MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

TERNOPIL IVAN PULUJ NATIONAL TECHNICAL UNIVERSITY

Faculty of Economics and Management

(Faculty)

Department of Management and Administration

(Department)

EXPLANATORY NOTE

to the Master's Paper

(education level)

Topic: **Improvement of manufacturing management in the organization by using data of PE «Novatsia service» (Ternopil, 38, Stepana Bandera Avenue)**

Performed by: sixth year student
Group: IBMm-62
Speciality: 073 «Management»

_____ Olajohn Deborah
(signature) (full name)

Supervisor _____ Halyna Mashliy ____
(signature) (full name)

Reviewer _____ _____Pavlo_Dudkin
(signature) (full name)

Ternopil – 2022

Ministry of Education and Science of Ukraine
Ternopil Ivan Puluj National Technical University

Faculty Faculty of Economics and Management
Department Department of Management and Administration
Educational Degree master
Specialty 073 Management

Approved by:
Department Head *Sorokivska O.A*

MASTER'S PAPER TASK

Olajohn Deborah
(full student name)

1. Master's Paper Topic:

Improvement of manufacturing management in the organization by using data from PE «Novatsia service» Located at 38, Stepana Bandera Avenue, Ternopil

Supervisor Halyna Mashliy, Ph.D., associate professor
(full name, scientific degree, academic rank)

Approved by the Order on «_20» 09 2022 № 4/7-770

2. Submission deadline 6.12.2022

3. Input data
Company balance sheets, reports on financial results, labor reports, service provision data and other enterprise reporting, works of scientists

4. Brief Content of the Master's Paper:
Chapter 1 Theoretical fundamentals of manufacturing management at enterprise
Chapter 2. Analysis of manufacturing management at the "Novatsia Service"
Chapter 3 Directions for improving manufacturing management at PE "Novatsia Service"
Chapter 4 Occupational health and civil safety at the enterprise

5. List of tables and figures:
The main technical and economic indicators of the activity of PE "Novatsia Service". Organizational structure PE "Novatsia Service". Dynamics of the equity capital of PE "Novatsia Service" and the value of the currency of the balance sheet. Indicators of financial sustainability of the "Novatsia Service" PE. Indicators of capital intensity and return on capital of the main funds of PE "Novatsia Service" in 2019-2021. Dynamics of the profitability of the main production assets of the enterprise and their active part.

6. Consultants to Master's Paper Chapters

Chapter	Consultant's full name	Signature, date	
		given by	checked by
Chapter 4 Occupational health and civil safety at the enterprise	Sherstiuk R.		
	Struchok V.		

7. Date of assigning the task _____

CALENDAR PLAN

№	Content	Chapters Deadline	Note
1	Introduction	30.09.2020	
2	Chapter 1 Theoretical fundamentals of manufacturing management at enterprise	10.10.2022	
3	Chapter 2. Analysis of manufacturing management at the "Novatsia Service"	29.10.2022	
4	Chapter 3 Directions for improving manufacturing management at PE "Novatsia Service"	10.11.2022	
5	Chapter 4 Occupational health and civil safety at the enterprise	20.11.2022	
6	Conclusions	25.11.2022	

Student _____ Olajohn Deborah
(signature) (full name)

Supervisor _____ Halyna Mashliy
(signature) (full name)

SUMMARY

Improvement of manufacturing management in the organization by using data of PE «Novatsia service» (Ternopil, 38, Stepana Bandera Avenue)

Master's thesis: 74 pp., 13 Fig., 16 Table, 1 appendices, 30 references.

The object of research is the process of manufacturing management of PE «Novatsia service».

The subject of research - theoretical-methodological and practical-methodical aspects of improving of manufacturing management of PE «Novatsia service».

The aim of the work is to research the ways of improvement of manufacturing management in the organization by using data of PE «Novatsia service».

Research methods are: comparison, theoretical and applied, statistical analysis, financial and economic analysis, grouping, systematic approach, method of comparative analysis.

The work outlines areas for improvement of manufacturing management in the organization by using data of PE «Novatsia service». Proposals regarding the implementation of repair services for household appliances, using of a flexible tariff when organizing the payment of employees, the application of forecasting methods the volumes of services provided by the enterprise are outlined in the work.

The developed proposals can be implemented in the practical activities of PE «Novatsia service».

Key words: manufacturing management, economic efficiency, improvement of manufacturing management.

АНОТАЦІЯ

Вдосконалення управління виробництвом в організації на прикладі ПП «Новація сервіс» (м. Тернопіль, проспект Степана Бандери, 38)

Магістерська робота: 74 с., 13 рис., 16 табл., 1 додаток, 30 літературних джерел.

Об'єкт дослідження - це процес організації виробництва ПП «Новація сервіс».

Предмет дослідження – теоретико-методологічні та практично-методичні аспекти вдосконалення управління виробництвом ПП «Новація сервіс».

Мета дослідження – дослідження шляхів удосконалення управління виробництвом в організації на прикладі ПП «Новація сервіс».

Методами дослідження: порівняння, теоретико-прикладний, статистичний аналіз, фінансово-економічний аналіз, групування, системний підхід, метод порівняльного аналізу.

У роботі окреслено напрями вдосконалення організації виробництва в організації на базі ПП «Новація сервіс». У роботі викладено пропозиції щодо здійснення послуг з ремонту побутової техніки, застосування гнучкого тарифу при організації оплати праці працівників, застосування методів прогнозування обсягів послуг, що надаються підприємством.

Розроблені пропозиції можуть бути впроваджені в практичну діяльність ПП «Новація сервіс».

Ключові слова: організація виробництва, економічна ефективність, вдосконалення організації виробництвом.

CONTENT

INTRODUCTION

The Master paper refers to the improvement of manufacturing management in the organization by using data of PE «Novatsia service». The main objective of manufacturing management is to iincrease manufacturing effectiveness and production flexibility in order to gain and possess competitive advantages in the market. As known that the effective and rational manufacturing management is used to reduce inventories, eliminate of excess production output and bad manufactory processing, reduce wastes and production time, and improve production capacity and its use.

The aim of the work is to research the ways of improvement of manufacturing management in the organization by using data of PE «Novatsia service».

The object of research is the process of manufacturing management of PE «Novatsia service».

The subject of research - theoretical-methodological and practical-methodical aspects of improving of manufacturing management of PE «Novatsia service».

Research methods are: comparison, theoretical and applied, statistical analysis, financial and economic analysis, grouping, systematic approach, method of comparative analysis.

This Master paper includes four main chapters where we have been examined the manufacturing management in the organization by using data of PE «Novatsia service» and found some ways and recommendations on how to improve manufacturing management, manufacturing process and production capacity of particular enterprise.

The Master paper discussed and solved the following tasks, including:

- to reveal scientific concepts of manufacturing management, manufacturing process and production capacity of particular enterprise;

- to describe theoretical foundations of rational organization of production processes;

- to highlight the scientific provisions on the organization of production processes in enterprise;

- to examine PE «Novatsia service» activity and analyze the use of fixed assets efficiency;

- to estimate the use of the working time fund of the company's employees;

- to make recommendations regarding the implementation of repair services for household appliances;

- to find the ways on how to improve the organizing the payment of employees;

- to make forecast of the volumes of services provided under influence of the factors;

- to highlight the civil safety of enterprise employees as well as the occupational safety at work.

The scientific novelty of the master's thesis consists in the generalization of the theoretical foundations of the organization of production, as well as the development of ways to improve the manufacturing management at the PE "Novatsia-service".

The information base of the research is scientific research in the field of scientific and practical aspects of the of manufacturing management of the enterprises, data of financial, operational and other reporting of PE "Novatsia-service".

CHAPTER 1
THEORETICAL FUNDAMENTALS OF MANUFACTURING MANAGEMENT AT ENTERPRISE

1.1 Scientific concepts of manufacturing management

An important factor that determines the success of high-quality production of the company's products and the efficiency of using the existing resource base, there is rational organization of production. It is built on scientific foundations that allows the increased effectiveness of activities, creates comfortable and attractive working conditions and builds a system of managerial responsibility ensuring the achievement of set goals.

The organization of production and its optimal management are the most important factors in accelerating scientific and technological progress.

They provide cost reduction and product quality improvement, growth of labor productivity and production efficiency.

First of all, the enterprise is the first place to ensure its livelihood, focus on market demand with its quality, consumer requirements, properties and price of the product (service). Production is only part of it with a constantly updated process, and therefore all technical, technological, organizational and economic decisions must be made only on the basis of sufficiently complete analysis and accurate information about expected market requirements, opportunities and threats of the external environment, weaknesses and strengths of one's own activity.

Products produced by food industry enterprises, must meet quality and safety requirements, and satisfy various consumer tastes. Food quality, quantity and availability are largely determined by taking into account the state of organizational, production and technological support.

The production organization includes such separate components as the organization primary and secondary production, labor organization and motivation systems, organization of innovative activity and control, organization of the quality

system for food industry enterprises. All of them, combined into a single system, ensures the efficiency and competitiveness of enterprises in the industry's domestic and foreign markets. The main purpose of production in the market conditions is to provide the consumer with the products he needs(services) within certain terms, with compliance in quality requirements and with minimal costs for the manufacturer. The economic result of the enterprise,its financial condition and future development depend on how many rationally organized production, whether it meets modern requirements such as optimality, flexibility, mobility, high culture, environmental friendliness, competitiveness, etc.

Equipment and technology for manufacturing products and providing services have to develop dynamically, taking into account changes both in the external and in internal business environment.

The more complex the product is designed and manufactured, the greater the number of raw materials, semi-finished products, equipment, tools, energy, transport, production and storage facilities used for its production. This should involve production personnels of various qualifications and specializations, which should within the limits of authority, expediently and highly efficiently unite, organize subordinate components.The main historical periods of the development of the science of production organization are given in the table 1.1.

