor productivity.

3) Selling expenses for five years have increased significantly, which is associated with the advertising activities of the manufactured equipment and the growth of the lease of premises. But in 2020, selling expenses decreased by 24%. This is due to the revision and reduction of advertising activities of the organization.

4) Administrative expenses in 2019 increased by 4648 thousand rubles, and in 2020 increased by 5348 thousand rubles, in 2019 they decreased again by 1657 thousand rubles, which is associated with an increase in the transport tax. In 2018 and 2020, events were held that required the repair of office premises and the purchase of office equipment. In 2020, an insignificant increase in management costs (RUB 1,070) can be noted.

5) Operating expenses have been decreasing in recent years. This is due to the fact that the organization practically did not use loans. In 2020, operating income

increased by 96% due to the acquisition of borrowed funds in the amount of RUB 39,091 thousand.

6) Over the period from 2018 to 2020, non-operating income and expenses increased by 226%. This is due to the growth of accounts receivable, which negatively affects the activities of LLC SERVICE CENTER METROLOGY, as there is a diversion of funds that could be used in the innovative activities of the organization.

7) Profit (loss) from ordinary activities grows annually. As of 2020, compared to 2019, it decreased by 4659 thousand rubles. The decrease in profit is associated with the production of new products ordered by specialized enterprises, as this requires updating the production base and purchasing new equipment, overhaul main production. During the study period, profit (loss) from ordinary activities grew by 2%.

8) Net profit for 2019 increased by 40,683 thousand rubles, and in 2020 by 7,224 thousand rubles. In 2019, the profit decreased by 27,908 thousand rubles. This is due to large investments in fixed assets. Net profit for 2020 decreased by 13%, this is due to an increase in the amount of permanent tax liabilities.

9) The average headcount has a stable level, and for 2018-2020 it is growing slightly. Since an agreement was concluded for the supply of a prototype weighing car for Russian Railways, the organization had to attract additional employees, as evidenced by the data in the table of technical and economic indicators.

10) Labor productivity of workers increased in 2019 by 132%, which can be associated with the correct distribution of working time, and comfortable conditions and methods of labor organization.

When analyzing the current costs of the organization, it is necessary to study a number of indicators: the cost of the work performed by the organization; the cost of certain types of work; Expenditures.

Table 2 - Production costs of LLC Service Center "Met-rologia" from 2020 - 2020

Cost elements	Amount (thousand rubles)					Cost structure (%)				
	2020	2019	2020	Deviation. 2020 κ 2020 (+/-)	Deviation. 2019 κ 2020 (+/-)	2020	2019	2020	Deviation. 2020 κ 2020 (+/-)	Deviation. 2019 κ 2020 (+/-)
1	2	3	4	5	6	7	8	9	10	11
Material costs	153 665	218 451	142 411	11 254	76 040	39%	48%	36%	108%	153%
Wage	100 429	99 959	82 949	17 480	17 010	22%	22%	21%	121%	121%
Contributions to the fund	29 794	28 834	23 680	6 114	5 154	6%	6%	6%	126%	122%
Depreciation	14 984	9 462	6 977	8 007	2 485	3%	2%	2%	215%	136%
other expenses	98 873	103 078	135 374	-36 501	-32 296	22%	22%	35%	73%	76%
Total	397 745	459 784	391 391	6 354	68 393	92%	100%	100%	-	-

According to the data presented in table 2, it can be concluded that all cost items increased in 2019, with the exception of the item "other expenses". This item in the cost structure in 2019 has become less significant. In 2020, there is a decrease in material costs by 30%. The rest of the costs decreased slightly.

An analysis of the organization's assets is presented in Table 3. In 2020, new improved equipment was delivered. In the LLC Service Center "Met-rologia" there were changes in the transport sector, namely: service vehicles were changed, trucks were purchased for the transportation of equipment, buildings and structures were repaired.

Table 3 - Availability of movement and structure of production assets for 2020

Name fixed assets	Period	Availability on beginning of the year		Received in a year		Eliminated in a year		Availability at the end of the year	
		tr.	beats weight, %	tr.	beats weight, %	tr.	beats weight, %	tr.	beats weight, %
1	2	3	4	5	6	7	8	9	10
Building	2020	29 342	24%	268	1%	-	-	29 610	21%
	2019	21 119	24%	8 223	24%	-	-	29 342	24%

Continuation of table 3

Constructions	2020	5 615	5%	-	-	-	-	5 615	4%
	2019	2 106	2%	3 509	10%	-	-	5 615	5%
Working machines, equipment	2020	52 805	43%	20 888	97%	814	11%	72 879	53%
	2019	38 560	43%	14 010	40%	-	-	52 569	43%
Vehicles	2020	23 828	19%	424	2%	454	6%	23 798	17%
	2019	15 657	18%	8 501	25%	330	100%	23 829	19%
Production and household inventory	2020	3 175	3%	52	0%	1 740	24%	1 487	1%
	2019	3 037	3%	373	1%	-	-	3 411	3%
Land	2020	3 887	3%	-	-	-	-	3 887	3%
	2019	3 887	4%	-	-	-	-	3 887	3%
Office equipment	2020	4 580	4%	9	0%	4 137	58%	452	0%
	2019	4 551	5%	29	0%	-	-	4 580	4%
Other types of OS	2020	264	0%	-	-	-	-	264	0%
	2019	264	0%	-	-	-	-	264	0%
Total	2020	123 496	100%	21 641	100%	7 145	100%	137 992	100%
	2019	89 181	100%	34 645	100%	330	100%	123 497	100%

1) Renewal coefficient (Cobn) - characterizes the share of new funds from the total cost at the end of the year:

$$\text{Cobn}_{2019} = 34\ 645 / 123\ 497 = 0.28$$

$$\text{Cobn}_{2020} = 21\ 641 / 137\ 992 = 0.15 \text{ ((3))}$$

The renewal rate revealed that the funds of the organization in 2013 and 2016 were renewed by 28% and 15%, respectively.

1) Term of renewal of fixed assets (Tobn):

$$\text{Tobn}_{2019} = 89\ 181 / 34\ 645 = 2.57 \text{ ((4))}$$

$$\text{Tobn}_{2020} = 123\ 496 / 21\ 645 = 5.70$$

3) Retirement rate (Kw):

$$\text{Q}_{2019} = 330 / 89\ 181 = 0.003 \text{ ((5))}$$

$$\text{Q}_{2020} = 7145 / 123496 = 0.05$$

The retirement rate for organizations in 2013 is 0.3%. The retirement rate in 2016 is 0.5%. From this we can conclude that in 2016, 0.5% of completely worn-out funds were written off.

4) Growth rate (Kpr):

$$\text{Kpr}_{2019} = 34\ 645 / 89\ 181 = 0.38$$

$$K_{pr2020} = 21\,641 / 123\,496 = 0.17 \quad ((6))$$

1) The coefficient of validity of fixed assets (K_g):

$$K_{g2019} = 123\,497 / 89\,181 = 1.38$$

$$K_{g2020} = 137\,992 / 123\,496 = 1.11 \quad ((7))$$

Table 4 - Indicators characterizing the efficiency and intensity of the use of fixed assets

The elements	2016	2017	2018	2019	2020
1	2	3	4	5	6
Fund profitability	0,88	2,81	2,58	1,48	1,71
Return on assets of OPF	11,9	11,9	13,5	11,9	12
Return on assets of the active part of the OS	7,74	7,56	8,49	6,61	3,11
Capital intensity	0,08	0,08	0,07	0,08	0,08
Labor-to-labor ratio	138,2	172,6	176,3	181,5	141,2

1) Return on assets is calculated using the formula:

$$\text{Return on equity} = \text{profit} / \text{average annual cost of OPF} \quad (8)$$

The return on assets of LLC Service Center Metrology is:

$$\text{in 2016: } 23\,988 / 21\,977 = 1.09$$

$$\text{in 2017: } 79,090 / 29,697 = 2.66$$

$$\text{in 2018: } 87\,586 / 33\,867 = 2.58$$

$$\text{in 2019: } 62\,353 / 42\,129 = 1.48$$

$$\text{in 2020: } 57\,694 / 33\,910 = 1.71$$

In 2020, from each ruble of fixed assets, the organization received 1.71 rubles of profit. The organization mastered new technologies, introduced innovations, thus, the return on assets ratio in 2020 increased by 0.23. In the course of the analysis from 201, 2019, a decrease in the return on assets indicator in 2020 is noted. This is justified by significant investments.

2) Capital productivity of fixed assets is calculated by the formula:

$$\text{Capital productivity of OPF} = \text{volume of work} / \text{average annual cost of OPF}$$

(9)

Return on assets of OPF LLC Service Center Metrology is equal to:

in 2016: $263\,721/21\,977 = 11.9$

in 2017: $356\,361/29\,697 = 11.9$

in 2018: $406\,398/33\,867 = 11.9$

in 2019: $505\,544/42\,129 = 11.9$

in 2020: $406\,924/33\,910 = 12.0$

Return on assets reflects whether the funds were effectively invested. It shows the total return on 1 ruble spent on fixed assets. In the period from 2016 to 2019, the rate of return on assets did not change, and in 2020 it is equal to 12.0.

The capital productivity of the active part of fixed assets is calculated according to the formula:

Return on assets of the active part of fixed assets =
scope of work / average annual cost of the active part of the OS (10)
(

The return on assets of the active part of fixed assets of LLC Service Center Metrology is equal to:

in 2016: $263\,721/65\,816 = 4.00$

in 2017: $356\,361/69\,900 = 5.09$

in 2018: $406\,398/80\,084 = 5.07$

in 2019: $505\,544/106\,339 = 4.75$

in 2020: $406\,924/130\,744 = 3.11$

The active part of fixed assets includes machines, equipment and vehicles. For each ruble of the active part of the fixed assets in 2020, 3.11 rubles of proceeds from the work performed were received. This indicator decreased due to the growth of fixed assets assets.

3) Capital intensity is calculated by the formula:

Capital intensity = average annual cost of OPF / volume of work (11) (

Capital intensity of LLC Service Center "Metrology" was according to Form

11:

in 2016: $21,977 / 263,721 = 0.08$

in 2017: $29\ 697/356\ 361 = 0.08$

in 2018: $33\ 867/406\ 398 = 0.08$

in 2019: $42\ 129/505\ 544 = 0.08$

in 2020: $33\ 910/406\ 924 = 0.08$

Capital intensity is the inverse return on assets. With the help of capital intensity, the level of funds invested in the production of certain products is characterized. In the analyzed period, the capital intensity did not change.

4) The capital-labor ratio is calculated by the formula:

Labor-to-labor ratio = average annual cost of OPF /
average number of workers ((12)

The capital-labor ratio of LLC Service Center Metrology was made according to formula 12:

in 2016: $21,977/102 = 215.4$

in 2017: $29\ 697/172 = 172.6$

in 2018: $33\ 867/192 = 176.3$

in 2019: $42\ 129/232 = 181.5$

in 2020: $33\ 910/240 = 141.2$

In the period 2017-2019, the capital-labor ratio was constantly growing. Since the technical equipment of the organization depends on this value, then, and its labor productivity. Improving working conditions leads to an increase in the efficiency of workers. A decrease in this indicator in 2020 indicates an ineffective distribution of labor in the organization's workforce.

2.3 Analysis of the state of the control system of LLC Service Center "Metrology"

The organizational structure is a document that establishes the quantitative and qualitative composition of the organization's divisions, and also schematically reflects the order of their interaction. The structure of an organization directly depends on the

volume and content of the tasks that it solves, the direction of activity, workflow and flows of information movement, taking into account its capabilities in the organizational and material spheres.

In the course of the analysis of the organizational structure of the organization, it was established that earlier in its structure there were "the department of innovative projects" and the "design bureau", which is not the case in 2019. At the moment, the innovation management system does not have a special functional unit that manages innovation processes. Responsible for this area of activity are various structural divisions of the organization.

The organizational structure of LLC Service Center "Metrology" is linear and functional.

The General Directorate manages the First Deputy General Director, the Secretariat, the Directorate for Economics and Finance, the Directorate for the main

The Directorate for Economics and Finance is responsible for the departments of accounting, labor and wages, finance and lending, cost and pricing, personnel management and the legal department.

The directorate of the main production is responsible for the departments for completing and equipment, warehousing, shipment of finished products, energy-mechanical service, auto service, workshop 1; 2; 3; four; 6; 7 and technology department.

The administrative department is subordinate to the directorate for infrastructure.