Table 1.1 - The main historical periods of development of the science of manufacturing organization

Time of occurrence	Concepts and their main methodical contribution to theory and practice	Author
1	2	3
1776	Division of labor	A. Smith
1770	Factory code: strict schedule, system fines for deviating from it	R. Arkwright
1790	Interchangeable parts of products	E. Whitney
1911	Principles of scientific management: selection and study of elements of operations; timing; rationing of labor; accounting; CONTROL; labor stimulation	F. Taylor
1911	Study of labor movements. Occurrence in industrial psychology	Frank and Lillian Gilbreth
1912	Work schedule chart showing actual and expected performance indicators	H. Gantt
1913	Assembly conveyor line. current organization of production, differentiation and standardization of production elements	G. Ford
1915	Mathematical model of inventory management. Determination of economically feasible size batch order	F. harris
1920s	Construction of production processes in time, Modeling graphs of details by operations, formulas of calculation of production cycle	K. Adams
1930	Investigation of labor motivation	E. Mayo
1930s	Selective Verification Methods and Statistical Tables for quality control	U. Shuhart, X. Dodge X. Roming
1940s	Interdisciplinary approaches to complex systemic problems: a simplex method and linear programming	D. Danzig
1940s	Methods of group processing of parts that contributed to automation and distribution highly effective group current lines in mass and small -scale production	S. Mitrofanov

Continuation of the Table 1.1

1	2	3
1940s 50-60s of the twentieth century.	Micro Elemental Labor Normalization (MTM) Operations Research Methods: Modeling production activity, queue theory, theory of decision making, mathematical programming, network planning methods (PERT and CPM)	H. Maynard,V. Ioffe A large number of researchers
60s and 70s 20th century	Wide use of computer equipment: procurement schedules, inventory management, forecasting, project management, material requirements planning (MRP)	Manufacturing companies, researchers and users
1980s	Modeling production strategies as a tool competitive struggle	Harvard Business School researchers
1980s	Concepts of quality and production flexibility, competition based on the time factor: JIT(just in time), Kanban, TQC (comprehensive quality control) and automation production	T. Ono, U. Deming, D. Yuran and groups of researchers
1990s	The concept of comprehensive quality management. Introduction of international standards ISO 9000, quality function deployment, compatible design, functional and cost analysis, continuous improvement model	International organization standardization
1990s	Modeling of updating business processes and radical changes.	M. Hammer consulting firm
Beginning of the 21st century	Environmental management. System introduction international standards ISO 14000 with the aim reduction of environmental pollution	International organization standardization

As the data of the table 1.1, scientific concepts of production organization has undergone long stages of development. Contrary to traditional, planned and administrative approaches, where the organization of production was regarded as a generalized concept in industry from the standpoint of specialization, cooperation and concentration, in "strengthening" the use of its restructuring for the manufacture of other types of products in case of change in demand; optimal formation that operates

with the least cost; Highly organized production with cultural traditions, which is capable of producing competitive products "exactly on time" and together to ensure the stable financial condition of the enterprise.

In market conditions of activity for managers and specialists of enterprises is important to:

a) have a complete and clear idea of the state of its production;

b) objectively evaluate the current situation;

c) imagine real prospects, develop a strategy for further development, as well as identify high organizational skills, using all opportunities to achieve the goals.

Each company has its own production characteristics that determine the specific complex tasks for its organization, such as the design and development of new goods, the supply of raw materials, the use of labor and equipment, the improvement of the assortment and quality of products, transport, storage and service in the process of operation. These tasks are vital to the success of the company and its ability to compete in the market.

The wide range of tasks in the production organization are solved in the company by the technology used. Technology refers to the application of scientific knowledge for practical purposes, and it encompasses a wide range of methods, production variants, and functions. The main aim of technology is to improve the efficiency of production by developing new machines, tools, and devices, and by streamlining work processes. Other important factors that technology must take into account include the qualifications of personnel, the availability of materials and resources, and the time required to produce each product. It is the technology that determines what and how, and what means of production are necessary to convert the object of work into a product with the right properties. For example, if a new product needs to be created, the technology will determine what machines are needed and how they should be used to create the product.

Production organization entails coordinating and optimizing the time and space of all material and labor elements of production to achieve the greatest result with the lowest costs within the specified time.

The production organisation is designed to solve the following main tasks:

- developing specialisation in certain areas, improving production organisation, rapidly changing production to meet the demand for different types of products, ensuring a smooth and steady production process, improving the organisation of labour processes and production in terms of both location and time;

- to have a range of machines that is appropriate for the size of the company, to have production capacity that is proportional to the range of machines, to have a workforce that is specialized in the most optimal way, to reconstruct and re-equip production;

- instrumental and energy maintenance of production, normalization of resource costs, choice of optimal security systems, forms of organization of units and their interaction with the external environment, as well as other necessary measures;

- optimization of equipment operating modes, rationalization of repair and preventive work methods, identification of causes of simple breakdowns and their elimination;

- determination of the level of production incompleteness, material resources and finished products, as well as the organization of their transport and storage;

- the organization of supplying the enterprise with raw materials, materials in the event of a reduction of their stocks and inventories of finished products.

- the creation and development of new products and technology, as well as the formation of quality and ensuring the competitiveness of products.

The tasks of production organization can also be attributed to the following:

- ensuring that the production process runs smoothly and without interruption;

- organizing labor and production more efficiently in terms of both space and time;

- a shorter production cycle results in a reduction of the duration of the production cycle;

- the creation of logistics systems that are efficient and effective;

- uninterrupted provision of raw materials, materials;

- The optimization of the use of raw materials and materials to reduce waste.

The term 'production organization' encompasses all components of the production system, as well as all aspects of its production and economic activity.

This includes:

- the organization of the work done by the company's employees as a process of establishing and improving the methods and conditions of the work processes, in order to improve efficiency and productivity.

The organization of production processes in time and space can be seen as a process of functional, spatial and temporary combination and communication of material and personal production factors.

- The organization of streaming production methods as a process of connecting workplaces on the site through different groups of equipment in order to complete a cycle of processing parts or harvesting products.

- The organization of technical quality control of products is a process that determines the quality of products produced in the company. This allows for the competitiveness of products as well as saving social work.

- The organization of technical normalization of labor is a way to figure out how much it costs to produce a production unit, or how much work can be done in a certain amount of time.

- The organization and planning of the creation and development of new technology and new technology products.

- The organization of management as a process of creating and improving systems and methods of management and operation.

The purpose of a production organization is to determine the specific values of the parameters of the technological process, by analyzing different options and choosing the most efficient option according to the purpose and conditions of production. In other words, how best to use the subject and tools, as well as the work itself, to transform the object of work into a product with the necessary properties, using the least amount of labor and resources. There are a few reasons that can explain why the load of equipment is incomplete and why machines are not being used to their fullest potential over time. Firstly, the structure of the machine selection

is inconsistent. Secondly, the production capacity of the company's workshops is disproportionate. Therefore, the tasks of production organization are to improve the range, to determine the optimal specialization of enterprises, production capacity, reconstruction and technical re-equipment of production, as well as to manage and control the production process.

The functions of production organization also include the determination of the specific values of the parameters of the technological process based on the analysis of possible options and the choice of the most effective of them according to the purpose and production conditions. This enables employees to be more efficient and productive in the workplace. For example, you can optimize the loading of equipment by considering certain restrictions, such as the number of resources available. You can also choose the most productive equipment by taking into account its quantitative and qualitative characteristics. Furthermore, you need to take into account the qualifications of personnel and economic criteria for production efficiency. The main task of the production organization, then, is to try and minimize the labor costs and production means by transforming the object of work into a product with the necessary properties.

For each situation, the production company provides reasoning for why the measures they took were effective. In order to improve production organization, a variety of measures are needed, such as increasing equipment productivity or reducing complexity, improving product quality or reducing raw materials costs. Production efficiency is determined by how well the company uses all of its resources to produce the desired output. The key to successful production organization is the effective interconnection of the various production elements, as well as the selection of methods and conditions of use which are most closely aligned with the desired outcome of the production process.

1.2 Theoretical foundations of rational organization of production processes

The rational organization of production is to integrate the whole set of heterogeneous components that implement the production process into a coherent and highly efficient production system, all elements of which are carefully "fit" under each other in all aspects of their functioning.The organization of production is intended to ensure optimization of production processes. The production process is a set of interconnected actions of people, means of labor and nature required for the manufacture of products. Production processes are divided into interrelated basic, auxiliary and service processes. The main processes are technological processes that result in changes in geometric forms, sizes and physicochemical properties of products. Auxiliary processes are processes that provide uninterrupted course of the main processes (manufacturing and repair of tools; repair of equipment; ensuring production of electricity, heat, steam, water, compressed air, etc.). Serving processes are processes related to maintenance of basic and auxiliary processes that ensure their normal course. These include preservation of products, warehouses, intra -plant transport, technical control, etc. Graphically, the structure of the production process is presented in Fig. 1.1.

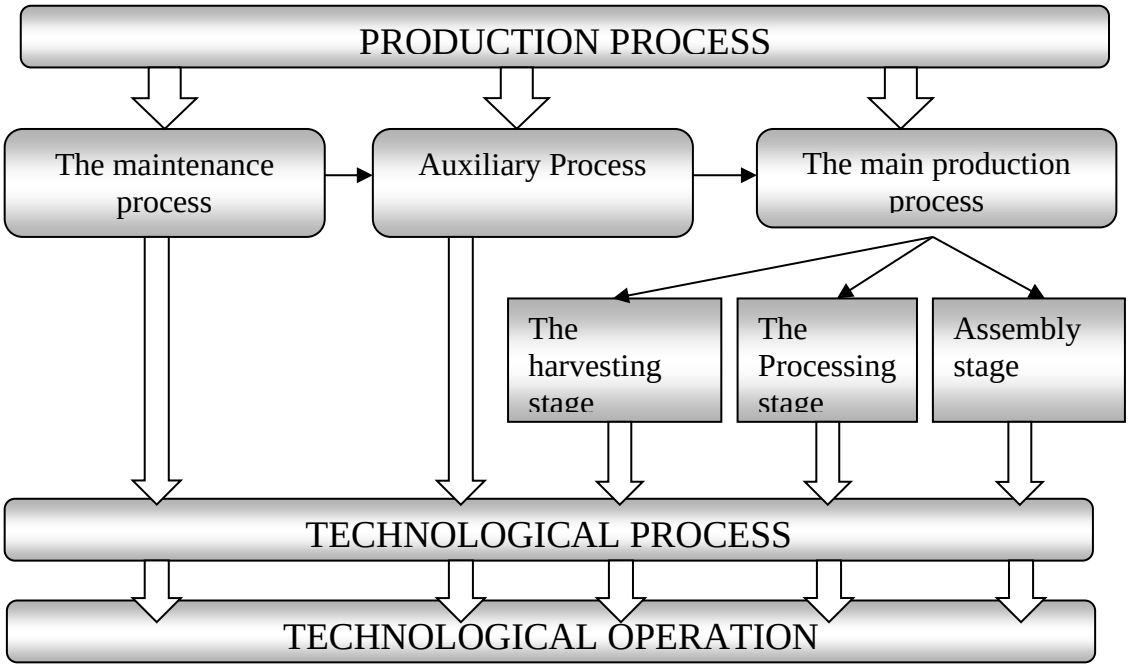


Figure 1.1 - The structure of the production process

When designing and organizing the production process, certain principles should be followed. The basic principles of rational organization of production processes include:

1. The principle of specialization means limiting the variety of elements of the production process, first of all the reduction of the product nomenclature, which is made on each section of the enterprise, as well as varieties of production operations performed in workplaces.

Specialization - the process of dividing the production process into components and fixing for each unit of production of a particular product - subject specialization, or a certain operation - technological specialization. Subject specialization involves the implementation of the technological process in one unit of the enterprise. This unit concentrates a variety of equipment for the manufacture of a separate product.

Its Advantages: formed in a closed cycle, simplified planning and accounting, reduces the duration of the production cycle by reducing the time of transport operations.

Disadvantages: the level of use of production capacity is reduced, the production structure becomes less flexible. Increasing the variety of production, specialization simplifies its organization, creates preconditions for its automation, which improves the use of enterprise resources, improves the quality of products, and reduces its cost.

The level of intra -factory specialization depends significantly on the constructive, technological, organizational unification. Compliance with the principle of specialization significantly influences the implementation of other principles of rational organization of the production process.

2. The principle of proportionality requires the reconciliation of all parts of the production process, the entire interconnected system of machines and units. Proportionality is achieved when the aggregate productivity of technologically associated units of production is proportional to the volume of work performed.

Violation of this principle leads to the emergence of "narrow places" or incomplete loading Their complexity in different units, etc., the intensification of the

proportions is a natural result of the development of production and its functioning in the dynamic environment. They should be provided and systematically minimized.

3. The principle of parallelism involves the simultaneous execution of individual operations and processes. In addition to this principle is especially important in the manufacture of complex products that are composed of many parts, units, nodes, consistent production, which would take a long time. The parallelism is achieved by rational dismemberment of products into components, combining the time of performing various operations on them, and simultaneous production of various products. The parallel performance of work in the workplace is ensured by multi -instrumental processing of workpieces, the combination of the time of execution of basic and auxiliary operations.

4. The principle of directness means that the objects of work in the process of processing should move in the shortest way at all stages and operations of the production process, without counter movements. Auxiliary production, services, warehouses, in turn keep as close as possible to the units they serve.

5. The principle of rhythm is that the work of all units of the enterprise and production should be carried out at a certain rhythm, systematic repetition. With this principle, at the same intervals, they produce the same or uniform, the amount of production evenly increases, providing uniform loading of workplaces. Rhythmic work makes it possible to use the production capacity of the enterprise and its units as fully as possible.

6. The principle of flexibility means that the production process is to adapt promptly to the change of organizational and technical conditions associated with the transition to the manufacture of other products or with its modification. The flexibility of the production process makes it possible to master the new products in the short term and with less costs. The value of the principle of flexibility is especially increased under the accelerated rates of scientific and technological progress, when production objects are often changing. Flexible production quickly adapts to changing the market conjuncture, which increases its competitiveness. The flexibility of the production process is achieved by the universalization of tools,

automation and processing tools, the introduction of machine tools from the CPC, and flexible production systems.

7. The principle of stability is that the production system is capable of stability to perform its functions within the permissible deviations and resist dysfunctional influences. This is achieved by the creation of technical and organizational mechanisms of self-regulation and stabilization. Stabilization organizational systems include the systems of operational planning and regulation of production, planned and core repair of equipment, reserve reserves and a number of other measures.

8. Continuity. This principle requires that breaks between adjacent technological operations are minimal or completely eliminated. This principle is mostly implemented in continuous production. In the interruption, it is impossible to completely eliminate breaks. Progressive methods of operational production management should be used to reduce breaks.

The basic principles of rational organization of production processes are shown in Fig. 1.2.

Figure 1.2 - Basic principles of rational organization of production processes

The organization of the production process in time and space is also based on the following principles: differentiation (of labor), concentration (of workers and equipment in one place), and integration (of workers and technology), optimality (of resources), electronization (of the workplace), and standardization (of work processes).

In this particular instance, the principle of differentiation would involve the division of the production process into a number of separate technological processes, operations, transitions and movements. Excessive differentiation in the workforce can lead to higher levels of fatigue due to the monotony and high intensity of the production process. The principle of differentiation is especially important when using high-performance equipment, such as CNC machines, processing centers, and robots, in order to integrate production processes seamlessly. As technology advances, operations become more complex and are performed with more sophisticated equipment.

The principle of optimality states that, given certain constraints, all production processes should be carried out in the most efficient way possible, using the least amount of labor and resources. The most efficient or ideal way to do something is typically determined by the law of time saving.

The principle of electronization involves the widespread use of CNCs based on the use of microprocessor technology, which enables the creation of fundamentally new machines that combine high productivity with the requirements of flexibility of production processes. This enables a high degree of flexibility and customizability in manufacturing. With the help of industrial and computer-based artificial intelligence, you can now complete the most difficult tasks in production, rather than humans.

The principle of standardization provides widespread use in the creation and development of new technologies and new technologies of standardization, unification, typing and normalization, which allows to avoid unjustified diversity in materials, equipment, technological processes and dramatically reduce the duration of the cycle of creation and development of new technologies. This allows for a greater efficiency and productivity in the creation of new technologies.

We believe that the list of these principles can be attributed to the principle of effective control over the course of production processes. This would allow for better regulation and management of these processes.

When designing a production process or production system, it is necessary to take into account these principles in order to make the most efficient use of them. The principles of rational organization of the production process are closely interconnected, and they complement each other while being put into practice. When designing the production process and its organization, one must take into account these principles, but there are also optimal organizational and technical solutions that can be chosen based on economic efficiency.

These principles of rational organization of production processes are an important factor in improving the efficiency of the management system, which is so important and appropriate in the real conditions of management of a certain system of indicators that characterize production processes.

The effectiveness of an organization's production process depends on the type of production organization. It is a set of basic features that determine the organizational and technological characteristics of the production process, such as the number of workers needed, the type of equipment required, and the amount of space needed.

The efficiency and eventual outcome of production depends on the specific forms, methods of preparation, planning, accounting and control. The three primary organizational types of production are single, serial and mass production. The main feature that characterizes production of a particular production type is the essence of its specialization. This means that each production type has a unique focus that sets it apart from other types of production.

The main characteristic of single production is that it is carried out by individual orders or in very small quantities, without repeating orders. The serial type of production involves making products in batches or series that are repeated at regular intervals. Each series is made up of a number of eponymous products which

are all similar in design and the same size which simultaneously run into production (production of lamps, masts for transmission lines, agricultural tools).

Small, average and large -scale production are used. The type of production has a decisive impact on the efficiency of the company's resources. The most effective production method is mass production, which allows for the selection of progressive starting materials and workpieces, high-performance equipment and methods of organizing production processes, and the reduction of the cost of manufactured products. In order to meet the high standards for quality raw materials, we need to do additional processing to bring it up to the required characteristics.

Innovative tasks in the field of production organization can be solved at enterprises at the expense of:

- developing technologies to help preserve products through the use of new and innovative equipment and methods of control;

- the development of new technologies for the deep resource-saving complex processing of agricultural products, based on the use of the latest physicochemical, biotechnological and other progressive methods of processing in processing industries;

- the development of methodological and technological aspects of the design of food products of a new generation of high nutritional and biological value is important for ordinary, preventive, therapeutic and rehabilitation nutrition of different population groups.

A significant challenge to developing a new, innovative business model in the food industry is the lack of production of modern equipment by domestic machine-building companies. This is because companies in the food industry that are based domestically now own more than 90% of the active, expensive equipment required.

1.3 Scientific provisions on the organization of production processes in enterprise

Since the time when work arose as a conscious human activity, aimed at creating material and spiritual goods, it has accumulated significant experience in the

organization of production processes. As a result of the analysis the possibility of this experience arises on the basis of the assets of social practice formulate a number of provisions, give relevant scientific explanations, as well as to establish certain regularities, which are accompanied by the development of the organization production The theory of production is interconnected with the development of production relations and productive forces.

In general, the theory of production organization is based on the following provisions:

1. The production process is a functioning set that includes physical human actions, use of means of labor, objects of labor, organization of labor processes in order to establish the production of a certain product, which is directed to meet specific consumer needs.

2. All elements of the technological process are interconnected.

3. Elements of production are in a certain qualitative ratio among themselves, they must be consistent with the final result obtained during production.

4. Subjects of work, means of work, employees must be in a certain quantitative ratio, which depends on the volume of production, and as well as time constraints.

5. The production process involves a certain spatial relationship between its elements that are minimally necessary to ensure their normal use.

6. The production process takes place within certain time limits. Each operation, stages must take place in a clearly defined period of time.

Therefore, the production process is such a process, during the implementation of which people, being in certain industrial relations and for this tool and objects of work, ensure the creation of goods necessary for society and services that have production and personal consumption.

Industrial production is a complex process in which transformation of materials, semi-finished products, raw materials, etc. is carried out by objects of labor into finished products, which are intended to satisfy the needs of individual consumers, as well as the market in general.

The structure of production process elements is shown in fig. 1.3.

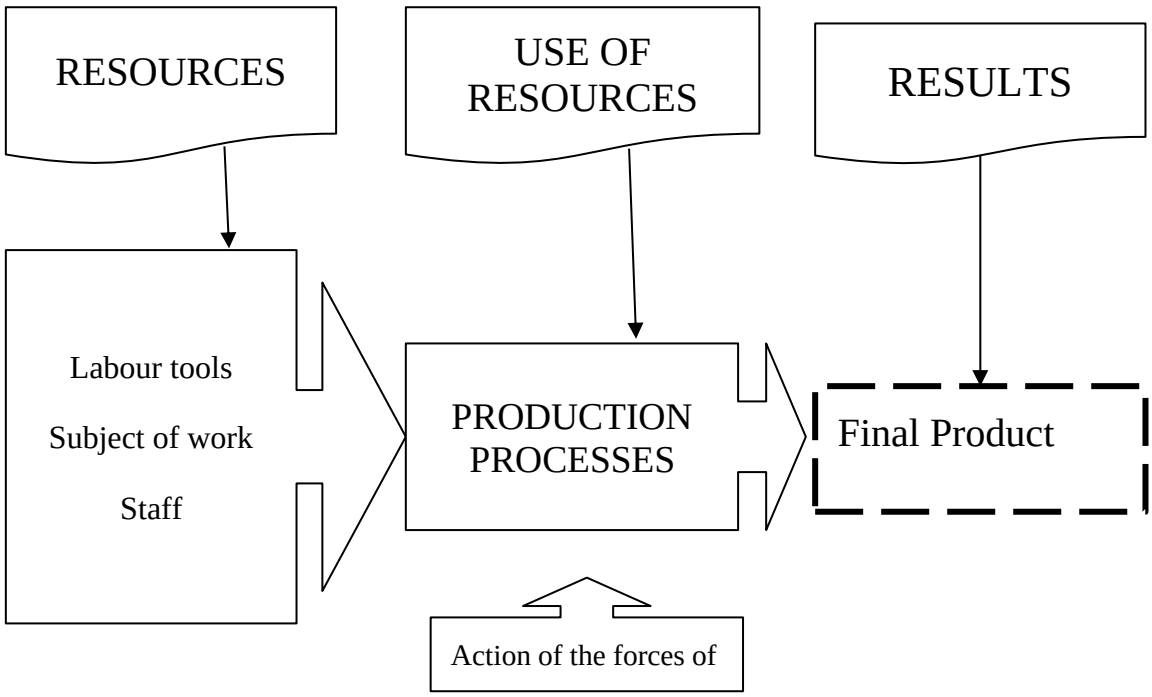


Figure 1.3 - Scheme of elements of the production process

Production processes are divided into such types as main, auxiliary, service processes.