The information technology departments and the 1C group are subordinate to the Information Technology Directorate.

The Technical Directorate deals with the development of the organization and the development of new products.

The technical department manages the commercial management department, the commercial department, the advertising and information department, the contract department, the procurement department, the technical department service, the software department, the design and technical department, the design department, the

construction control department. -installation work, service department, quality management department, standardization, certification and branch projects department, as well as subsidiary divisions of the organization.

The organizational structure of the departments should correspond to the goals and objectives of the organization, since the departments conduct their activities in different directions, each department is engaged in a certain type of activity and is responsible for the performance of certain functions.

Next, you should study the technical department, which is the most important element of management in LLC Service Center "Metrology". He is responsible for the commercial activities of the organization.

Having studied the organizational structure of the Service Center "Metrology", an analysis of the number and qualifications of the organization's employees should be carried out. The analysis can be carried out using the characteristics of the labor force presented in table 4.

Table 4 - Characteristics of the organization's labor resources

Indicator	Number of people 2017 g.	Number, people 2018		Number, people 2019		Number, people 2020	
		Total	Adopted in 2018	Total	Adopted in 2019	Total	Adopted in 2020
1	2	3	4	5	6	7	8
1. Payroll total:	172	192	81	232	77	240	8
- leaders	8/12	8/14	1	8/14	1	8/14	0
- specialists	32	45	27	66	25	70	4
- employees	31	34	10	47	7	48	1
- workers	97	99	43	105	45	108	3
2. Gender of workers:							
- men	127	142	67	175	61	179	4
- women	45	50	14	57	16	61	4
3. Age of employees:							
up to 20 years	55	61	42	66	24	68	2
from 21-30	59	50	23	83	25	85	2
from 31-40	28	41	12	41	20	43	2
from 41-50	27	36	3	37	8	38	1

Continuation of table 4

from 51-60	2	3	1	5	0	6	0
4. Education:							
- среднее	12	8	3	8	2	8	0
- initial professional	36	38	7	41	18	41	0
- secondary vocational	69	80	41	89	37	93	4
- higher	55	66	30	94	20	98	4

1) The average number of employees in the organization is growing every year.

Most of the new workers are technical workers in the plant. The organization uses many ways to find personnel, namely:

- advertises open vacancies in newspapers and on the Internet;
- participates in graduate fairs;
- works with the employment center.

In 2016, the number of employees increased slightly.

2) As of 2016, 80% of the workers in the organization are men.

3) Most workers are between 31 and 40 years old.

4) The number of employees with higher education increased in 2017 by 55 people, in 2018 by 66, in 2019 by 94, and in 2020 by 98.

Next, you should analyze the employees by age.

Table 5 - Characteristics of employees of LLC Service Center "Metrology" by age in 2020

Positions	21-30	31-40	41-50	51-60	61 -
1	2	3	4	5	6
Leaders	3	6	6	8	1
Specialists	31	23	8	7	1
Employees	18	16	5	9	-
Workers / AXOs	20	39	22	14	3
Total	72	84	41	38	5

1) At the age from 21 to 30 years, the majority of specialists (31 employees).

The organization actively employs young professionals. In addition, LLC Service Center "Metrology" invites students of universities for internship, with further employment.

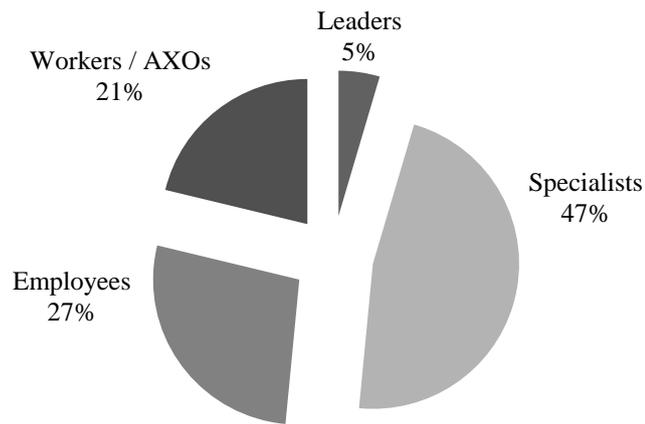


Figure 2 - Distribution of personnel of LLC Service Center "Metrology" between the ages of 21 and 30

2) Half of employees aged 31 to 40 are workers

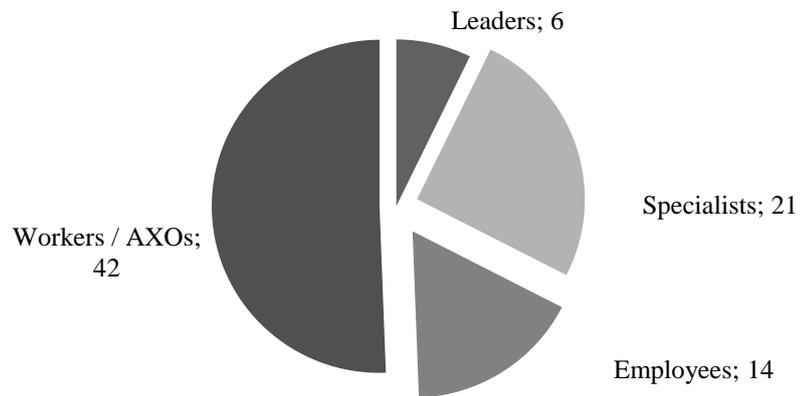


Figure 3 - Characteristics of workers aged 31 to 40 years by personnel category

3) At the age of 51 to 60 years, 38 people work and 5 people over 61 years old. These workers have high qualifications, life experience and are loyal to the organization. They serve in all parts of the organization.

Next, you should analyze the personnel by education. The characteristics are presented in table 6.

Table 6 - Characteristics of the employees of Service Center "Metrology" LLC by education in 2020

Professions	Higher	Average professional	Initial professional	Среднее
1	2	3	4	5
Leaders	14	-	-	-
Specialists	74	-	-	-
Employees	6	30	8	-
Workers	4	63	33	8
Total	98	93	41	8

In addition to managers and a specialist, 4 employees and 2 workers have higher education.

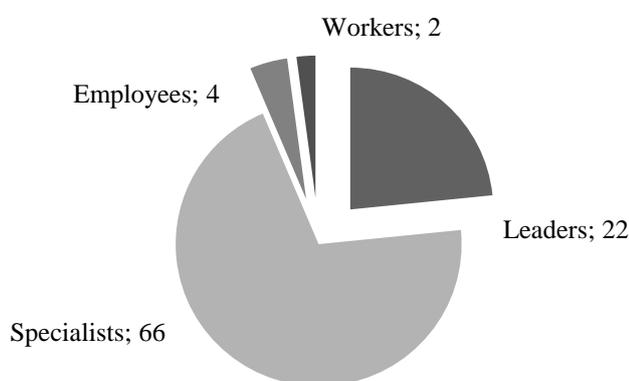


Figure 4 - Employees of LLC Service Center "Metrology" with higher education

Most employees have secondary vocational education, while workers have both secondary vocational and primary vocational education.

The organization uses administrative methods of personnel management. This method of managerial influence on employees allows you to achieve managerial goals. Administrative methods of managerial influence on employees are based on three, including: power, discipline and punishment. Administrative methods motivate employees to consciously adhere to labor discipline, develop a sense of duty and a desire to work. Such methods act directly through regulation or administrative acts that are subject to mandatory execution.

There are four ways of administrative influence in LLC Service Center "Metrology":

1) Organizational impact in the form of a staffing table, regulations on divisions, job descriptions, job organization, collective agreements, labor regulations, organizational management structure, organization charter. Such orders should be formalized in the form of organizational standards and must be enforced by order of the head.

2) Administrative influence in the form of orders, instructions, instructions, instructions, instructions, target planning, labor rationing, coordination and control over the execution of work. Such an impact is aimed at achieving management goals through direct administrative regulation.

3) Bringing to disciplinary responsibility and penalties in the form of remarks, reprimands, severe reprimands, demotion or dismissal.

4) Bringing to administrative responsibility in the form of warnings and fines.

The importance of administrative responsibility has increased significantly over the past years. The imposition of fines is practiced in case of violation of labor discipline or non-compliance with orders and orders.

The number of personnel of the organization LLC Service Center "Metrology" is 172 people in 2017, 192 people in 2018, 232 people in 2019, and 240 people in 2020. You can see an increase in the number of personnel, which indicates the stability of the organization.

Assessment of the intensity of movement of labor resources in 2020 is carried out by calculating the coefficients:

1) The coefficient of turnover for the reception of workers (K_{pr}):

K_{pr} = the number of people employed,
average headcount ((13)

$K_{pr} = 8: 240 = 0.033$

2) Ratio of turnover on disposal (K_v):

K_v = the number of employees who quit,
average headcount ((14)

$$K_v = 37: 240 = 0.154$$

3) Employee turnover rate (Kt):

CT = number of dismissals. of their own free will and for violation of labor discipline slave.,

average headcount

((fifteen)

$$CT = 21: 240 = 0.090$$

4) Coefficient of constancy of the composition of the personnel of the enterprise (Kp.s.):

Kp.s. = the number of employees who have worked the whole year,

average headcount ((16)

$$Kp.s. = 195: 240 = 0.815$$

Table 7 - Use of labor resources at the enterprise LLC Service Center "Metrology" for 2020

Indicator	Base year, 2019	Reporting year, 2020		Deviation, qty	
		plan	fact	from base year 2019	from plan 2020
1	2	3	4	5	6
Average annual number of workers (CR)	232	245	240	8	13
Worked per year by one worker: days (D)	230	247	247	17	17
Worked per year by one worker: hours (H)	1653	1971	1971	318	318
Average working day (P), hour	7,19	7,98	7,98	0,79	0,79

According to the data presented in table 7, one can notice a deviation from the plan for the number of employees (13 people). Overtime work was not carried out at the Metrology Service Center LLC. That had a beneficial effect on the activities of the organization.

During the study of the organization's personnel management system, it was established that the organization uses administrative methods to manage personnel. These methods are primarily aimed at motivating employees to the need to observe labor discipline, a sense of duty and the desire to work. Administrative methods act directly through regulation or administrative acts subject to mandatory execution.

3 Calculation and analytics

3.1 Analysis and evaluation of the effectiveness of the procurement activities of the enterprise

To analyze the effectiveness of procurement activities of LLC SERVICE CENTER METROLOGY, two aspects of the organization's work with suppliers should be considered:

1) Clarity and transparency of procurement principles. High-quality products should be purchased from reliable suppliers, at an acceptable cost and terms of payment, as well as with the possibility of unplanned deliveries.

2) Timeliness of payment of bills.

Next, you should study the aspects of the work of the organization Service Center "Metrology" LLC with the public:

1) Creation of a complex, the activities of which are aimed at servicing weighing equipment under warranty and after its completion, verification of measuring instruments, as well as training corporate employees.

2) Compliance with the requirements for environmental protection in accordance with the legislation of the Russian Federation.

3) Creation of a positive image of the organization. This can be done through certain activities, for example, by providing support to children in orphanages or by sponsoring sports events.

3.2 Analysis of the sales activities of the enterprise

The organization Service Center "Metrology" LLC has been a leading developer and manufacturer of electronic industrial scales and information systems based on them for over 20 years. The activity of the organization allows accumulating significant experience in the development and manufacture of weighing equipment.

The organization carries out work in seven directions:

1) Develops and manufactures electronic industrial scales and information systems based on them.

2) Reconstructs and modernizes mechanical scales.

3) Performs all the work until the complete manufacture of equipment on a turnkey basis, namely: develops a project, carries out construction, installation and commissioning works, and also hands over the facility.

4) Carries out service under the guarantee and after its completion.

5) Checks measuring instruments.

6) Automates the system of accounting and control of material flows.

7) Train employees in licensed training centers.

Convenient and efficient execution of works is facilitated by the development of a network of Trade and Service Centers and regional offices in Russia and neighboring countries. The guarantee of the quality of the manufactured equipment and the services rendered is a long-term partnership with the largest industrial enterprises in Russia and the CIS countries.