The main ones are those technological processes that lead to changes in forms, dimensions, physical and chemical characteristics of products.

Auxiliary are the processes that ensure the continuity of the main processes, for example, providing production with electricity, steam, heat or water, making tools, repairing equipment, etc.).Maintenance processes are related to the main maintenance as well as auxiliary processes. They include warehouse operations, operations regarding preservation of products, implementation of intra-plant transportation, etc.

The technological process includes a set of sequentially performed processes

subject of labor of technological actions called operations. The operation is understood as such a part of the technological process, which is carried out on one and the same workplace and involves the performance of special actions that take place over the subject of work or a group of subjects subject to processing.

The production process covers the components of technological processes that have their own turn, and are divided into separate phases.

The phase structure of technological processes is shown in fig. 1.4.

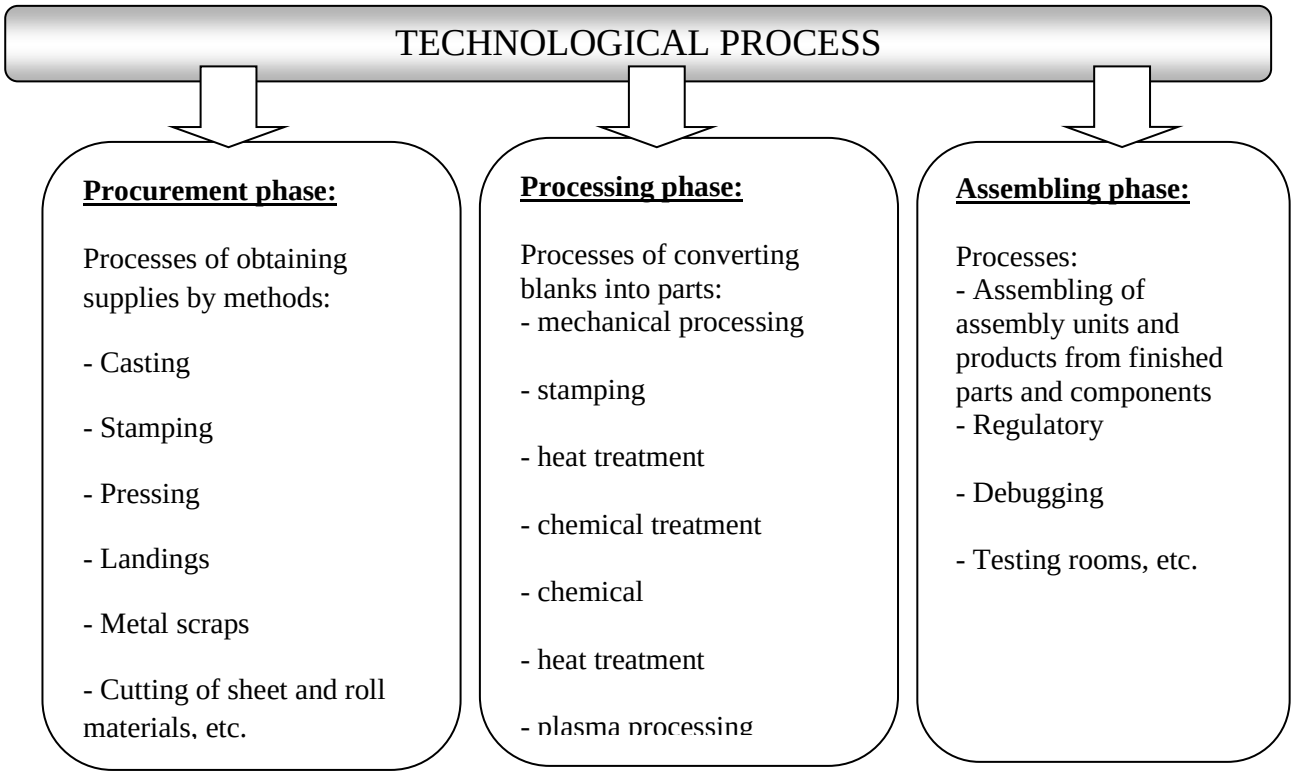


Figure 1.4 - The phase structure of technological processes

The phases acts as a set of works, the performance of which is a marked completion of a certain part, which is a component of the technological process, and after it upon completion, a certain subject of work is transferred from a qualitative one state to another. In particular, technological processes are divided in mechanical engineering into three main phases, such as: procurement; processing; foldable

The type of production is a combination of organizational, economic, and technical factors features that comprehensively characterize the organization's activity and the technical level of the enterprise, which is determined by the degree of its specialization, as well as the stability and complexity of the release of a certain product range,volumes and repeatability of production and existing production scales.

The type of production is selected taking into account the following factors:

- nomenclature of manufactured products;
- production volume;
- the degree of constancy of the company's product range;
- the nature of loading, which characterizes workplaces.

Depending on the level of concentration and specialization, distinguish three types of production: single, serial and mass.

The characteristics of the specified types of production can be seen in the Appendix A.

The type of production of an individual enterprise depends on the type of production that has a leading workshop, and the type of production of the workshop depends on the characteristics of the precinct where the most important operations are performed. It determines certain features of its organization, it affects the economic indicators of the enterprise, determines the cost structure of products, the level of production equipment, etc.

CHAPTER 2
ANALYSIS OF MANUFACTURING MANAGEMENT AT THE "NOVATSIA SERVICE"

2.1 General characteristics of the investigated enterprise

PE "Novatsia Service" was founded in 2003. This enterprise was created with the aim of saturating the market with high-quality services in the field of trade and service of electrical goods. The subject of the company's activity is the organizational and methodical supply of the market with the latest technologies, the practical implementation of works related to the introduction of the latest technologies and the provision of other services in the field of information technologies.

PE "Novatsia Service" is located at the address: Ternopil, ave. Stepana Bandera, 38. The main activity of this enterprise is repair and maintenance of office equipment, electrical installation works and wholesale trade. The company conducts its non-cash settlement operations through PrivatBank.

The activity of the enterprise is a system of economic interrelationships related to the circulation of resources, formation, use of funds, control over production.

The main areas of activity of PE "Novatsia service" include:

- carrying out various trade operations, including the sale of office equipment and office equipment: personal computers, various peripheral devices (printers, scanners, modems, displays), copying and duplicating equipment, video equipment, office furniture, office supplies, equipment and goods for offices;
- servicing, repair of office equipment and office equipment, related products;
- export, import of equipment and discs for information reading systems;
- sale of spare parts, consumables for the specified equipment and software for computers;
- performance of copying works.

The main technical and economic indicators of the activity of the branch of PP "Novatsia Service" are given in table 2.1.

Table 2.1 – The main technical and economic indicators of the activity of PE "Novatsia Service"

Indicators	2019	2020	2021	Deviation of 2021 from 2020	
				absolute, +/–	relative %
1. Net income from product sales,thousand hryvnias	647.9	661.2	843.2	182.0	27.5
2. Cost of sold products, thousand UAH	528.0	559.4	691.0	131.6	23.5
3. Gross profit (loss), thousand UAH	119.8	101.8	152.2	50.4	49.5
4. Net profit, thousand hryvnias	98.4	73.2	120.4	47.2	64.5
5. Average population, people	22	21	27	6	28.5
6. Wage fund, thousand UAH	171.6	174.3	267.6	93.3	53.5
7. Average monthly salary of one employee, thousand UAH	7.8	8.3	9.9	1.6	19.4
8. Accounts receivable, thousand UAH	56.2	71.7	96.3	24.6	43.8
9. Accounts payable, thousand UAH.	21.3	29.2	73.5	44.3	51.7
10. Equity	169.0	182.0	251.0	69.0	37.9
11. Amount of assets	217.0	228.0	299.0	74.0	32.5

Analyzing the data in Table 2.1, it can be indicated that the volume of sales of the main products in 2021 compared to 2020 increased by UAH 182,000, or by 27.5%, which positively characterizes the enterprise's work. The increase in gross profit in the amount of 50.4 thousand UAH or 49.5% in 2021 is also a positive point.

Accordingly, the number of employees increased by 6 people during the last researched period. From the data in the table, it can be seen that the average monthly salary of employees increased by 1.6 thousand UAH or by 19.4%, which, accordingly, along with the increase in the number of employees, led to an increase in the wage fund by 93.3 thousand UAH or by 53.5%. During 2019-2021, there was a significant excess of payables over receivables, while ideally they should balance.

A positive phenomenon for the company in 2021 was the growth of equity capital and the total amount of assets.

In modern market conditions of business, the main factor for an enterprise engaged in the production of its own products or providing services is sales. At the same time, enterprises or individuals interested in the products of this enterprise come to the fore. Here, attention should be paid to the needs of potential buyers or reliable partners who have been working with this company for more than one year. These needs need to be analyzed, receiving relevant operational information.

One of the main problems affecting the company's activities is the ambiguous tax policy, which restrains the production process. The company's activities are financed mainly from the profits received from the production of products and the provision of services. In the future, the company plans to create a customer service department and introduce new types of products and services. If we consider the organizational structure of PE "Novatsia Service" PE, it can be noted that, in general, it corresponds to the structure of typical enterprises, as for PE "Novatsia Service".

Organizational structure PE "Novatsia Service" shown in fig. 2.1.

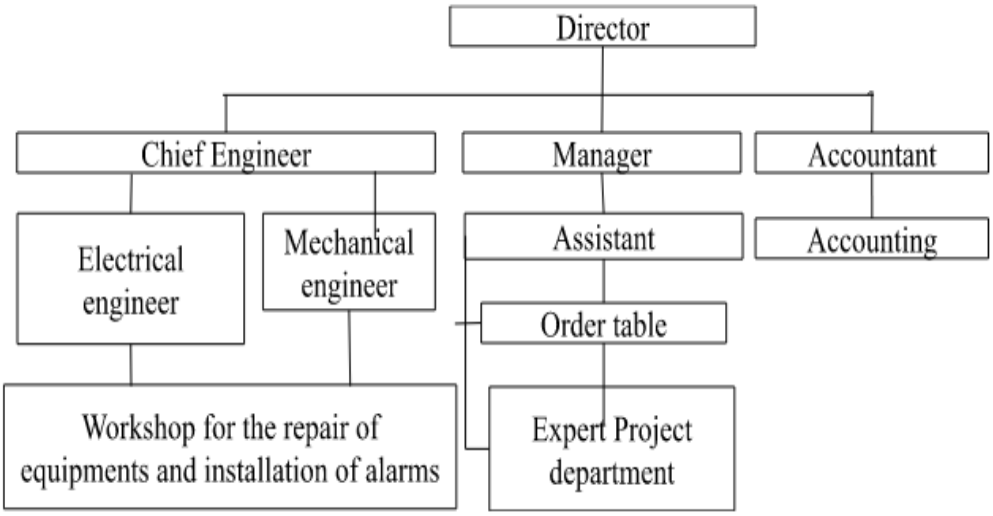


Figure 2.1 – Organizational structure PE "Novatsia Service"

The general management of the PE "Novatsia Service" is carried out by the director of the enterprise, to whom the chief accountant, chief engineer and responsible manager are subordinate. There are two electronics engineers reporting to the chief engineer, who ensure the work of the production and repair department. As for the production site, the production of the company's main products takes place here, namely assembly, testing and connection of alarm systems.