Table 8 - Terms of interaction between LLC Service Center "Metrology" with buyers

Buyers	Условия взаимодействия				
	delivery time	size of discounts	conditions fees	method and conditions of delivery	amount of penalties
1	2	3	4	5	6
JSC "Russian Railways"	45 days	20%	prepayment 100%	railways	Individually, depending on the terms of the contract
OJSC SUEK	30 days	10%	70/30	transport companies	
MC "Kuzbassrazrezugol"	90 days	10%	70/30	transport companies	
HC "SDS"	30 days	10%	50/50	transport companies	
OJSC "Ural Steel"	120 days	15%	prepayment 100%	railways	

Table 9 - Information about the buyers of LLC Service Center "Metrology" for 2017-2020

Buyers	2017 г.		2018 г.		2019 г.		2020 г.	
	sales volume, thousand rubles	%						
one	2	3	4	5	6	7	8	9
Local Buyers:								
JSC "Russian Railways"	45 871	13%	212 976	52%	322 851	64%	258 969	51%
OJSC SUEK	74 875	21%	46 589	11%	-	-	30 256	6%
MC "Kuzbassrazrezugol"	25 754	7%	35 483	9%	-	-	25 986	5%
HC "SDS"	14 789	4%	-	-	37 945	8%	15 896	3%
Buyers from other regions:								
OJSC "Ural Steel"	-	-	45 789	11%	35 893	7%	25 986	5%
OJSC "Nizhny Tagil Metallurgical Plant"	85 741	24%	65 561	16%	65 874	13%	15 435	3%
OJSC "Novolipetsk Metallurgical Plant"	109 331	31%	-	-	42 981	9%	34 396	7%
Total	356 361	100%	406 398	100%	505 544	100%	406 924	100%

Table 10 - Performance indicators of sales activities of LLC Service Center "Metrology" for 2017-2020.

Indicator	Период				Oct 2020 to 2019,%	2019 Nov. to 2018,%	2018 Nov. to 2017,%
	2017	2018	2019	2020			
1	2	3	4	5	6	7	8
1. Actual volume of sold products, thousand rubles.	356 361	406 398	505 544	406 924	80%	124%	114%
2. The number of concluded contracts with buyers, pcs.	20	40	60	41	32%	150%	200%
3. The number of fully completed contracts with buyers, pcs.	20	40	60	42	30%	150%	200%
4. Average cost of a completed contract, thousand rubles.	17 818	10 160	8 426	9 925	-18%	83%	57%
5. Ratio of inventory turnover	0,00 102	0,0009 0	0,0007 2	0,0009 0	-24%	80%	88%

The main customers of Service Center Metrology LLC are large industrial, coal and oil enterprises that need industrial scales. The largest buyer of scales and weighing equipment is Russian Railways.

Table 11– The structure of the product range of the enterprise for 2017-2020.

Group goods	Turnover 2017		Turnover 2018		Turnover 2019		Turnover 2020		The ratio of 2020 to 2017, %
	amount, t.	%							
1	2	3	4	5	6	7	8	9	10
scales and weighing equipment	235 937	66%	352 730	87%	440 771	87%	337 917	67%	43%
accessories	71 955	20%	18 433	5%	18 884	4%	19 740	4%	-73%
repair services and equipment commissioning	33 233	9%	21 857	5%	27 714	5%	29 170	6%	-12%
other sales	15 236	4%	13 378	3%	18 175	4%	20 097	4%	32%
Total	356 361	100%	406 398	100%	505 544	100%	406 924	100%	–

Table 12 - Information on production costs

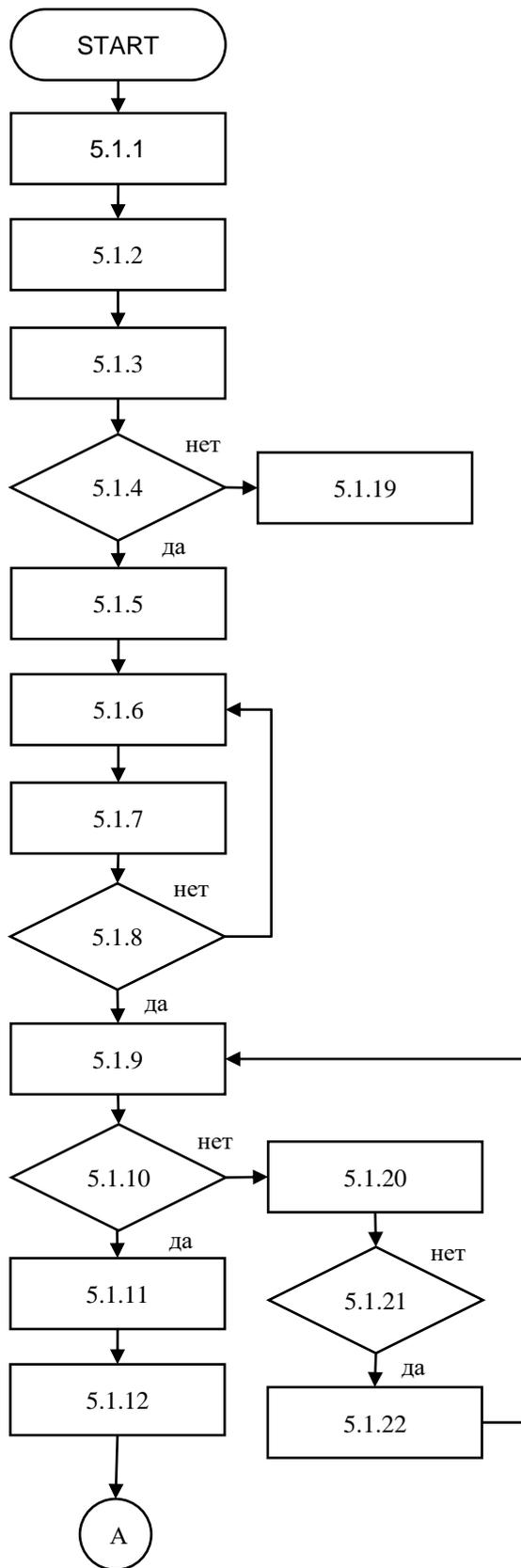
Group goods	Turnover		Turnover		Turnover		Turnover		The ratio of 2020 to 2017, %
	2017		2018		2019		2020		
	amount, t.	%							
1	2	3	4	5	6	7	8	9	10
scales and weighing equipment	156 859	0%	229 715	89%	338 161	90%	246 593	65%	57%
accessories	41 856	18%	15 385	6%	12 331	3%	11 843	3%	-72%
repair services and equipment commissioning	26 908	12%	10 269	4%	18 675	5%	20 971	6%	-22%
other sales	3 916	2%	1 831	1%	8 164	2%	9 991	3%	155%
Total	229 539	100%	257 200	100%	377 331	100%	289 398	100%	

Table 13 - Information about the sources of procurement of LLC Service Center "Metrologia" in 2020

Suppliers	Purchase amount, thousand rubles	Share, %
1	2	3
Manufacturers	209 712	72%
Mediators	79 686	28%
Total	289 398	100

The main group of goods sold in LLC Service Center "Met-rologia" are scales and weighing equipment. These products bring 60-90% of the entire revenue of the organization. One of the main activities is the repair and commissioning of the equipment sold.

The activity of the commercial department is to provide the organization with long-term competitive advantages in equipment and technologies of weight building, technical regulation, promotion and sale of its own products.



- 5.1.1 5.1.1 Receiving a request
- 5.1.2 Responsible: Specialist KO
- 5.1.3
- 5.1.4 5.1.2 Sending a questionnaire to the customer.
- 5.1.5 Responsible: Specialist KO
- 5.1.6
- 5.1.7 5.1.3 Analysis of the questionnaire for the possibility of meeting customer requirements
- 5.1.8 Responsible person: Director of TD
- 5.1.9
- 5.1.10 5.1.4 Are customer requirements feasible?
- 5.1.11
- 5.1.12 5.1.5 Changes to the sales plan and appointment of a responsible specialist
- 5.1.13 Responsible: Deputy Chief Executive Officer
- 5.1.14
- 5.1.15 5.1.6 TCH development
- 5.1.16 Responsible: Specialist KO
- 5.1.17
- 5.1.18 5.1.7 Coordination of the TCH with the Deputy CA and approval at the CA level.
- 5.1.19 Responsible: Specialist KO
- 5.1.20
- 5.1.21 5.1.8 Was the TCH agreed and approved?
- 5.1.22
- 5.1.23 5.1.9 Coordination of TCH with the customer
- 5.1.24 Responsible: Specialist KO
- 5.1.25
- 5.1.26 5.1.10 Is the TCH agreed?
- 5.1.27
- 5.1.28 5.1.11 Conclusion of a contract
- 5.1.29 Responsible: Specialist KO
- 5.1.30
- 5.1.31 5.1.12 Monitoring the process of fulfilling the terms of the contract
- 5.1.32 Responsible: Specialist KO

Figure 5 - Block diagram of the work of the commercial department of the IC LLC Service Center "Metrology"

Description of the flowchart for working with clients:

5.1.1 KO specialists receive inquiries from customers by fax, telephone or Internet.

5.1.2 KO specialists send questionnaires to customers and, if necessary, clarify the requirements for a product or service. The completed questionnaire is submitted to the Deputy CEO and the Director of the Trade House.

5.1.3 The director of the TD and with the specialists of the CA analyzes the questionnaires for the possibility of fulfilling the requirements of clients, if necessary, specialists of various directions are involved in the consideration.

5.1.4 If the client's requirements can be met, then clause 5.1.5 is fulfilled, if not, then clause 5.1.19.

5.1.5 The Deputy CEO makes changes to the annual sales plan, and a responsible specialist of the commercial department (hereinafter referred to as the KO specialist) is appointed to work with customers.

5.1.6 On the basis of questionnaires, a TCH specialist develops a TCH (TCH for serial products are stored on the company's file server), in some cases, a consultation with the organization's specialists is carried out.

5.1.7 The TCH specialist and the Deputy CEO agree and approve the TCH at the level of the commercial director.

5.1.8 If the TCH is agreed and approved, then clause 5.1.9 is fulfilled, if not, then clause 5.1.6.

5.1.9 The KO specialist sends the TCH to the customer for review and approval of the delivery completeness, production time, price and delivery terms.

5.1.10 When agreeing on the TCP, clause 5.1.11 is fulfilled, if not, then clause 5.1.20.

5.1.11 The KO specialist draws up an application for the preparation of a contract in accordance with the METROLOGY SERVICE CENTER -SMK-In-0701.03.00 "The procedure for registration, accounting and control of the execution of contracts", coordinates it with the deputy of the CA, and transfers it to the head of the contract dress.

5.1.12 The KO specialist controls the process of fulfilling the conditions stipulated in the contract in accordance with the adopted schedule.

5.1.13 If the term for fulfilling the terms of the contract corresponds to the schedule, then clause 5.1.14 is fulfilled, if not, then clause 5.1.23.

5.1.14 The KO specialist signs the work completion certificate and monitors the payment process.

5.1.15 If payment under the concluded agreement was made in due time, then clause 5.1.16 is performed, if not, then clause 5.1.25.

5.1.16 A specialist of the contract department closes the contract in accordance with the SERVICE CENTER "METROLOGY" -SMK-In-0701.03.00 "Procedure for registration, accounting and control of the execution of contracts."

5.1.17 Every day, a KO specialist produces a report on the progress of the process of fulfilling the terms of the contract.

5.1.18 The Deputy CA marks the daily reports of the CA specialist in the annual sales plan.

5.1.19 In case of refusal, the Deputy CEO or the responsible specialist of the KO prepares a reasoned answer approved by the commercial director and sends it to the client.

5.1.20 The CR specialist and the TD director are considering the possibility of making changes to the TCH. If necessary, a specialist in a narrow direction is involved in them.

5.1.21 If it is possible to make changes to the TCH, then clause 5.1.22 is fulfilled, if not, then clause 5.1.19.

5.1.22 A KO specialist makes changes to the TCH.

5.1.23 A CA specialist, informs the deputy of the CA about non-fulfillment of the terms of the agreement within the time frame set by the schedule.

5.1.24 The Deputy CEO and the Director of the TD identify the reasons for non-compliance in accordance with the METROLOGY SERVICE CENTER -SMK-DP-0802.00.00 "Management of non-conforming products", develop corrective

actions and register the non-compliance in accordance with the METROLOGY SERVICE CENTER "-SMK-DP-0803.00.00" Corrective and preventive actions. "

5.1.25 The KO specialist prepares a written notification to the client about the violation of the contractual payment term, it is approved by the commercial director and sent to the client.

5.1.26 Upon receipt of payment, clause 5.1.16 is performed, if payment has not been received, then clause 5.1. 27.

5.1.27 An official letter is prepared by the KO specialist and the deputy of the CA, notifying of the violation of the contractual payment deadline, the letter is approved by the commercial director and sent to the client.

5.1.28 Upon receipt of payment, clause 5.1.16 is performed, if payment has not been received, then clause 5.1.29.

5.1.29 The Deputy CA transfers all the documentation ordered by lawyers for the preparation of a statement of claim to the court.

3.3 Break-even analysis of the organization

The break-even point (X) is the proceeds from the sale of products at which the organization does not incur losses and does not make a profit. The breakeven point can be calculated using four methods:

- 1) Having determined the classic break-even point.
- 2) Having determined the minimum break-even point.
- 3) Having determined the financial break-even point.
- 4) Having determined the financial break-even point when accounting for taxation.

To analyze the break-even point, it is necessary to select the data presented in tables 14,15,16.

Table 14 - Initial data for the calculation

Period balance total			Revenue from sales for a period of time			Cost over time			Annual attraction rate credit
2018	2019	2020	2018	2019	2020	2018	2019	2020	
1	2	3	4	5	6	7	8	9	10
344	393	444	406	505	406	257 200	377 331	289 398	
320	541	484	938	544	924				

Table 15 - Assets of the enterprise LLC Service Center "Metrology"

Asset article	at the end of the period 0: 2019	at the end of period t: 2020	dynamics,%
1	2	3	4
Non-current assets:	-	-	-
Fixed assets	77 925	85 455	10%
Current assets:	-	-	-
Stocks	195 244	228 391	17%
Receivables	112 490	124 189	10%
Current financial investments	4	130	3150%
Cash	1 420	300	-79%
Future spending	-	-	-

Table 16 - Liabilities of the enterprise LLC Service Center "Metrology"

Liability clause	at the end of the period 0: 2019	at the end of period t: 2020	dynamics,%
1	2	3	4
Equity:	-	-	-
Authorized capital	200	200	0%
Undistributed profits	305 679	316 484	4%
Ensuring follow-up costs and payments	-	-	-
long term duties	18 707	18 319	-2%
Current responsibility:	-	-	-
Short-term loans	68 955	70 390	2%

The classic break-even point can be calculated using the formula (17):

$$X = \text{fixed costs} / \text{relative marginal income}, (17)$$

The organization's fixed costs are reflected in the cost of production in the base period, as well as in management costs.

The relative marginal income can be calculated using the formula (18):

$$\text{OMD} = (\text{Revenue} - \text{Variable costs}) / \text{Revenue}, (18)$$

2018 year:

$$\text{Fixed costs 2018} = 257,200 + 33,987 = 291,187$$

$$\text{Relative marginal income of OMD 2018} = (406\,398 - 27\,625) / 406\,398 = 0.932$$

$$\text{Break-even point: X}_{2018} = 291\,187 / 0.932 = 312\,432$$

2019 (base year):

$$\text{Fixed costs 2019} = 377\,331 + 32\,330 = 409\,661$$

$$\text{Relative marginal income of OMD 2019} = (505\,544 - 33\,530) / 505\,544 = 0.933$$

$$\text{Break-even point: X}_{2019} = 409\,661 / 0.933 = 439\,079$$

2020 (reporting year):

$$\text{Fixed costs 2020} = 289,398 + 34,400 = 323,798$$

$$\text{Relative marginal income of OMD 2020} = (406\,924 - 25\,432) / 406\,924 = 0.937$$

$$\text{Break-even point: X}_{2020} = 323\,798 / 0.937 = 345\,568$$

The safety margin (Z) is the difference between the actual volume of production and the break-even point:

$$\text{Z}_{2018} = 406\,398 - 312\,432 = 93\,966 \text{ rubles, which is: } (93\,966/406\,398) \times 100\% = 23\%.$$

$$\text{Z}_{2019} = 505\,544 - 439\,079 = 66\,465 \text{ rubles, which is: } (66\,465/505\,544) \times 100\% = 13\%.$$

$$\text{Z}_{2020} = 406\,924 - 345\,568 = 61\,356 \text{ rubles, which is: } (61\,356/406\,924) \times 100\% = 15\%.$$

The organization LLC SERVICE CENTER "METROLOGY" is solvent, as it constantly increases cash receipts. In 2013, the revenue and costs of the organization increased, but OMD remained at the level of 2018. This reduced the break-even point threshold to 13%. It follows from this that the threshold of the safety margin of the organization is quite low. In 2020, OMD remained at the level of 2019, but at the same time, there was a decrease in the organization's revenue and costs. To avoid further lowering the threshold, the organization's fixed and variable costs should be modernized and costs reduced.

The minimum break-even point can be calculated using the formula (19):

$$X_{\min} = \text{fixed costs} - \text{depreciation} / \text{OMD}, (19)$$

This point is able to cover the costs accompanying the outflow of funds from the organization.

$$X_{2018\min} = (291\,187 - 6\,977) / 0.932 = 304\,946 \text{ rubles}$$

$$X_{2019\min} = (410\,862 - 9\,462) / 0.933 = 430\,225 \text{ rubles}$$

$$X_{2020\min} = (323\,798 - 14\,984) / 0.937 = 329\,577 \text{ rubles}$$

$$Z_{2018\min} = 406\,398 - 304\,946 = 101\,452 \text{ rubles, which is: } (101\,452/406\,398) \times 100\% = 24\%.$$

$$Z_{2019\min} = 505\,544 - 430\,225 = 75\,319 \text{ rubles, which is: } (75\,319/505\,544) \times 100\% = 15\%.$$

$$Z_{2020\min} = 406\,924 - 329\,577 = 77\,347 \text{ rubles, which is: } (77\,347/406\,924) \times 100\% = 19\%.$$

Significant costs incurred by the organization in 2013 influenced the decrease in the minimum break-even point from 24% to 15%. This indicates the incorrect use of the organization's funds. In 2016, the situation changed slightly, the break-even point increased by 4%.

The financial break-even point can be calculated using the formula (20):

$$X_{\text{fin}} = (\text{fixed costs} + \text{standard profit}) / \text{OMD}, (20)$$

The regulatory profit is equal to the share capital multiplied by the deposit rate of the funds raised. The deposit rate will be 12% (the percentage of the deposit).

$$\text{Normative profit 2018} = 286,474 \times 0.12 = 34,376 \text{ rubles}$$

$$\text{Normative profit 2019} = 305,879 \times 0.12 = 36,705 \text{ rubles}$$

$$\text{Normative profit 2020} = 316\,684 \times 0.12 = 38\,002 \text{ rubles}$$

$$X_{2018\text{fin}} = (291\,187 + 34\,376) / 0.932 = 349\,317 \text{ rubles}$$

$$X_{2019\text{fin}} = (410\,862 + 36\,705) / 0.933 = 479\,707 \text{ rubles}$$

$$X_{2020\text{fin}} = (323\,798 + 38\,002) / 0.937 = 386\,126 \text{ rubles}$$

$$Z_{2018\text{fin}} = 406\,398 - 349\,317 = 57\,081 \text{ rubles, which is: } (57\,081/406\,398) \times 100\% = 14\%.$$

$$Z_{2019\text{fin}} = 505\,544 - 479\,707 = 25\,837 \text{ rubles, which is: } (25\,837/505\,544) \times 100\% = 5\%.$$

$Z_{2020 \text{ fin}} = 406\,924 - 386\,126 = 20\,798$ rubles, which is: $(20\,798/406\,924) \times 100\% = 5\%$.

The financial break-even point, taking into account taxation, is calculated using the formula (21):

$$X_{\text{fin. tax}} = (\text{fixed costs} + \text{standard profit including tax}) / \text{OMD} \quad (21)$$

$$X_{2018 \text{ fin. tax}} = (291\,187 + 60\,513) / 0.932 = 377\,360 \text{ rubles}$$

$$X_{2019 \text{ fin. tax}} = (410\,862 + 32\,605) / 0.933 = 475\,312 \text{ rubles}$$

$$X_{2020 \text{ fin. tax}} = (323\,798 + 28\,405) / 0.937 = 375\,883 \text{ rubles}$$

$Z_{2018 \text{ fin. tax}} = 406\,398 - 377\,360 = 29\,038$ rubles, which is: $(29\,038/406\,398) \times 100\% = 7\%$.

$Z_{2019 \text{ fin. tax}} = 505\,544 - 475\,312 = 30\,232$ rubles, which is: $(30\,232/505\,544) \times 100\% = 6\%$.

$Z_{2020 \text{ fin. tax}} = 406\,924 - 375\,883 = 31\,041$ rubles, which is: $(31\,041/406\,924) \times 100\% = 7\%$.

All calculated indicators indicate a decrease in the breakeven-accuracy points in 2019. This is due to the increased costs of the organization. A decrease in the break-even point leads to losses nailed in trouble and, as a consequence, to a negative impact on the activities of the organization. But despite this, the volume of products sold in 2018-2019 is above the break-even point. In the course of the analysis in 2016, one can notice a decrease in the organization's revenue, while the volume of costs remains unchanged. In order for the activities of the organization to have a positive trend, it is necessary to analyze its costs and reduce them as much as possible.

3.4 Analysis of the solvency, liquidity, financial stability of the enterprise

The most important criterion for the financial condition of an organization is its liquidity and solvency. These concepts mean the ability of the organization to pay its long-term obligations. Thus, a solvent organization is one that has more assets than external liabilities.

Table 17 - Analysis of the financial stability of the organization LLC Service Center "Metrology" for 2016-2020.

Indicators	2016	2017	2018	2019	2020
1	2	3	4	5	6
1. Sources of own funds	191 154	239 169	286 474	305 879	316 684
2. Non-current assets	44 314	42 906	62 318	83 953	91 448
3. Availability of own working capital	146 840	196 263	224 156	221 926	225 236
4. Long-term liabilities	6 625	7 175	12 278	18 707	18 919
5. Availability of own and long-term borrowed sources	153 465	203 438	236 434	240 633	244 155
6. Short-term liabilities	46 042	68 059	45 568	68 955	109 481
7. The total value of own sources of formation of stocks and costs	199 507	271 497	282 002	309 588	353 636
8. Inventories and costs	103 432	124 818	195 162	195 244	228 391
9. Surplus (+) or shortage (-) of own working capital (p. 3-8)	43 408	71 445	28 994	26 682	-3 155
10. Surplus (+) or shortage (-) of own and long-term borrowed sources of formation of stocks and costs (p. 5-8)	50 033	78 620	41 272	45 389	15 764
11. Surplus (+) or shortage (-) of the total value of own and borrowed sources of formation of stocks and costs (p. 7-8)	96 075	146 679	86 840	114 344	125 245
Financial strength type	+++	+++	+++	+++	-++

The balance sheet asset includes information on investments in specific property and material assets, on the organization's expenses for the manufacture and sale of products, as well as on the remaining free cash. Each type of allocated capital has a separate balance sheet item. The assets are considered to be non-current and current assets of the organization. Thus, the ratio of current and non-current assets reflects the general structure of assets.

In the course of the analysis of the financial stability of the organization, it was found that LLC Engineering Center SERVICE CENTER METROLOGY had a stable financial position for 5 years.

Table 18 - Indicators of financial stability of the organization LLC Service Center "Metrology"

Indicators	2016	2017	2018	2019	2020	Deviation on 2020 by 2016 (+/-)
1	2	3	4	5	6	7
Autonomy (independence) coefficient	0,78	0,76	0,83	0,77	0,71	-0,07
Equity ratio of current assets	0,74	0,72	0,79	0,72	1	0,26
Equity capital flexibility ratio	0,77	0,82	0,78	0,72	0,72	-0,05
Enterprise financial activity ratio	0,28	0,31	0,2	0,29	0,27	-0,01

Macroeconomic factors exert the greatest influence on the business activity of the divisions. Their impact forms both a favorable "business climate", which stimulates conditions for the development of the organization, and an unfavorable one.

The capital structure, solvency, liquidity directly depend on the level and nature of the organization's business activity.

The assessment of solvency is based on the indicators of the liquidity of current assets. Liquidity is determined by the time it takes to transform current assets into cash. The less time is spent on this process, the more liquid the asset is.

The main purpose of the analysis of solvency is the timely identification and elimination of shortcomings in financial activities, and finding reserves to increase the solvency and creditworthiness of the organization.

Table 19 - Indicators of the organization's solvency

Indicators	Standard	2016	2017	2018	2019	2020	Deviation on 2020 to 2016 (+/-)
one	2	3	4	5	6	7	8
Absolute liquidity ratio	0,2-0,5	0,45	0,55	0,3	0,02	0,03	-0,42
Critical liquidity ratio (intermediate coverage)	Больше 1	2,03	2,15	1,9	1,65	1,38	-0,65
Current liquidity ratio	От 1 до 2	4,32	3,99	6,19	4,49	3,22	-1,10

Solvency indicators speak about the organization's ability to pay.