The repair station mainly repairs household electronics. The main functions of a responsible manager include working with customers, product sales and advertising.

In global and domestic accounting and analytical practice, a system of indicators characterizing the financial stability of the enterprise has been developed. Using the analysis of financial ratios, it is possible to identify the strong and weak positions of the finances of various enterprises and firms. Managers use this data to control the activities of "Novatsia Service" PE in order to prevent financial deterioration and bankruptcy.

The financial stability of the enterprise is one of the most important characteristics of the financial condition of PE "Novatsia Service". It is related to the level of dependence on creditors and is characterized by the ratio of owned and borrowed funds.

It is also important that ratio analysis provides a better understanding of the relationship between the balance sheet and the income statement. Banks to a large extent build their credit policy on the basis of the analysis of the relevant coefficients of the financial condition. Financial experts use them to compare the relative merits of different businesses. Analyzing the financial stability of the enterprise, certain conclusions can be drawn depending on the purpose for which this analysis is carried out:

- the owners of the enterprise (shareholders, investors and other persons who contributed to the authorized capital) prefer a reasonable increase in the share of borrowed funds;

- creditors (suppliers of raw materials, banks providing short-term loans), on the contrary, prefer enterprises with a high share of equity capital.

Therefore, the analysis of financial stability makes it possible to assess the extent to which the enterprise is ready to repay its debts and to answer the question of how independent it is from external sources of financing, whether the level of this independence is increasing or decreasing, whether the state of the assets and liabilities of the enterprise corresponds to the tasks of its financial and economic activity.

The equity concentration ratio is calculated as the ratio of equity capital to the total amount of business funds (balance sheet currency). This ratio characterizes the share of the owners of the enterprise in the total amount of funds advanced for its activities. The higher the value of this indicator, the more the company is financially stable, stable and independent from external creditors. In addition to this indicator, there are coefficients of the concentration of attracted (loan) capital - their sum should be equal to 1 (or 100%). For PE "Novatsia Service", the value of the equity concentration ratio is as follows:

Kk 2019= 169.0 / 217.0 = 0.78;

Kk 2020 = 182.0 / 228.0 = 0.80;

Kk 2021 = 251.0 / 299.0 = 0.84.

When analyzing this indicator, it can be seen that it has increased over the last year, which is a positive moment for the company. After analyzing the indicators of the equity concentration ratio of "Novatsia Service" PE, it can be concluded that this indicator has changed for the better over the past year, namely its value has increased from 0.80 in 2020 to 0.84 in 2021. Let's display the corresponding dynamics of changes in the national capital and the currency of the balance using Figure 2.2.

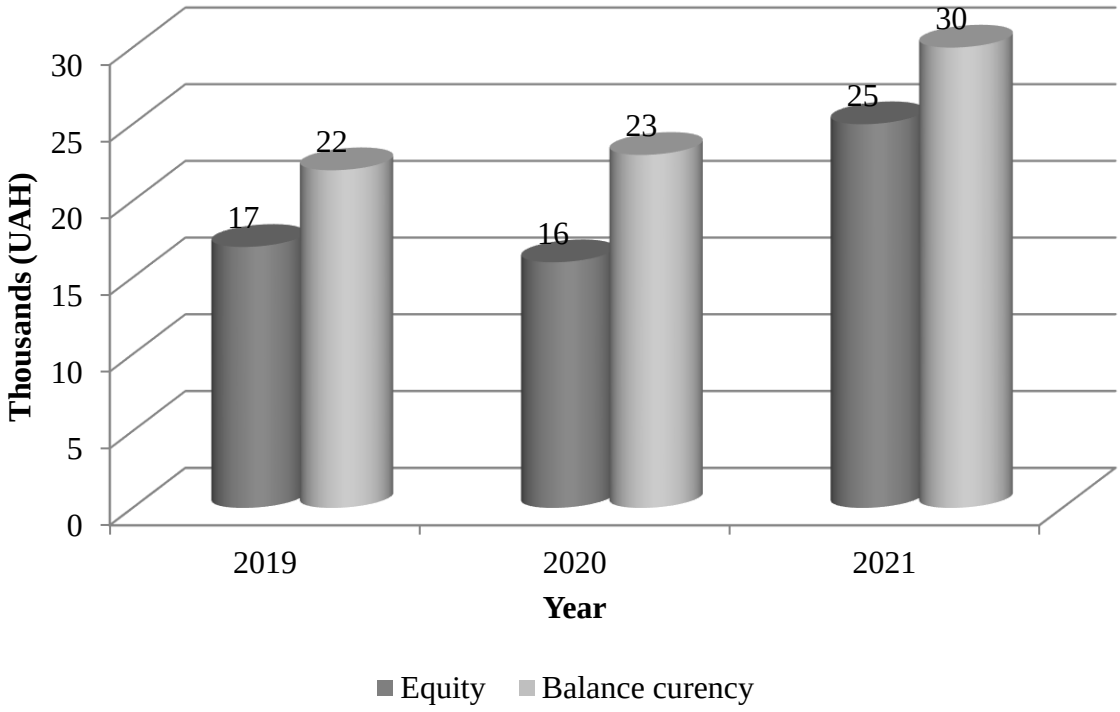


Figure 2.2 - Dynamics of the equity capital of "Novatsia Service" PE and the value of the currency of the balance sheet

When analyzing the figures shown in fig. 2.1 of the indicators shows that over the last year, equity and balance sheet totals have increased, which is positive for the company.

Regarding the level of attraction of borrowed funds, there are different opinions in foreign practice. The most common is the following: the share of equity must be at least 0.6 (60%). Creditors are more willing to invest in a company with a high share of equity capital, as it is more likely to repay its debts with its own funds.

The calculations showed that in our case this ratio significantly exceeded the recommended values, and this positively characterizes his financial condition.

To calculate the coefficient of financial dependence, the currency of the balance sheet is divided by equity (summary of section 1 of liabilities).

For "Novatsia Service" PE, the coefficient of financial dependence is equal to:

Kfz 2019 = 21.70 / 16.90 = 1.28

Kfz 2020= 22.80 / 18.20 = 1.25

Kfz 2021 = 29.90 / 25.10 = 1.19

Let's graphically display the results of the calculations (Fig. 2.3).

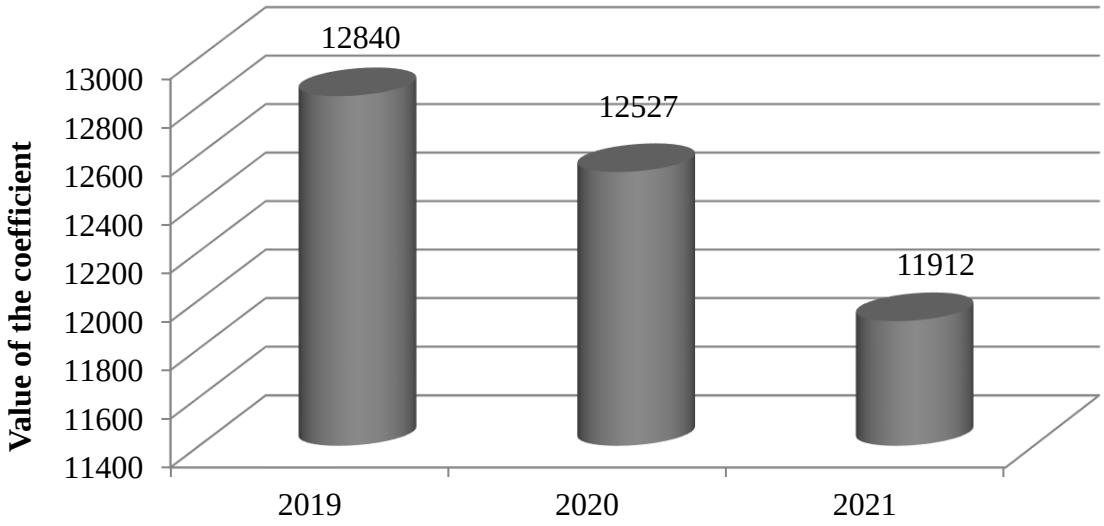


Figure 2.3- Dynamics of changes in the financial dependence ratio of the enterprise in 2019-2021

This ratio is the inverse of the equity concentration ratio. The dynamic growth of this indicator means an increase in the share of borrowed funds in the financing of the enterprise.

A high value of the ratio of the concentration of the capital involved can indicate a high degree of trust in the enterprise on the part of banks, and therefore also about financial reliability. However, if the value of this ratio increases strongly, it weakens its financial independence, causes higher dependence on loan sources of financing, and makes its financial condition less stable. After the analysis of the

financial stability of the enterprise, the obtained indicators are summarized in table 2.2.

Table 2.2 - Indicators of financial sustainability of the PE "Novatsia Service"

№ з/п	Indicators Coefficients	Norm	2019	2020	Deviation		2021 рік	Deviation	
					absolute, +/-	relative, %		absolute, +/-	relative, %
1.	Concentrations own capital (autonomy, independence)	More than 0.6	0.78	0.80	0.02	2.50	0.84	0.04	5.16
2	Financial independence	More than 1	1.28	1.25	-0.03	-2.44	1.19	-0.06	-4.91
3.	Maneuvering own capital	0.4...0.6	1.24	1.23	-0.02	-1.39	1.19	-0.04	-3.10
4.	Security index own reversible funds	More than 0.1	0.77	0.79	0.02	2.89	0.84	0.05	5.70

So, after the calculations, we can conclude that during 2019-2021 there was an improvement in the indicators of financial stability of PE "Novatsia Service".

2.2 Analysis of the efficiency of the use of fixed assets of PE "Novatsia Service"

We will conduct an analysis on the effectiveness of the use of fixed assets of "Novatsia Service" PE. The main indicator for the analysis of the efficiency of the use of the company's fixed assets is the return on assets. This indicator is defined as the ratio of income (revenues from the sale of goods or services) to the cost of fixed assets.