Liquidity ratios are of interest to both the management of the organization and its partners, namely: suppliers of raw materials and supplies (absolute liquidity ratio), investors (current liquidity ratio), banks (critical liquidity ratio).

During the analysis, it was found that the critical liquidity ratio is within the normal range. The coefficients of the current and absolute liquidity speak about the inefficiency of the capital structure, and the possible financial risks of the organization.

3.5 Assessment of the business activity of the enterprise

The next stage of the research is the study of the business activity of the organization Service Center Metrology LLC.

Table 20 - Indicators of business activity of the organization LLC Service Center "Metrology"

Indicators	2016	2017	2018	2019	2020	Deviation 2020 (+/-) by 2016
1	2	3	4	5	6	7
Total capital turnover ratio (return on capital)	1,07	1,27	1,23	1,37	0,97	-0,1
Equity capital turnover ratio	1,45	1,66	1,54	1,7	1,3	-0,15
Turnover ratio of current assets	1,32	1,28	1,23	1,71	1,22	-0,1
Material turnover ratio (stocks)	2,14	3,12	2,54	2,59	1,92	-0,22
Turnover in days of all current assets	273	237	245	210	293	19,98
Short-term accounts receivable turnover ratio	4,68	3,93	4,47	5,45	3,43	-1,25
Turnover in days of accounts receivable	85,8	91,63	80,47	66,02	104,6	18,8
Inventory stock turnover in days	168	115	142	139	187	18,58
Accounts payable turnover ratio	5,46	6,25	7,15	8,83	5,84	0,38

The total capital turnover ratio shows whether management is effective, as well as the rate of asset turnover. There were no significant changes in this indicator for the analyzed period, but in 2016 it decreased by 0.4.

The level of sales is characterized by the equity capital turnover ratio. According to the data obtained, first its insignificant growth is visible, and then a decrease by 0.4 in 2020.

Calculation of the turnover ratio of current assets allows you to count the number of turnover of current assets for the period under study, as well as whether they are effective. Until 2019, this indicator increased, which testifies to the effective activity of the organization SERVICE CENTER METROLOGY LLC. In 2020, the turnover rate remained unchanged.

The effectiveness of the organization of work on the collection of receivables reflects the turnover ratio of short-term receivables. Research into the activities of LLC Service Center "Metrology" testifies to the effectiveness of this activity. Since this figure is increasing every year.

The speed of settlement of the organization with suppliers directly depends on the value of the accounts payable turnover ratio. As it was established, LLC SERVICE CENTER "METROLOGIA" makes timely calculations for its obligations, but this ratio has decreased by 3%.

The financial result of the organization's activities can be characterized by the received profit and profitability.

4 Results of the study

The analysis of LLC Service Center "Metrology" made it possible to draw some conclusions:

1) For the majority of employees of LLC SERVICE CENTER "METROLOGY", the most significant interest and social significance of their activities, and not material benefits. Consequently, managers need to motivate employees in accordance with their interests.

2) Leaders should be interested not only in the work of their subordinates, but also in them as individuals. Employees are motivated by the respect, trust and sincerity shown to them. The recognition and gratitude of the leader has a huge impact on the activities of subordinates.

3) Corporate rest is one of the means of motivating the team.

4) To control the level of mathiness, you should establish feedback with employees of the organization, interview them and accept proposals for improving the working climate.

Management should take into account the individual characteristics of its employees, their motives and anti-motives. With knowledge of the anti-motives, it is easier to identify the needs of the organization's employees who are not satisfied, and vice versa.

Summarizing the results of the activities of LLC Service Center "Metrology" with the dynamics of indicators, we can draw a number of conclusions:

1) From 2016 to 2018, one can notice an increase in the main technical and economic indicators, namely: the volume of production and sales of equipment, profit, cost, number of employees and labor productivity. In 2020, a negative trend towards a decrease in equipment sales can be noted, which is due to a decrease in the budget of buyers in order to purchase innovative products.

2) During the period from 2019 to 2020, large capital investments were made in fixed assets, the buildings and structures of the main production were repaired, the production base and service transport were updated, trucks were purchased, and

working conditions were improved. This led to a decrease in key indicators, an increase in costs, sales, management and operating expenses.

1) Operating expenses have been decreasing in recent years. This is due to the fact that the organization practically did not use loans. In 2020, operating income increased by 96% due to the acquisition of borrowed funds in the amount of RUB 39,091 thousand.

2) Over the period from 2016 to 2020, non-operating income and expenses increased by 226%. This is due to the growth of accounts receivable, which negatively affects the activities of LLC SERVICE CENTER METROLOGY, as there is a diversion of funds that could be used in the innovative activities of the organization.

3) The intensity of movement of labor resources for 201 years was assessed using relative indicators - coefficients: turnover in recruitment and retirement, staff turnover, constancy of the composition of the organization's employees.

4) The decline in technical and economic indicators in 2020 cannot be considered negative. Such changes are inevitable with the rapid growth of assets. But, many management problems, for example, decisions on purchasing equipment, evaluating innovative projects, could be solved more effectively, with a wider use of corporate governance capabilities. The growth of accounts receivable also remains an unresolved problem.

In the course of the analysis of the circle of stakeholders, it was found that the studied organization has established good relationships with suppliers, customers and authorities, while the internal organizational climate is quite tense. Employees of the organization need to work overtime in order to fulfill individual orders on time, which they are not satisfied with. In addition, conflicts were noticed between employees at all levels of activity. This is the result of ineffective personnel management in the organization.

Measures to improve the organization's performance

As an event that improves the work of the organization, you can implement a project to conclude a collective agreement.

A collective agreement is a document that contains the obligations to be fulfilled by the administration and the collective of the enterprise. In this agreement, the interests of all participants are taken into account, obligations are imposed on them, and rights and benefits are provided. Consequently, a collective agreement can be viewed as a method for overcoming conflict situations, since it can resolve harsh forms of labor struggle, for example, a strike.

When concluding a collective agreement, the employer determines the conditions the fulfillment of which he is really able to ensure. Thus, this agreement is a guarantee of the stable activity of the team.

During the preparation of a project under a collective agreement, the manager receives the most accurate information about the needs of the organization's employees.

The collective agreement has a positive effect on the motivation of employees, which leads to an increase in labor efficiency, which ensures an increase in profits. In addition, the conclusion of this agreement will allow organizing labor and production discipline, which increases the competitiveness of the organization.

The collective agreement provides an opportunity to reduce the tax burden in accordance with applicable law. Since the norms of the tax code in some cases provide for the ability to take into account certain expenses for tax purposes, only when they are indicated directly in the contract. So, article 255 of the Tax Code of the Russian Federation provides for labor costs with the inclusion of the stipulated legislative norms in labor or collective agreements:

- accruals to employees in cash and (or) in kind;
- accruals and allowances, in order to stimulate employees);
- payments that compensate for the work schedule or working conditions;
- bonuses and one-time incentives;
- maintenance of employees;
- other expenses, for example: a bonus for qualifications or length of service, a bonus for labor achievements, additional payments for combining, work on weekends and holidays, etc.

There are seven stages of the procedure for the development and conclusion of a collective agreement:

- 1) creation of a draft collective agreement by employers or employees;
- 2) the beginning of the procedure and agreement of the conditions with the other party to the agreement;
- 3) the formation of the commission in acc. Service center "Metrology" and with the principles of parity, autonomy and equality of the parties (trade union committee);
- 4) mailing the agreed project to structural divisions for discussion, and making additions and changes within a certain time frame;
- 5) discussion by the participants of the content of the project to formalize the decision of the working commission and employees of the enterprise in order to conclude a collective agreement (signing the protocol of negotiations);
- 6) a meeting of employees to discuss the project;
- 7) signing by the employer and employees of the collective agreement in case of its approval at a meeting held earlier.

Table 21 - Economic effect from the conclusion of a collective agreement by LLC Service Center "Metrology" by the expert method

Turnover growth (t / c)			
Experts	Coefficient	% of t / o	Growth of t / o, %
1	2	3	4
Expert 1	0,3	0,5	0,15
Expert 2	0,7	0,2	0,14
Total:			0,29

According to table 21, it can be concluded that experts note an increase in turnover at the conclusion of a collective agreement by 0.29% of the annual turnover of LLC Service Center Metrology.

Next, you should calculate the increase in the volume of profits with an increase in sales or the economic effect for LLC Service Center "Metrology" (table 22).

Table 22 - Calculation of the economic effect of LLC Service Center "Metrology"

Indicators for calculation	Unit rev.	Amount
1	2	3
Revenue from the sale of goods (services) before the implementation of the event	Thousand. rub.	406,924
Increase in proceeds from the sale of goods (services) after the implementation of the event	%	0.29
The size of the increase in revenue	Thousand. rub.	1 180
Expected level of profitability	%	10.3
Increase in profit from increased sales	Thousand. rub.	195.30

The economic effect is equal to 195.30 thousand rubles.

1) A high level of dispersion of accounts receivable. As a result of the analysis of technical and economic indicators, a tendency towards a decrease in economic indicators was established in 2016, which can be explained by the growth of debtors' debt.

This phenomenon has a negative impact on the functioning of the enterprise, as there is a diversion of funds from circulation. Insufficient and unsystematic management control can lead to this. To avoid such a situation, it is necessary to form a commission to deal with debtors. the commission must constantly act and meet at least twice a month.

The commission should consist of specialists from the contractual and commercial departments, an accountant and a lawyer. The director of commercial management will be appointed chairman of the commission.

The main task of the commission is to exercise control over the current accounts receivable. In addition, the commission will prevent possible future debts, during the division of work in stages.

Table 23- Stages of work on receivables

Stages of work on accounts receivable	Description
one	2
stage of contract conclusion	during this stage, you need to check the buying company, correctly draw up an agreement, take into account the client's possible motivation for a timely refund, prescribe in the agreement the possibility of further deferral of payment with written approval (commercial loan agreement), establish penalties for late payment for products, insure the risk of non-payment counterparty, check the signing of documents by the counterparty and the number of documents.
stage of work with a counterparty	during this stage, it is necessary to classify the client according to the degree of risk, sign an additional agreement on a commercial loan, set a credit limit, track the correctness of filling out the primary documents, track the facts of payment and, if necessary, remind the buying company of the time of payment, charge penalties for late payments, track the current the solvency of the client company and new purchases of the management and founders of the company.
stage of overdue debt formation	during this stage, it is necessary to understand what is the fact of delay of receivables by delay or final default, get all the documents in hand and, if necessary, bring them to the prescribed form, obtain reliable information about the debtor's solvency, negotiate debt recovery. If the debtor repays the debt, then continue working with the debtor, lowering the credit limit and setting him a different degree of risk. Otherwise, make a decision that has legal consequences.
making a decision with legal consequences	at this stage, it is decided how to reclaim the debt: in a judicial proceeding, in an insurance procedure, in the procedure of assignment of the right of claim (cession), in the procedure for transferring a debt, in the manner of a contract-order for reclaiming debts.

Table 24- Description of the stages of tracking receivables

Name of stages	General description of the stage	Description
1	2	3
		<p>a) Checking the counterparty During the check of the counterparty, all possible sources are used, both open and closed. The topics to check can be as follows: - checking for family and friendly relations with the employees of the enterprise; - checking the time of foundation of the company - checking the founders of the company for involvement in litigation; - verification of the constituent documents of the company; - checking the authority of officials to sign documents; - checking the delivery of reports and balance sheet indicators of the company; - other necessary checks. These parameters are used to assess the decency of the buying firm. Thus, the firm is insured against collusion of employees with other persons, from one-day firms, from persons engaged in forging documents, from signing documents by unauthorized persons. If the agreement was signed by an unauthorized person, then this person acted in his own interests in accordance with the Civil Code. This means that when signing an agreement and other documents by persons who do not have the right to act without a power of attorney, it is necessary to require a power of attorney from such persons. Otherwise, you will have to sue the citizen. Also, the financial indicators of the company's solvency are being clarified. In addition, it is necessary to assess the financial performance of the company by the employees of the planning and economic service. When deciding on the advisability of analyzing the financial condition and reliability of the customer, certain employees receive the necessary data (financial statements, bank and audit certificates, reviews of other suppliers of the customer, etc.).</p> <p>b) Competent drawing up of the contract When drawing up a contract and further work under the contract, it is important to be ready for a possible appeal to the arbitration court. That is why it is necessary to remember that documents submitted to the arbitration court and confirming the commission of legally significant actions (contracts, invoices, powers of attorney, applications, etc.) must comply with the requirements established for this type of documents. And the organization must keep the originals of the documents and more than one document must not be lost. Since the Arbitration Court cannot consider a proven fact, confirmed only by a copy of a document or other written evidence, if the original document is lost or not submitted to the court, and the copies of this document submitted by the persons participating in the case are not identical. The agreement must also be signed by an authorized person, so it is always important to require documents confirming the authority. A contract is considered concluded if an agreement is reached on the essential terms of the contract.</p> <p>c) Motivation of clients for a timely refund An agreement or an additional agreement may provide for bonuses for timely payment based on the results of the month. This is a purely psychological technique, which is calculated on the client's desire to pay money for an additional reward.</p> <p>d) Signing in the agreement the possibility of further deferral of payment with written approval (commercial loan agreement) In accordance with the Civil Code of the Russian Federation, any deferral and payment by installments for products, work performed and services rendered is interpreted as a "commercial loan agreement" and if not signed in writing is invalid. As well as advances or prepayments given to you by the client.</p>

Continuation of table 24

1	2	3
		<p>The Civil Code says that a commercial loan agreement can be concluded as a condition of the main agreement, but in any case must be concluded in writing.</p> <p>e) Establishment of penalties for late payment for products If fines are established in the contract for late payment for products in an amount larger than that provided for in the civil code, this will not be a violation. But the buyer will be interested to pay for the products earlier.</p> <p>f) Verification of the signing of documents by the counterparty and the number of documents It is necessary to receive a letter of guarantee from the counterparty with a list of signed documents for a specific day. The authority of the person must also be confirmed by a power of attorney for one day - the day of signing the documents.</p>
<p>Second stage: Working with a counterparty.</p>	<p>This is the stage at which "accounts receivable" appears and is tracked, and steps are taken to reduce it. Work at this stage should be built on the level of daily work with debt.</p>	<p>a) Classification of clients according to the degree of risk The client's risk class determines the potential risk of the client's failure to make timely payments for the shipped products and the occurrence of doubtful debts. The client's risk class is determined based on the following factors: - the duration of the client's work with the company - compliance by the client with payment discipline - potential solvency of the client based on the analysis of the current financial statements of the client All clients should be classified according to their degree of risk according to the following scale: 1) Very high. 2) High. 3) Average. 4) Low. At the initial stage, a low risk is assigned. This means that in the case of constant and timely payment by the buyer for the product, he can be allocated a commercial loan. The assignment of the degree of risk should be regulated by your internal documents.</p> <p>b) Signing an additional commercial loan agreement In accordance with the Civil Code, a commercial loan agreement is signed, the mandatory conditions of which must be the amount of the commercial loan limit and the number of days of deferred payment. Also, the additional agreement must contain the details of the parties, the persons authorized to sign the documents and the grounds for authority (documents certifying the authority must be attached), the place of signing, the date of signing, the number and date of the main document, the signatures of the parties (must correspond to the power of attorney). As well as the consequences of late payment. Also, an additional agreement on the provision of a commercial loan is regulated by the Civil Code of the Russian Federation.</p> <p>c) Establishing a credit limit The credit limit, as a limitation, is set programmatically. The credit limit is calculated using the following formula. Credit limit = amount of shipments in the previous month / 30 days * number of days of grace period. In case of late payment, the client is assigned the next level of risk on the scale, and the credit limit is reduced by 25%. Maybe a more detailed scale of the degree of risk. This is usually left to the discretion of the CFO.</p> <p>d) Tracking the correctness of filling out primary documents Tracking the correctness of filling out the shipping documents is an important part of dealing with accounts receivable. Since it is the primary documents that are the basis for the appearance of obligations for the counterparty.</p>

Continuation of table 24

1	2	3
		<p>Documents must be tracked by the accounting department:</p> <ol style="list-style-type: none"> 1. Signatures on invoices and powers of attorney (the signature of the authorized person must match). 2. Deciphering the signature on the waybills. 3. The signatures of the chief accountant and the general director must match the signatures on the contract. 4. The documents must be filled in according to the form provided by the legislation and by-laws. <p>The same should be the case with the acts of work performed and services rendered.</p> <p>e) Daily tracking of payment facts and, if necessary, reminding the buying company about the time of the next payment</p> <p>When the goods are delivered to the buyer, shipping documents are signed, it is desirable that they indicate the time of receipt of the goods.</p> <p>Tracking is carried out on the basis of a plan-factor analysis of cash flows. Money to be received and actually received funds on the date of planned receipt. Usually, programs for filling in primary documentation have a function for tracking the time of payment by a counterparty for delivered goods. The day before payment, it is important to call and remind the counterparty about payment. This will not be perceived by the counterparty as pressure. A business partner can have many suppliers, and this reminder is a standard procedure. Some programs provide for sending e-mails with a reminder of upcoming payments, but as a rule, these are improvements for a specific company. Moreover, reminders should be sent exactly to those persons who are responsible for payments in specific organizations.</p> <p>f) Calculation of penalties for late payments</p> <p>If the contract provides not the right to accrue, but the very accrual of fines, the company is obliged to accrue them. Fines are charged according to the terms of the agreement. In the absence of an appropriate rate in the agreement, penalties can be calculated using the refinancing rate in accordance with the provisions of the Civil Code of the Russian Federation.</p>
<p>Stage three: the formation of arrears.</p>		<p>a) It is necessary to understand what is the fact of delay in receivables, deferred payment or final default</p> <p>In this case, the delay may be:</p> <ul style="list-style-type: none"> <input type="checkbox"/> deferred payment for a short period with subsequent payment; <input type="checkbox"/> late payment for a long period with subsequent payment; <input type="checkbox"/> final non-return of receivables. <p>Deferral of payment for a short period with subsequent payment may be caused by short-term breach of contractual obligations by the debtor's clients. A delay in payment for a long period with subsequent payment can be caused by a complete violation of the contractual obligations of the debtor's clients, the peculiarities of the debtor's credit obligations, as well as legal proceedings or large purchases for production needs.</p> <p>b) Receiving all primary documents in your hands and, if necessary, bringing them to the prescribed form</p> <p>This is the last attempt to bring documents to the established form.</p> <p>c) Obtaining reliable information about the debtor's solvency</p> <p>Such work is usually done by specialized agencies. The cost of these services is negligible, but it will give you additional arguments for using them in a negotiated manner. And later in court.</p>

Continuation of table 24

1	2	3
		<p>d) Negotiating debt recovery.</p> <p>In large companies, negotiations are usually divided into several stages:</p> <p>1) Negotiations with the manager</p> <p>2) Negotiations with the head of the department</p> <p>3) Negotiations with the security service.</p> <p>Negotiations with a manager are usually held in order to finally understand what the late payment is and to confirm or refute the assumptions.</p> <p>Negotiations with the head of the sales department are usually held in order to work out a debt recovery scheme or to get a final waiver of payment.</p> <p>Negotiations with the security service are carried out to put pressure on the debtor and make a decision that has legal consequences.</p>
Step four: Making a decision with legal implications.	At this stage, you must decide in which way you will exercise your legal rights as a creditor.	<p>If all documents are drawn up correctly and all actions have been taken to voluntarily return receivables, then the law provides the following methods:</p> <p>- judicial order; insurance procedure; assignment of the right to claim; transfer of debt to a solvent debtor; debt collection order agreement.</p>

The results of an expert assessment on the creation of a commission to combat accounts receivable are presented in Table 25. According to experts, the conclusion of a collective agreement should break the growth of turnover and labor productivity.

Table 25 - Economic effect from the creation of a commission to combat accounts receivable in LLC Service Center "Metrology" by an expert method

Turnover growth (t / c)			
Experts	Coefficient	% of t / o	Growth of t / o, %
1	2	3	4
Expert 1	0,4	0,5	0,20
Expert 2	0,6	0,2	0,12
Итого:			0,32

As can be seen from Table 25, experts believe that the creation of a commission to combat accounts receivable will lead to an increase in turnover by 0.32% of the annual turnover of LLC Service Center Metrology. Next, you need to calculate the increase in the volume of profits with an increase in sales (table 26).

Table 26– Calculation of the economic effect of LLC Service Center "Metrology"

Indicators for calculation	Unit rev.	Amount
1	2	3
Revenue from the sale of goods (services) before the implementation of the event	Thousand roubles.	406 924
Increase in proceeds from the sale of goods (services) after the implementation of the event	%	0,32
The size of the increase in revenue	Thousand. rub.	1 302,15
Expected level of profitability	%	10,8
Increase in profit from increased sales	Thousand. rub.	201,42

The economic effect is 201.42 thousand rubles.

Another problem is the lack of a council that should be responsible for the interests and rights of employees. The enterprise has a collegial body consisting of directors and founders, which does not include specialists who are able to solve pressing issues and problems, put forward ideas for solving problems and propose relevant projects for discussion.

In an interview with the general director, it was noted that all organizational issues at all levels of the organization's activities are taken by him alone, without the participation of employees. The decisions made are not always objective and require more time to make them. It would be advisable to share some of the responsibilities between specialists. To this end, a collegial council should be formed, which will include AXO specialists, economists, specialists in the design department, software development specialists, lawyers, marketers, chief accountant and head of the auto business.

The Council will consider proposals and recommendations for the development and improvement of the enterprise in the economic, financial, economic, production and commercial spheres.

Meetings of the Collegiate Council should be convened at least once a month. The work plan of the council should be drawn up for 1 quarter, with the agreement of all council members.

The Collegiate Council of Service Center Metrology LLC is an advisory body. Its main task is to address the pressing issues of the organization:

- Use of modern technologies, materials and equipment.
- Application of best practices that increase labor productivity, efficiency and rationality of the use of resources, increasing the volume and quality of services provided.
- Involvement of employees in the development of management decisions.

Therefore, in order to create an effective corporate governance model for LLC Service Center Metrology, it is advisable to create a collegiate council that has a clear definition of its own powers and obligations, to create a system of collegial decision-making, without formalizing functions. In addition, you can create a commission aimed at combating debtors, create an information section on corporate governance on the official website of the organization, as well as a collective agreement between the employer and employees.

Having solved these problems, the METROLOGY SERVICE CENTER organization will be able to significantly improve the organizational climate, increase labor productivity, and increase sales.

Table 27 - The economic effect of the creation of a collegial council in LLC Service Center "Metrology" by the expert method

Turnover growth (t / c)			
Coefficient	Coefficient	Coefficient	Coefficient
1	2	3	4
Expert 1	0,5	0,6	0,3
Expert 2	0,5	0,7	0,35
Итого:			0,65

From the presented data, it follows that experts assess the effect of the collegial council's activities as an increase in turnover by 0.65% of its annual volume. Next, you should calculate the increase in the volume of profit or the possible economic effect (table 28).

Table 28 - Calculation of the economic effect from the creation of a collegial council

Indicators for calculation	Unit rev.	Amount
1	2	3
Revenue from the sale of goods (services) before the implementation of the event	Thousand. rub.	406 924
Increase in proceeds from the sale of goods (services) after the implementation of the event	%	0,65
The size of the increase in revenue	Thousand. rub.	2 645,0
Expected level of profitability	%	13,7
Increase in profit from increased sales	Thousand. rub.	425,76

The economic effect from the creation of a collegial council is 425.76 thousand rubles.

Site update. Official site of Service Center "Metrology" LLC (Service Center "Metrology" LLC): [www. http://www.spark-interfax.ru/kemerovskaya-oblast-yurga/ooo-servisny-tsentr-metrologiya-inn-4230006276-ogrn-1124230001279-6e7a8754a2a148578e43d62d0b9dfa84](http://www.spark-interfax.ru/kemerovskaya-oblast-yurga/ooo-servisny-tsentr-metrologiya-inn-4230006276-ogrn-1124230001279-6e7a8754a2a148578e43d62d0b9dfa84).

The website improvement proposal has a number of advantages:

- The proposed form of the site provides information in a convenient and understandable form. Such a design can highlight important points with benefits and noticeable efficiency for the organization. In addition, many blocks are modeled in simple vector graphics, which makes it easy to update the site if necessary.

- There will be a slider at the top. It is the most popular area, statistically attracting the attention of visitors with presentable illustrations on the most relevant topics.