The calculation of the total capital return of the enterprise and the capital return of the active part of fixed assets is used.

Fund capacity is an inverse indicator of fund return, it reflects how many monetary units are accounted for by one monetary unit, which is invested in the main

funds. The analysis of capital intensity and return on capital of the main funds of PE "Novatsia Service" in 2019-2020 is shown in the table. 2.3.

Table 2.3 - Indicators of capital intensity and return on capital of the main funds of PE "Novatsia Service" PE in 2019-2020

Name indicator	2019	2020	Deviation		2021	Deviation	
			absolute, +/-	relative, %		absolute, +/-	relative, %
Income (revenue) from the sale of products (goods, works,services), thousand hryvnias	228.0	209.4	-18.6	-0.1	239.0	29.6	0.1
The cost of the main production assets, thousand UAH	115.0	122.5	7.5	6.5	163.7	41.2	33.6
The cost of active parts of the main production funds, thousand hryvnias	74.1	79.4	5.3	7.2	92.7	13.3	16.8
Return on capital of the main productive assets	1.98	1.71	-0.27	-0.14	1.46	-0.25	-14.6
Fund return of the active part fixed assets	3.08	2.63	-0.45	14.6	2.58	-0.05	-1.9
Fund capacity	0.51	0.58	0.07	13.7	0.68	0.10	17.2
Capital capacity of the active part of fixed assets	0.32	0.38	0.06	18.75	0.39	0.01	2.6

After conducting an analysis of the efficiency of the use of fixed assets of PE "Novatsia Service", we can say that in 2021 the return on capital of the fixed assets of the enterprise decreased by 0.25, or by 14.6% compared to the previous year, while the return on capital of the active part of fixed assets fell by 0.05, or by 1.9%. Having analyzed the capital intensity of the company's fixed assets, we draw conclusions about the growth of this indicator in 2021 compared to the previous period. The capital capacity of the active part of fixed assets increased.

Also, the indicator of the profitability of the use of fixed assets is calculated as the ratio of the amount of net profit to the cost of fixed assets. The calculation results are shown in the table. 2.4.

Table 2.4 - The calculation results Profitability of the main production assets Profitability of the active part of fixed assets

Name of indicator	2019	2020	Deviation		2021 рік	Deviation	
			Absolute, +/-	Relative, %		Absolute, +/-	Relative, %
Net profit	98.4	73.2	-25.2	-25.6	120.4	47.2	64.5
The cost of the main production assets, thousand UAH.	115.0	122.5	7.5	6.5	163.7	41.2	33.6
The cost of active parts of the main production assets, thousand UAH.	74.1	79.4	5.3	7.2	92.7	13.3	16.8
Profitability of the main production assets	85.6	59.8	-25.8	-30.1	73.5	-13.7	22.9
Profitability of the active part of fixed assets.	132.8	92.2	-40.6	-30.6	129.9	37.7	40.9

From the data in the table. 2,4, we draw a conclusion about the decrease in profitability indicators in 2020, but in 2021, the level of profitability of fixed assets increased significantly, and this is positive for the company. However, throughout the period of 2019-2020, the value of profitability was positive, which indicates the profitability of the use of the main production assets of "Novatsia Service" PE.

Graphically, the dynamics of the profitability of the main production assets of the enterprise and their active part are shown in Fig. 2.4.

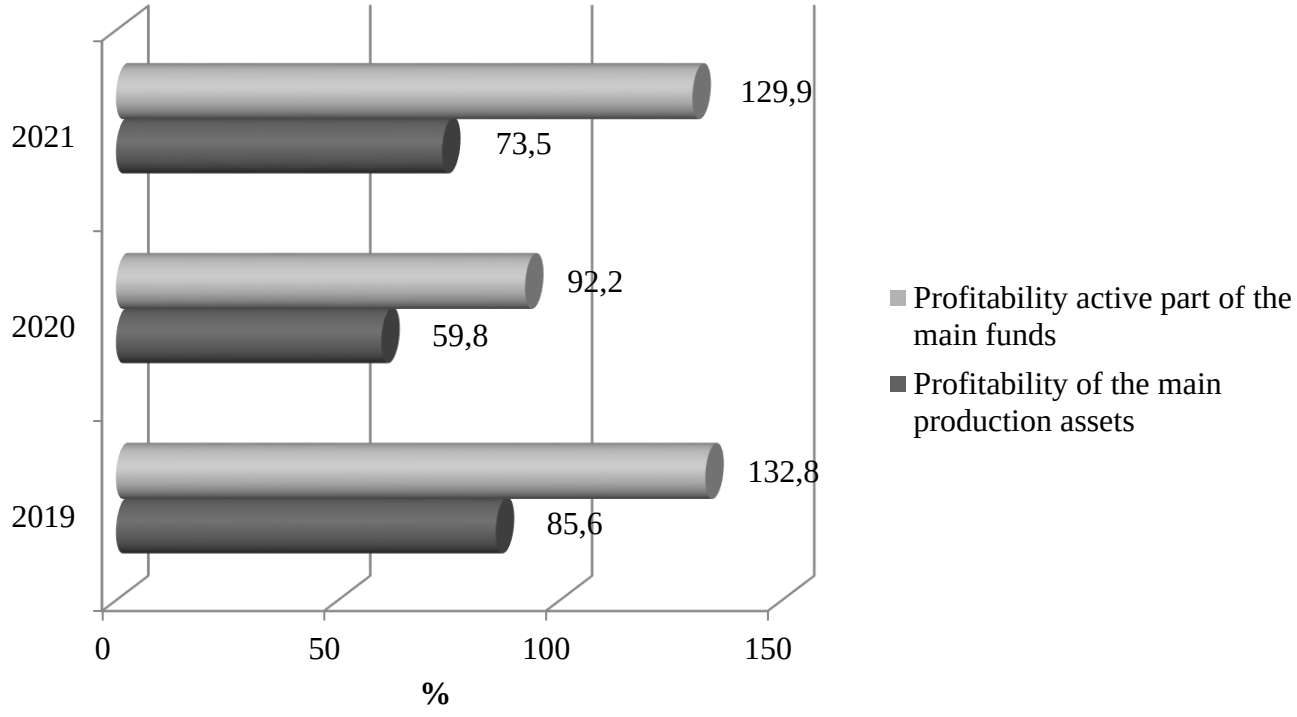


Figure 2.4 – Dynamics of the profitability of the production assets of PE "Novatsia Service"

From fig. 2.4 we see that the profitability indicators of fixed assets reached their highest level in 2019. After the decrease in the values of this indicator in 2020, in 2021 they increased again.

2.3 Analysis of the use of the working time fund of the company's employees.

One of the main factors affecting labor productivity is the use of working time. When studying the working time of the enterprise, it is also advisable to analyze the use of the working time fund per employee. The results of this analysis are shown in table 2.5.

Table 2.5 - Analysis of the working time fund per employee of PE "Novatsia Service"

Indicators	2019	2020	Deviation		2021	Deviation	
			Absolute, +/-	Relative, %		Absolute, +/-	Relative, %
Calendar number of days	365	365	0.00	0.00	365	0.00	0.00
Including holidays and weekends	114	114	0.00	0.00	114	0.00	0.00
Nominal number of working days	251	251	0.00	0.00	251	0.00	0.00
Absences to work	38.13	37.47	-0.66	-1.73	40.33	2.86	7.63
Including:							
Annual holidays (main and additional)	21	21	0.00	0.00	21	0.00	0.00
- Temporary incapacity	13.40	12.74	-0.66	-4.92	14.28	1.54	12.09
- Educational holidays and other no-shows provided for legislation	0.44	1.32	0.88	200.68	0.88	-0.44	-33.13
- Absences with the permission of the administration	3.30	2.42	-0.88	-26.67	4.17	1.75	72.61
- Actual number of working days	213	214	1.00	0.47	211	-3.00	-1.40
- Average duration of working shift, hours	6.82	6.81	-0.01	-0.1	6.8	-0.01	-0.8
-Working time fund, hours	1451.9	1457.2	5.3	0.3	1434.3	-22.9	-1.5

Having analyzed the fund of working time per employee, we can say that the average length of working time is influenced by many factors. In the last year of the studied period, the real average working day per employee is 6.80 hours, which usually requires more optimal use of time.

As you know, the condition for the rational use of the company's personnel is the economical and efficient use of working time. The full use of the working potential of the staff can be estimated by the number of days and hours worked by one employee during the analyzed period, as well as the degree of use of the working time fund. We will conduct an appropriate analysis, and present the results in Table 2.6.

Table 2.6 - Analysis of the use of the working time fund of employees PP "Novatsia Service" by the amount of time worked

Indicators	2019	2020	Deviation		2021	Deviation	
			absolute, +/-	relative, %		absolute, +/-	relative, %
Average registered number employees	22	21	-1	-4.55	27	6	28.57
Number of time worked by one employee:							
– Days	213	214	1	0,47	211	-3	-1,40
– Hours	1451.9	1457.2	5.28	0.36	1434.4	-22.87	-1.57
Average duration of the work days, hours	6.82	6.81	-0.01	-0.11	6.80	-0.01	-0.17
Working duration fund, hours	31943	30602	-1341	-4.20	38728	8126	26.55

Having conducted an analysis of the use of the labor potential of the employees of "Novatsia Service" PE, we can say that in 2021, on average, one employee of the enterprise actually worked 211 working days.

The working time fund (FRH) depends on the number of employees (K), the number of days worked by one employee on average per year (D), and the average duration of the working day (T) and is calculated according to the following formula:

$$FRH = K \times D \times T. \quad (2.1)$$

As you know, the amount of time actually worked by employees is affected by many factors, so for a better understanding of the situation at the enterprise, it is necessary to analyze each of the factors in detail. For this, we will use the method of absolute differences.

So, let's analyze the impact of the main factors on the change in the amount of time worked in 2020 relative to 2019.

- the impact of a change in the number of employees on the working time fund:

$$\Delta F\ (K)_{2020} = (K_{2020} - K2_{019}) \times D_{2019} \times T_{2019} =$$
$$= (21 - 22) \times 213 \times 6.82 = -1451.95 \text{ hours.}$$

– the effect of a change in the average number of days worked by one employee on the working time fund:

$$\Delta F\ (D)_{2020} = (D_{2020} - D_{2019}) \times K_{2020} \times T_{2019} =$$
$$= (214 - 213) \times 21 \times 6.82 = 143.15 \text{ hours.}$$

– the impact of a change in the average length of the working day on the working time fund:

$$\Delta F\ (T)_{2020} = (T_{2020} - T_{2019}) \times D_{2020} \times K_{2020} =$$
$$= (6.81 - 6.82) \times 214 \times 21 = -32.20 \text{ hours.}$$

Summarizing the obtained results, we get the total change in the working time fund in 2020 relative to 2019:

-1452 + 14 - 32 = -1341 hours.