- Clarity, consistency and orderliness of the navigation algorithm.

- The site will be created in the style of Windows 8. Currently, it is a modern and up-to-date style. The proposed design of the site will contribute to entering the federal level and winning more buyers.

The new, improved site will attract more visitors interested in the products. It must correspond to the latest market trends. The site is the "face" of the organization. Since LLC Service Center "Metrology" is an innovative organization, the site must correspond to it.

The result of the expert assessment on the creation of an information section on corporate governance on the website of LLC Service Center "Metrology" is presented in Table 29.

Table 29 - The economic effect of updating the website of LLC Service Center "Metrology" by the expert method

Turnover growth (t / c)			
Coefficient	Coefficient	Coefficient	Coefficient
1	2	3	4
Expert 1	0,6	0,3	0,18
Expert 2	0,4	0,2	0,08
Итого:			0,24

As can be seen from the data presented, experts believe that the turnover of goods will increase after the creation of an information section on corporate governance on the website of LLC Service Center "Metrology" by 0.24% of its annual volume. We calculate the economic effect of increasing sales volumes in Table 30.

Table 30 - Calculation of the economic effect of LLC Service Center "Metrology"

Indicators for calculation	Unit rev.	Amount
1	2	3
Revenue from the sale of goods (services) before the implementation of the event	Thousand. rub.	406 924
Increase in proceeds from the sale of goods (services) after the implementation of the event	%	0,24
The size of the increase in revenue	Thousand. rub.	9 776,0
Expected level of profitability	%	8,3
Increase in profit from increased sales	Thousand. rub.	175,30

The economic effect is equal to 175.30 thousand rubles.

2) In the course of the analysis of economic indicators, the organization LLC Service Center "Metrology" in 2016, significantly reduced the volume of production, which led to a decrease in revenue. But at the same time, the organization was unable to reduce the volume of costs for administrative and commercial expenses. In addition, the organization increased accounts receivable by 32,580 thousand rubles, the amount of accounts payable by 50,943 thousand rubles, and doubled overdue debts of customers. The current situation indicates the need for the rational use of monetary funds. Managers should carefully consider line items and keep the organization's costs as low as possible.

Table 31 - The total economic effect of ways to improve the corporate governance model of LLC Service Center "Metrology"

Direction of ways to improve the corporate governance model	EE manifestation	EE sum
1	2	3
Strengthening the impact of the circle of stakeholders	Increase in satisfaction with work,	EE1 = 195.30
Strengthening the impact of the circle of stakeholders	Increase in t / c, increase in profit, decrease in losses	EE2 = 201.42
Company website update	Decrease in losses, increase in technical value, increase in profits	EE3 = 175.30
Improving the structure of collegial bodies	Increase in t / c, increase in profit	EE4 = 425.76
Total:		997,78

In Table 31, the calculation of the total economic effect was carried out in the event of the adoption of the proposed ways to improve the corporate governance of LLC Service Center Metrology, and it is equal to 997.78 thousand rubles.

Consequently, the modernization of the corporate governance of the organization will lead to the improvement of the management system and will contribute to an increase in the efficiency of financial and economic activities.

5 Social responsibility

5.1 Description of the workplace

The object of the study is a director's office located at 1a Zheleznodorozhnaya Street, Yurga.

The room where the specialist's workplace is located has the following characteristics:

- length of the room (A): 6 m;
- width of the premise (B): 3 metres;
- height of the room (H): 3 metres;
- Number of windows: 2 (dimension 2x2.5 m)
- Number of work places: 6
- Lighting: Total artificial and natural (i.e., through a window). The main source of light in the room are two white LB fluorescent lamps of 80W each placed in fixtures type SHOD.

Interior: The walls are covered with wallpaper (to be painted) and whitewashed in light green, the floor is wooden, covered with linoleum, the ceiling is whitewashed.

There is one computer in the room and one MFP. In terms of the severity of the work performed, it is classified as "light".

In accordance with protocol No. 13 of 21.07.2013 on measuring the actual level of indicators of microclimate in the office, which was carried out by OOO Centre of expertise of working conditions "Expert", the microclimate parameters are as follows:

- air temperature - in cold period 21 - 23°C,
- in warm period - 23 - 25°C;
- Relative humidity - in cold period 40-60%,
- 40% to 60% in warm periods;
- Air velocity - 0.1 m/s.
- Noise level 47 dB

The room is ventilated. Daily wet cleaning (dusting, floor cleaning) and natural ventilation are provided.

There are two fire extinguishers type OU-5 (carbon dioxide fire extinguisher) in the room.

5.2 Analysis of detected harmful factors of the projected production environment

Real production conditions are characterized by the presence of some dangerous and harmful factors of production.

A harmful factor of production is an industrial factor whose effect on the worker, under certain conditions, leads to illness or reduction of working capacity.

Standards on requirements and standards for types of hazardous and harmful factors contain quantitative or qualitative characteristics of these factors. Classification of factors is given in the basic standard GOST 12.0.003 - 74 "Hazardous and harmful production factors. Classification".

According to this standard all factors are divided into the following groups by the nature of their action

- a) chemical;
- b) physical;
- c) biological;
- d) psychophysiological.

Harmful factors identified at a given workplace:

- insufficient illumination of the working place;
- non-standard parameters of microclimate;
- exposure to electromagnetic fields and radiation and other harmful effects of the computer;
- excessive noise;
- inappropriate colour design of the workplace interior.

Each of these factors has a negative impact on human health and well-being.

1. Insufficient lighting in the workplace.

Lighting is the use of light energy from the sun and artificial light sources to provide visual perception of the world around us.

The workplace lighting system must be calculated to provide the required illumination. The size of the room is 18 m². To calculate the lighting, you must select the lighting system, light sources, type of lighting fixtures, determine the illumination of workers, the safety factor, the required number of luminaires and the power of light sources.

For our space, the most rational system of general lighting that is used for those rooms where work is carried out on the entire area, and there is no need to improve the lighting of individual areas.

Fluorescent lamps are a good light source, because they have many advantages over incandescent lamps: their spectrum is closer to natural light; they are more economical and last 11 to 12 times longer than incandescent lamps. However, there are also disadvantages: their operation is sometimes accompanied by a little noise; they work worse at low temperatures; they cannot be used in rooms with explosive atmospheres. Lighting fixture type for fluorescent lamps - a two-lamp fixture of SHOD type with a protective grid, as they are designed for lighting in normal premises, and the microclimate parameters of our premises according to GOST 30494-96 "Parameters of microclimate in premises" correspond to the category of "normal premises".

The values for rated illumination are set out in construction rules and standards SNIIP 23-05-95. For our premise requires illumination corresponding to visual work of very high precision (smallest size of object of distinction - 0,15 - 0,3 mm, digit of visual work - 2, sub digit of visual work - G, background - light, contrast of object with background - big).

In accordance with SNIIP 23-05-95 to ensure visual comfort in the premises for such visual work requires the necessary illumination of the workplace $E = 300$ lux. The illuminance value obtained is corrected taking into account the reserve factor due to soiling of luminaires and reduction of luminous flux of lamps.

Main characteristics of used lighting equipment and workplace:

- luminaire type - with SHOD type protective grid;
- minimum height of lamp suspension above the floor - $h_2 = 2.5$ m;
- Standard illumination of the working surface $E=300$ lux for general lighting;
- Length $A = 6$ m, width $B = 3$ m, height $H = 3$ m;
- safety factor for premises with low dust emission $k=1,5$;
- Height of working surface - $h_1=0,75$ m;

Wall-reflection coefficient $\rho_c=30\%$ (0.3) - for walls with light-coloured wallpaper;

ceiling reflectance $\rho_p=70\%$ (0.7) - whitewashed ceiling.

Let's make the most favourable for the working conditions of the location of lighting devices. Using the relation for the most favourable distance between luminaires, and the fact that $h = h_2 - h_1 = 1.75$ m, then $\lambda = 1.1$ (for luminaires with protective grid), therefore = 1.925 m. Distance from outermost luminaires to the walls of the room = 0.642 m. Based on the room dimensions ($A=6$ m and $B=3$ m), size of SHOD luminaires ($A=1.53$ m, $B=0.284$ m) and the distance between them, we determine that the number of luminaires in a row should be 3 and the number of rows should be 1, i.e. there should be 3 luminaires in total.

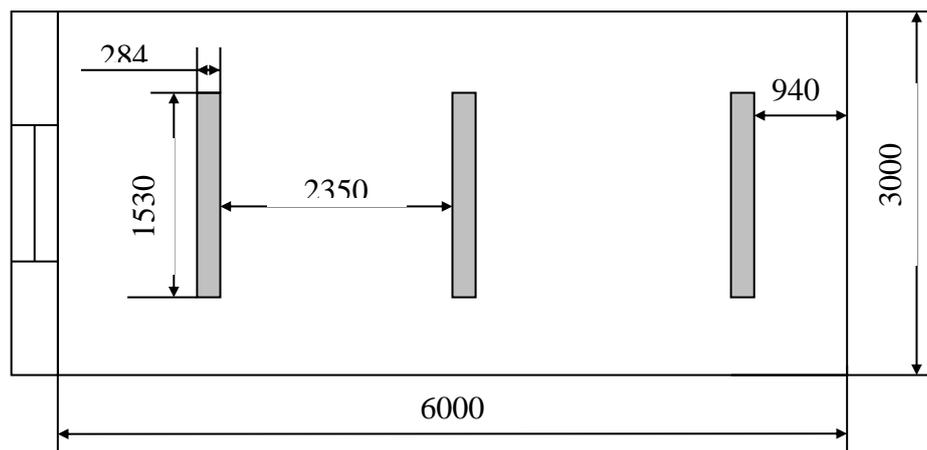


Figure 6 - Layout of the lamps

Calculate the lighting installation. Calculation of total uniform artificial lighting is done using the luminous flux factor method. The luminous flux of the lamp is determined by the formula:

$$F = (E \times k \times S \times Z) / (n \times \eta),$$

where F is luminous flux of each lamp, lm;

E - minimum illuminance, lux;

k - safety factor;

S - area of the room, m²;

n - number of lamps in the room;

- luminous flux utilization factor (in fractions of one);

Z - coefficient of irregularity of lighting for fluorescent luminaires Z = 0.9.

In order to obtain the luminous flux utilisation factor it is necessary to know the room index i, the ceiling and wall reflection coefficients st and the luminaire type.

The room index is given by the formula:

$$i = S / (h \times (A + B)) ,$$

where S - area of the room, m²;

h - height from work surface to suspended luminaires, m;

A, B - room sides, m.

The value of the reflection coefficient of the ceiling is taken 70% and the reflection coefficient of the walls - 30%. Based on this, the coefficient of utilization of luminous flux equal to 0.43 (SNiP 23-05-95 tab. Luminous flux factor).

Determine the value of luminous flux:

lm.

We choose the type of lamp. In our case for indoor lighting should be provided, as a rule, discharge lamps. 80 W.

Thus, the lighting system of the premise under consideration should consist of 2 two lamps of SHOD type with 80 W fluorescent lamps LB, built in 1 row of 2 lamps.

Let us now compare the required lighting system with the actual lighting system in place. The room lighting system consists of 2 x LED downlights mounted in 1 row of 2 lamps, each with 80W LL bulbs. The luminaires are arranged parallel to the wall with windows. The burned out lamps will be replaced in a timely manner.

It can be concluded that the existing lighting system meets the requirements of SNiP 23-05-95.

2. Not acceptable microclimate parameters.

The microclimate of the production premises, i.e. the climate inside them, is determined by the relationships of humidity, temperature and air velocity that act on the human body. Therefore, in order to ensure the required hygienic air quality corresponding to SNiP 2.04.05-91 "Heating, ventilation and air conditioning" and SP 2.2.1.1312-03, ventilation is provided in all production and auxiliary premises.

It is advisable to limit the relative humidity to approx. 30-70 % when workers are in closed rooms for long periods of time.

In hot weather it is advisable to ventilate the room.

3. Exposure to electromagnetic fields and radiations and other harmful effects of the computer.

In our case, the source of EMF and radiation is a computer. Prolonged exposure to industrial frequency EMF leads to the following disorders: headache, drowsiness, sleep disturbance, memory loss, increased irritability, apathy, heart pain. Slow heart rate and rhythm disturbances, functional disorders of central nervous system and cardiovascular system disorders, disturbances in blood composition for chronic exposure to EMF of industrial frequency are characteristic.