As can be seen from the conducted analysis, the change in the value of the working time fund in 2020 relative to 2019 was influenced by:

- positive: change in the average number of days worked by one employee;

- negative: change in the number of employees, change in the average length of the working day.

Using the method of absolute differences, we will also analyze the influence of the main factors on the change in the amount of time actually worked in 2015 compared to 2014.

– impact on the working time fund of changes in the number of employees:

$$\Delta F(K)_{2021} = (K_{2021} - K_{2020}) \times D_{2020} \times T_{2020} =$$
$$= (27 - 21) \times 214 \times 6.81 = 8743.43 \text{ hours.}$$

– the impact on the working time fund of changes in the number of days worked by one employee on average:

$$\Delta FRChD\ (D)_{2021} = (D_{2021} – D_{2020}) \times K_{2021} \times T_{2020} =$$
$$= (211 - 214) \times 27 \times 6.81 = -551.57 \text{ hours.}$$

– impact on the working time fund, changes in the average length of the working day:

$$\Delta F(T)\ 2021 = (T2021 – T2020) \times D2021 \times K2021 =$$
$$= (6.80 - 6.81) \times 211 \times 27 = -65.86 \text{ hours.}$$

Summarizing the obtained results, we will get the total change in the working time fund in 2021 relative to 2020:

$$8743 + (-552) + (-66) = 8126 \text{ hours.}$$

So, the conducted analysis proved that the change in the size of the working time fund in 2021 relative to 2020 was influenced by:

- positive: change in the number of employees;

- negative: change in the average number of days worked by one employee, change in the average length of the working day.

The effective use of equipment, machines, and mechanisms depends on the enterprise's provision of the necessary labor resources, their rational use, and a high level of labor productivity, and as a result, an increase in the volume of production, and its cost price, profit, and a number of other economic indicators. In summary, we will summarize all indicators of the influence of relevant factors on the time worked by employees of the "Novatsia Service" PE in a summary table (Table 2.7).

Table 2.7 - The influence of the main factors on the fund of working time of PP "Novatsia - Service", hours

Name	The magnitude of the impact	
	2019-2020	2020-2021
Factors:		
- change in the number of employees	-1451.95	8743.43
- change in the average number days worked by one employee	143.15	-551.57
-change in the duration of an average working day	-32.20	-65.86
The total annual working time fund	-1341	8126

From the table 2.7, we can see that in 2020, compared to the previous year, the working time fund of PE "Novatsia Service" decreased by 1,341 hours, and in 2021, it increased by 8,126 hours compared to 2019. As can be seen from the analysis of working time for 2021, the nominal working time fund changed by 10,542 compared to the previous year, that is, we see an increase in this indicator by 28.57%. Mainly, the nominal working time fund is affected by the change in the number of employees.

As for the working time fund, here we are talking about the influence of many factors (vacations, absenteeism, etc.). That is, for PE "Novatsia Service" in 2021, the working time fund amounted to 38,728 hours. and that, in turn, is 26.55% more than in 2020. Having analyzed the fund of working time per employee, it can be said that the average length of working time is influenced by many factors.

In the last year of the studied period, the real average working day per employee is 6.80 hours, which, of course, needs some improvement in order to make optimal use of time.

After conducting an analysis of the use of the working potential of the employees of "Novatsia Service" PE, we can say that in 2021, on average, one employee of the enterprise actually worked 211 working days. As can be seen from the analysis, the change in the value of the working time fund in 2020 relative to 2019 was influenced by:

- positive: change in the average number of days worked by one employee;

- negative: change in the number of employees, change in the average length of the working day.

CHAPTER 3
DIRECTIONS FOR IMPROVING MANUFACTURING MANAGEMENT AT THE PE "NOVATSIA SERVICE"

3.1 Proposals regarding the implementation of repair services for household appliances

In today's economic conditions, expanding the scope of services provided by "Novatsia Service" PE is very important in meeting the needs of consumers. The role of the service sector will steadily grow, as the needs of the population are constantly growing, and their diversity is constantly expanding. Development of the field of household services and improvement of its efficiency in meeting the needs of the population is directly related to innovations.

In order to achieve success and stay ahead of competitors, "Novatsia Service" PE needs to manage services and their quality and assortment.

In order to improve the organization of the activities of the PE "Novatsia Service" we offer home appliance repair services. For this the enterprise should purchase equipment in the amount of UAH 130,000.

The following costs should also be taken into account:

1. Equipment transportation costs (8% of its cost):

130.0 8/100 = 10.4 thousand UAH.

2. Costs for installation work, amounting to 5.5% of cost of equipment:

130.0 x 5.5/100 = 7.2 thousand UAH.

3. Costs for the implementation of commissioning works, which constitute about 4.5% of the equipment cost:

130.0 x 4.5/100 = 5.9 thousand UAH.

4. Unforeseen expenses amounting to 5% of the cost of the equipment:

130.0 x 5.0/100 = 6.5 thousand UAH.

The results of the obtained calculations are presented in the table. 3.1.

Table 3.1 – Calculation of the initial costs of the PE "Novatsia Service" on implementation of household appliance repair services

Type of expenses	Amount, UAH
1. The cost of purchasing the proposed production equipment	130.0
2. Transportation costs	10.4
3. Assembly works	7.2
4. Commissioning works	5.9
5. Unforeseen costs	6.5
Total costs	160,0

As we can see from table 3.1, the total initial costs of the "Novatsia Service" PE for the implementation of household appliance repair services will amount to UAH 160,000.

Data on the projected cost of implementing the provision of home appliance repair services are given in the table. 3.2.

Table 3.2 – Projected current costs of the PP "Novatsia Service" for the introduction of household electrical repair services.

Cost elements	Amount, thousand, UAH.
Raw materials and materials	891.8
Electricity	32.5
Salary expenses	356.7
Deductions for social events	78.5
Depreciation of equipment	32.0
Other expenses	50.4
Total costs	1441.9

Therefore, the total amount of costs for the implementation of household electrical repair services by the company will be equal to UAH 1,441.9 thousand.

Project financial results of PP "Novatsia Service" from the implementation of

the proposed measure is summarized in Table 3.3.

Table 3.3 – Project financial results of PE "Novatsia Service" from the implementation of household electrical repair services, thousand UAH.

Indicators	Years				
	2023	2024	2025	2026	2027
Net income from product sales	1516.8	1516,8	1516,8	1516.8	1516,8
Current costs of production and sales	1441.9	1441.9	1441.9	1441.9	1441.9
Profit from ordinary activities before taxation	74.9	74.9	74.9	74.9	74.0
Income tax from ordinary activities	13.2	13.2	13.2	13.2	13.8
Net profit	61.7	61.7	61.7	61.7	61.7

As we can see from the data in this table, the additional net profit from the use of the proposed equipment for the provision of household electrical repair services will be equal to UAH 61.7 thousand.

The calculation of the amount of the forecasted annual cash flows from this proposal is shown in the table. 3.4.

Table 3.4 - Calculation of the cost of the company's annual cash flows from the provision of household electrical repair services

Indicators	Amount of annual cash flow				
	2023	2024	2025	2026	2027
Additional net profit	61.7	61.7	61.7	61.7	61.7
Depreciation of equipment	32.0	32.0	32.0	32.0	32.0
The total amount of cash flow	93.7	93.7	93.7	93.7	93.7

As can be seen from this table 3.4, the value of the projected annual cash flow of the implementation project of providing services for the repair of household electrical appliances will amount to UAH 93.7 thousand.We will calculate the discounted cash flows from the proposed measure (Table 3.5).

Table 3.5 – Discounted cash flows of PP "Novatsia Service" from the implementation of the provision of services for the repair of household electrical appliances.

Years	Cash flow, UAH	Discount factor/ Coefficient (at 20%)	Discounted cash flow, UAH.
t	$ГП_t=ЧП_t+А_t$	$1/(1+R)^t$	$ГП_t/(1+R)^t$
2016	93.7	0.833	78.1
2017	93.7	0.694	65.0
2018	93.7	0.579	54.2
2019	93.7	0.482	45.2
2020	93.7	0.402	37.7
TOTAL			280.2

To assess the feasibility of investments in the project, we will calculate the net present value (NPV) indicator, which is the difference between the amount of discounted cash flows received from the implementation of this project and the following amount of costs for its implementation:

$$NPV = \sum_{t=1}^{n} \frac{ГП_t}{(1+\partial)^t} - \sum_{t=0}^{n} \frac{L_t}{(1+\partial)^t}, \quad (3.1)$$

where NPV is the amount of net present value, UAH thousand;

GPT - the amount of cash flows in year t that are planned to be received from investments;

L_t - initial investments, thousand hryvnias;

∂ - discount rate, %.

Let's calculate the net present value of the project:

NPV = 280.2 – 160.0 = 120.2 thousand UAH.

So, the net present value of the project for the implementation of the provision of services for the repair of household electrical appliances is UAH 120.2 thousand, which is significantly more than 0, and therefore the project is acceptable.

We will also use the profitability index to evaluate the return on the initial investment invested in the project to replace outdated computer equipment at “Ternopil Gas” PJSC. It belongs to the relative indicators characterizing the efficiency of investments and is calculated as the ratio of the amount of discounted cash flows of the project to the amount of investment costs initially invested in the project:

$$In = \sum_{t=1}^{n} \frac{ГП_t}{(1+\partial)^t} / \sum_{t=0}^{n} \frac{L_t}{(1+\partial)^t}, \qquad (3.2)$$

where *In* is the profitability index;

We will evaluate the return on the initial investment in the project based on the profitability index:

In = 280.2/160.0 = 1.75.

The simple payback period of the project is 1 year 9 months, and the discounted period is 2 years 4 months.

The results of the evaluation of the effectiveness of the implementation at the PE "Novatsia Service" providing services for the repair of household electrical appliances is shown in table 3.6.

Table 3.6 – Indicators of the economic efficiency of the implementation of the "Novatsia Service" PE in providing services for the repair of household electrical appliances.

Indicators of project efficiency	Indicator value
Initial costs of the project, thousands of hryvnias.	160,0
Present Net value, thousands (UAH).	120,2
Profitability index	1,75
Simple payback period (years, months)	1 year 9 months
Discounted payback period (years, months)	2 years and 4 months

As the data in the table shows. 3.6, the net present value of the project is 120.2 thousand UAH, the profitability index is 1.75, the simple payback period is 1 year 9 months, and the discounted payback period is 2 years 4 months, which is acceptable. Taking this into account, PP "Novatsia Service" it is expedient to implement the provision of services for the repair of household electrical appliances.

3.2 Use of a flexible tariff when organizing the payment of employees

When creating an effective incentive system for employees interested in the high

final results of the company's work, it should be important to increase the stimulating role of the tariff salary. In particular, we propose to implement the concept at the company's flexible tariff, the essence of which is that the tariff salary is next to the main task of motivating employees to improve their qualifications, and should take into account the individual results of their work, first of all productivity and quality of products (services).