4. Excessive noise.

Noise is a combination of sounds of different pitches and intensities, changing randomly over time and causing unpleasant subjective sensations to the worker. According to its origin, noise is divided into the following types:

- Noise of mechanical origin (vibrations from equipment surfaces)
- noise of aerodynamic origin (arising from compressed air or gas movement);
- Noise of electromagnetic origin (arising from oscillations of electromechanical devices);
- Noise of hydrodynamic origin (arising from processes in fluids);
- The main normative document that establishes classification of noise, and its permissible level in workplaces is the sanitary norms SN 2.2.4/2.1.8.562-96 "noise at workplaces, in residential and public buildings and in territory of residential buildings".

5. Interior colour design.

The rational use of colours in the interior design is an important factor in improving people's livelihood and working life. That is, experts have found out that colours have different effects on people: some irritating and others soothing.

The colour interior of the room in question is favourable for work, has a calming effect on the nervous system and is rather beneficial for the employee's mood.

Occupational hazards are factors which may cause injuries or accidents. These factors are caused by exposed moving machine parts, unprotected drives and electrically live machine parts.

Hazardous factors at the workplace include:

- Exposure to electrical current;
- fire risk;

1. Exposure to electric current.

Electrical shock can cause serious injury and death.

Effects of electric current on humans:

- Thermal - heating of tissues up to 60-700 C;
- Mechanical - rupture of muscle tissues, vessels, tendons;

Biological - involuntary contraction of muscles in a living organism.

electrolytic - decomposition of blood into charged particle ions with a change in the physical and chemical composition of blood.

Causes of electrocution are:

- touching or approaching live parts while they are live;
- faulty or damaged insulation;
- incorrect operation of the system;

The maximum permissible values of touch voltages and currents are established for paths of current from one hand to another and from hand to foot of direct and alternating current with frequency 50 and 400 Hz (GOST 12.1.038-82).

Correct organisation of maintenance of operating electrical installations, repair, installation and preventive maintenance works is of great importance for the prevention of electrical injuries. Electrical equipment complies with electrical safety requirements,

since ensuring these requirements is achieved by using protective earthing, which in our case complies with SanPiN 2.2.4.1191.

2. Fire hazard.

Fire is understood to be an uncontrolled combustion process involving danger to human life and destruction of material assets. Improper use of the PC may result in fire. When operating a PC the following situations may cause a fire:

- short circuit;
- overloads;
- increase of transient resistances in the electric contacts;
- overvoltage.

When a fire occurs, employees are stressed and, as a rule, people in such situations are prone to panic and, as a result, their behaviour is inadequate - this makes it difficult to rescue people and property.

Primary fire fighting means are used to extinguish a fire.

Primary fire fighting means are tools, materials, devices that are designed to eliminate and/or localize the fire in its initial stages (internal fire hydrant, fire extinguishers, sand, water, asbestos cloth, burlap, shovel, bucket, etc.). Such equipment shall be available at all times.

The following fire-fighting measures have been developed in the company: fire alarms are provided; evacuation plans are posted; fire shields are installed in the main building and throughout the company.

5.3 Environmental protection

Environmental protection is a set of measures designed to limit the negative impact of human activity on nature. In our case, such measures may include limiting atmospheric and hydrospheric emissions in order to improve the overall environmental situation.

The main objective of Stroyprospect is to provide construction services and ensure the safety and security of citizens.

The formal structure of protective measures is defined in Article 134 of the Constitution of the Russian Federation. They consider the implementation of technical and organisational measures.

The technical measures include:

- Providing employees with standardised facilities and space;
- Ensuring an air-friendly environment at the workplace;
- Fire protection equipment for the workplace;
- illumination of premises with artificial, natural, rational lighting, sewage, water supply, ventilation, heating, rest, hygiene and catering facilities;
- electrical safety equipment;
- protection against vibration and noise.

Organisational measures include:

- a pre-employment medical examination upon entry to work;
- Briefing and training of the employee;
- Preferential pension schemes for employees;
- routine and periodic medical examinations according to the Russian Ministry of Health standards;
- provision of personal protective equipment to employees.

In terms of the use of a personal cosplayer in the workplace, one type of energy pollution of the environment is the electromagnetic field. As a biologically active factor, an electromagnetic field of artificial origin can have an adverse effect on the environment and on humans.

5.4 Protection in emergencies

Emergency situations (ES) are caused by natural phenomena (earthquakes, floods, landslides, etc.) and technological accidents.

Fire hazards.

The general requirements on fire safety are regulated in GOST 12.1.004-91. According to All-Union norms of technological designing all industrial buildings and premises are divided into categories A, B, C, D and D according to fire hazard.

The building in question falls within explosion hazard category C. The building in which the study room is located is constructed of fire resistant materials - brick and concrete, i.e. materials with the ability to retain their working functions of fire barrier, thermal insulation or load-bearing capacity under the action of high temperatures.

Fire prevention measures:

- organisational - correct use of the equipment, correct maintenance of the territory and buildings, fire safety briefings for employees and workers;
- technical - adherence to the norms of building design, equipment and electric installation, ventilation, heating, lighting, fire safety regulations;
- regime - prohibition of smoking in places not equipped for this purpose, electric welding works in fire-hazardous premises;
- operational - timely repairs, inspections and tests (preventive maintenance).

Carbon dioxide fire extinguishers must be used in connection with live electrical installations in the building.

The building is equipped with an automatic fire detection system - fire alarm.

There are primary fire extinguishing means on the territory of the workshop: hand-held fire extinguishers type OU-3 - designed to extinguish fires of various types.

The level of fire resistance of the building, as well as structural and functional fire hazard is regulated by SNiP 21-01-97.

The main and emergency entrances are used to evacuate people in case of fire. In order to ensure safe conditions for the evacuation of people in a fire, the non-proliferation of combustion products within the fire compartment and the rescue of people and the successful suppression of a fire, regardless of the location of the fire, a smoke exhaust system with mechanical impulsion is provided.

The room is equipped with fire alarms and fire extinguishers, there is a responsible person for fire safety and the staff is trained in fire safety, which complies with safety regulations.

The premises in question are in safe distance from potential sources of natural hazards (rivers and mountains), geographical location protects from seismic activity and earthquakes.

Fire training must be carried out once every 6 months. According to the nature and timing of fire safety briefings at the enterprise, fire safety briefings are divided into primary at the workplace, introductory, repeated, target and unscheduled, which are conducted in accordance with the requirements of GOST 12.0.004.

All employees shall be allowed to work only after fire safety briefing in accordance with the Federal Law "On Fire Safety", which defines the responsibilities and actions of employees in case of fire, including:

- rules for the use of office equipment;
- rules for calling the fire brigade;
- regulations for the use of fire-fighting equipment and fire extinguishing equipment;
- evacuation procedures, fire exits, etc.

The level of training of employees can be assessed as good.

There is a fire safety officer in the room, signs indicating evacuation routes, and an emergency exit. There are 3 floors in the whole building - evacuation will not cause turmoil and problems as there are not many people in the room. In general, in the event of a fire, trained and certified personnel. Trained personnel will react quickly and prevent or minimise possible damage.

Seismic safety.

In the event of an earthquake, the following precautions should be taken: do not panic and remain calm.

When indoors, you should stand against retaining walls or doorways. Outdoors, move away from electric wires and, if possible, avoid narrow streets. During an earthquake, you should not enter the stairs or the lift.

The building in question is of normal quality and is not designed to withstand horizontal forces.

The procedure for the preparation of the population in the area of protection against emergencies is approved by Resolution No. 738 of the Government of the Russian Federation of 24.7.95.

The main objective of emergency training is to teach all groups of the population the basic means of protection from emergencies and the rules of conduct, the methods of providing necessary first aid to victims, the rules of use of personal and collective protective equipment.

5.5 Legal and organisational safety issues

When performing organizational issues of safety assurance of aviation technician, various legal norms of labour legislation were applied:

SanPiN 2.2.4.548-96 "Hygienic requirements for the microclimate of production premises". , п. 4.10;

SanPiN 2.2.4.548-96 Computer rooms, etc.

GOST 12.1.003-83. Noise. General safety requirements.

GOST 12.1.005-88. TSBT. Air of working zone. General hygienic requirements.

GOST 12.1.030-81. SSBT -- electrical safety. Protective earthing, grounding.

5.6 Section Conclusion

This section has considered the following hazardous and harmful factors that affect health, well-being of the worker and occupational safety: insufficient lighting of the workplace; non-normative parameters of the microclimate, exposure to

electromagnetic fields and radiation and other harmful effects of computers, excessive noise, improper colour design of the workplace, exposure to electric current, risk of fire.

As a result of the analysis of hazardous and harmful factors of production, we can conclude that for the investigated facility, most of the factors potentially posing a health hazard to the employee correspond to the normative values.

In accordance with this, it is important to provide the following measures to eliminate or reduce the impact of harmful factors:

local heating should be used to increase the temperature during the cold period;

To reduce the impact of harmful electromagnetic fields and radiations it is recommended to:

replacement of monitors with CRTs by liquid crystal monitors.

Powder and carbon dioxide fire extinguishers should be used as extinguishing media. Air-conditioning systems should be installed and used indoors.

In summary it can be said that the working conditions in the room in question are comfortable and sufficiently safe.

Conclusion

In this graduation work, aspects of the organization of commercial activities of LLC Service Center "Metrology" were studied.

In the first chapter, the theoretical component of the commercial activity of a trade organization was studied. In addition, the marketing activity of the organization and the values of the main indicators of its activities were studied.

In the second chapter, the material and technical base of the organization was analyzed, the coefficients of efficiency of the main technical and economic indicators were calculated and the management system of LLC Service Center "Metrology" was studied.

In the third chapter, the analysis and assessment of the effectiveness of the commercial activities of LLC Service Center "Metrology" were carried out. In addition, the calculation of the sales activity ratios was made, the break-even, solvency, liquidity, financial stability and business activity of the organization were analyzed.

In the fourth part, recommendations were given aimed at maintaining the previous positions, with a tendency to an increase in market volumes and the creation of a comfortable environment in LLC Service Center Metrology. For this, it was proposed to create a commission to control accounts receivable, conclude a collegial agreement and create a collegial council that meets the interests and rights of employees. To improve the organization's work with clients, it was proposed to adapt the existing site to a modern and more comfortable one.

The technical and economic indicators of the organization speak of dynamic development. From 2017 to 2020, the output increased by 54%. This is due to the growth in demand for weighing equipment, or rather, for its creation and production for specialized enterprises of the industrial and metallurgical industries.

Gross profit for the period from 2017 to 2020 increased by 50%, which indicates an increase in the volume of equipment produced, and an increase in labor productivity. At the same time, there is a decrease in administrative and commercial expenses.

The decline in technical and economic indicators in 2020 cannot be considered negative. Such changes are inevitable with the rapid growth of assets. But, many management problems, such as decisions on the purchase of equipment, the assessment of innovative projects, could be solved more effectively, with a broader use of corporate governance capabilities. These include employee participation, the use of synergy of collegiality, and project review by its participants.

During the analysis of the organization, shortcomings were identified in a number of elements of the corporate governance model:

1) Circle of stakeholders. The main disadvantage of this element is the relationship with the staff. They were established during the survey, and include: dissatisfaction with work and working conditions, conflicts, both in the team and employees with management, the absence of a management body representing the interests and rights of employees.

To solve this problem, you can conclude a collegial agreement-thief. This document contains obligations that must be fulfilled by all employees and administration. It reflects all work commitments and interests.

2) A high level of dispersion of accounts receivable. This aspect negatively affects the activities of the organization, since there is a diversion of funds that could be used in innovative activities from circulation.

This problem can be solved by creating a commission that controls all stages of work with clients in order to prevent the growth of accounts receivable and reduce the existing one.

3) Lack of a collegial council protecting the interests and rights of employees. A collegial body, which includes only the founders of the organization, develops management decisions.

The current collegial council will be able to protect the rights and interests of the organization's employees.

4) The "face" of the organization is its website. It is on the site that the client first gets acquainted with the organization and its products. Today the site of the organization is outdated, which negatively affects the organization. LLC Service

Center "Metrology" positions itself as an innovative organization, therefore, the site must meet the same requirements.

The new, improved site will attract more visitors interested in the products. It must correspond to the latest market trends. The site is the "face" of the organization. Since LLC Service Center "Metrology" is an innovative organization, the site must correspond to it.

Consequently, the improvement of the activities of LLC Service Center "Metrology" contributes to the improvement of the management system and will increase the efficiency of the financial and economic activities of the organization.

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