The size of the labor productivity tariff should be directly proportional to the salary model, according to the concept of a flexible tariff. Yes, there are three different tariffs set for each category of qualification

Depending on how productive the worker is, they can be characterized as

- "low" if they are performing less than 95% of the set norms. If they are meeting the average level of labor intensity, they are considered "normal."

- "high" is defined as when someone does more than 105% of the average or expected performance. as long as it does not exceed the limits set by the standard,

For example, 95-105% of the workers receive the so-called qualification salary, which is in the middle of the rate range.

If production systematically exceeds 105% of the norm, the worker receives a rate of 5% higher than the qualification rate. Conversely, if production is constantly below 95% of the norm, the worker receives a rate 5% lower than the qualification rate.

The tariff is imposed for 3-6 months. After the specified term of her revision and correction, taking into account the increase in labor productivity in the last quarter or six months, she will be able to finish the project. This particular salary system is known as compromise. With a system like this in place, workers are guaranteed a certain income, and this brings them closer in status to other workers, as disputes between them are often the cause of many labor disputes. The new system enables managers to stimulate increased production by controlling wages and combining them with a change in performance.

The salary for this tariff is based on the concept of a flexible tariff, which incentivizes employees to improve their performance through a merit-based assessment system. It is common knowledge that employees with the same qualifications can achieve different results in their workplace due to their unique skills and abilities. In my opinion, these differences in job roles should directly reflect the amount of wages that are earned. In fact, the pay system is designed to divide tariffs based on individual work results as well as some personal characteristics of the worker, such as skills and experience. Proposed flexible tariff rates for workers at PE "Novatsia Servis" shown in Table 3.7.

Table 3.7 - Proposed flexible tariff rates for workers at PE "Novatsia Servis"

Class of workers	Current hourly rates, UAH	Project hourly tariff rates for execution of the plan, UAH			Project daily tariff rates at implementation of the plan, UAH		
		less than 95%	95 - 105%	more 105%	less than 95%	95 - 105%	more 105%
I	44,3	42,2	44,3	46,5	337,6	354,4	372,0
II	48,7	46,4	48,7	51,1	371,2	389,6	408,8
III	53,5	50,9	53,5	56,2	407,2	428,0	449,6
IV	58,9	56,1	58,9	61,8	448,8	471,2	494,4
V	64,8	61,7	64,8	68,0	493,6	518,4	544,0
VI	71,3	67,9	71,3	74,9	543,2	570,4	599,2

Table 3.7 shows the current hourly tariff rates, as well as introduced proposed hourly tariff rates according to the concept of a flexible tariff. The proposed merit evaluation system provides stimulation in the form of an opportunity for workers to prove themselves, deepen their knowledge, and improve their professional skills, which in turn influences the number of services provided.

Merit must be evaluated according to the following indicators:

- quantity of products and volume of work;
- independence in work;
- professional skill and initiative;
- relations with colleagues;
- the need for leadership.

The data in Table 3.7 show that the hourly and daily tariffs of each of the separate categories are branched. The disparity in rates between each type of discharge is 10%. This allows for a more accurate assessment of work results for workers of basic production.

Figure 3.1 shows a graphic representation of the change of hours tariff rates of employees according to the concept of a flexible tariff.

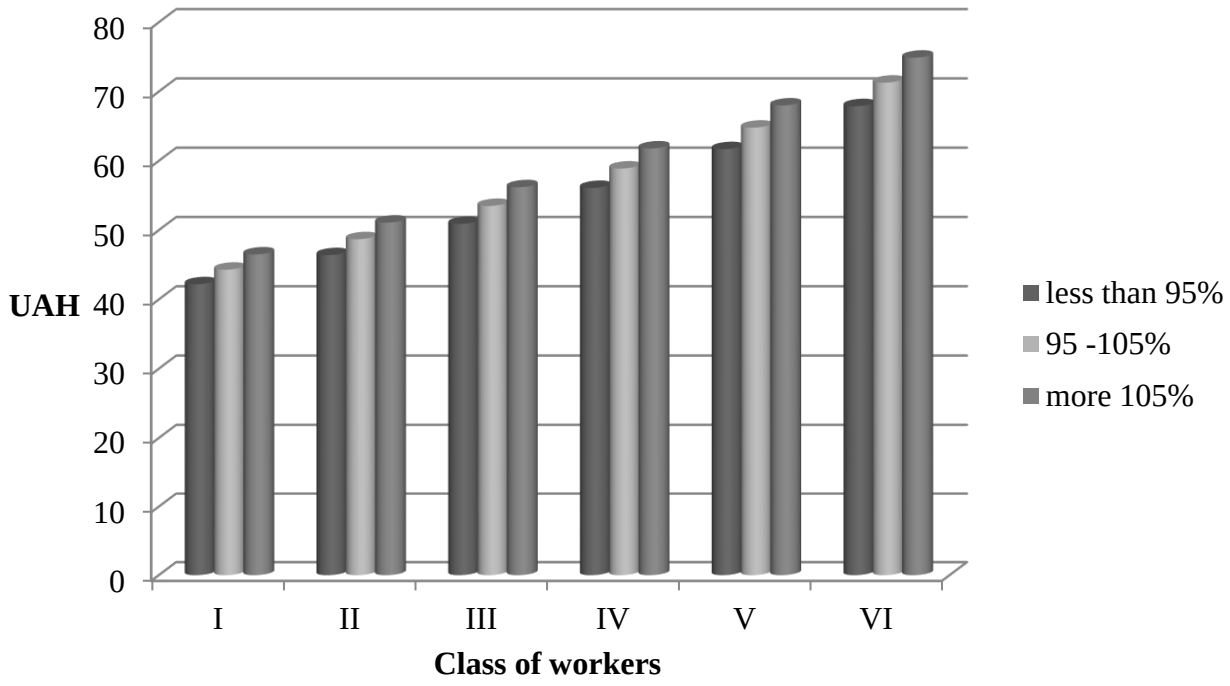


Figure 3.1 – Changes in the hourly tariff rates of PE "Novatsia Servis" according to the proposed concept of a flexible tariff

The data in Figure 3.1 show that the hourly rate grows in proportion to the qualification level, the proportions are preserved stable for each digit separately. The difference between each sub-tariff in each tariff is 5%.

The proposed salary model, which is based on the concept of a flexible tariff, will most likely increase labor productivity due to the additional employee incentives.

If these proposals are enacted, labor productivity will increase as a result of the more effective system of material labor incentives.

3.3 The application of forecasting methods the volumes of services provided by the PE "Novatsia Servis"

The future prospects of the development of the provision of services to the company are predicted by the volume of services, looking at forecasts and analyzing past data on costs, volumes of services. Business forecasting is very important because we can predict and improve business performance. It is also important for PP

"Novatsia-Service" to forecast the amount of costs for the provision of services, since they affect the final financial results of the activity of this firm. Statistics on volume of services and cost of services provided for 10 months 2022 year given in the table 3.8.

Forecast model consists of two variables, one of them are:

- dependent variable *Y* that is volume of services, thousand UAH;
- independent variable *X* that is cost of services provided, thousand UAH.

To find the volume of services forecast you need to use the regression model (1):

$$Y = b_0 + b_1 \cdot X_{1t}, \tag{3.3}$$

where Y – is the predicted value of volume of services, thousand UAH;

X_{1t} – is the predicted value of cost of services provided for the predicted period *t*, thousand UAH;

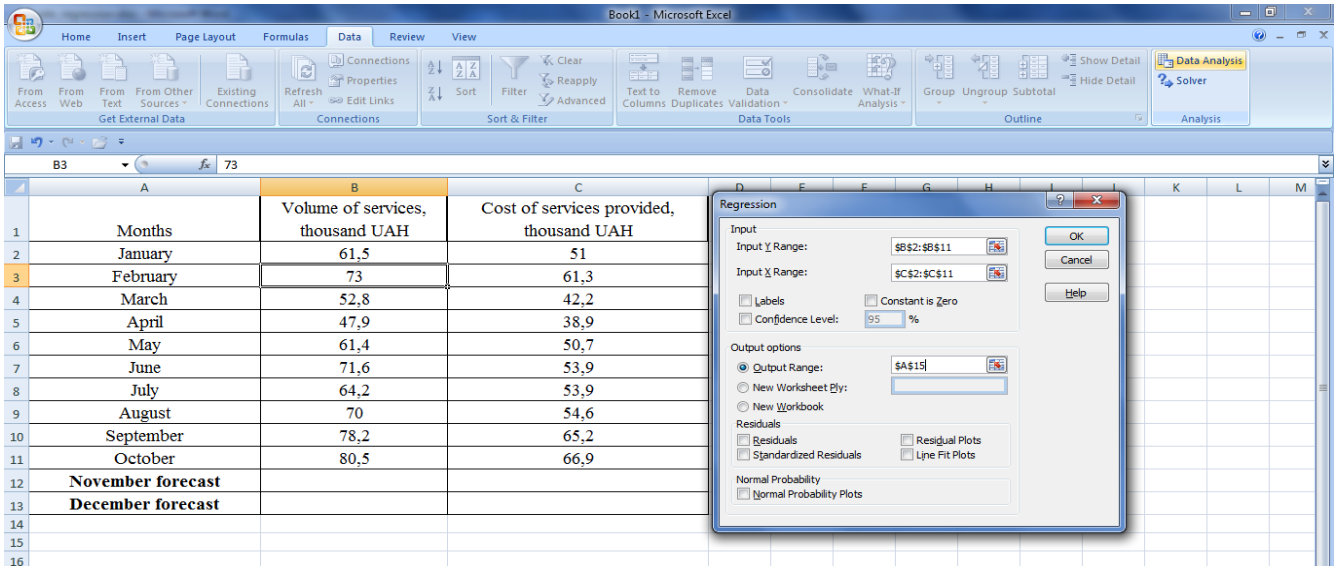
b_0, b_1, – are the regression coefficients.

Table 3.8 – Statistics on volume of services and cost of services provided for 10 months 2022 year

Input data	January	February	March	April	May	June	July	August	September	October
1. Volume of services, thousand UAH	61,5	73,0	52,8	47,9	61,4	71,6	64,2	70,0	78,2	80,5
2. Cost of services provided, thousand UAH	51,0	61,3	42,2	38,9	50,7	57,5	53,9	54,6	65,2	66,9

Calculation of the coefficients b_0, b_1, is long and laborious process. To calculate the quantitative forecast value of the services volume we can use Microsoft

Excel for creating and calculating the regression model. Statistical data on volume of services and cost of services provided for 10 months should be typed in Excel spreadsheet. Using “Data” / “Data Analysis” / “Regression” we get the regression model (Figure 3.2).



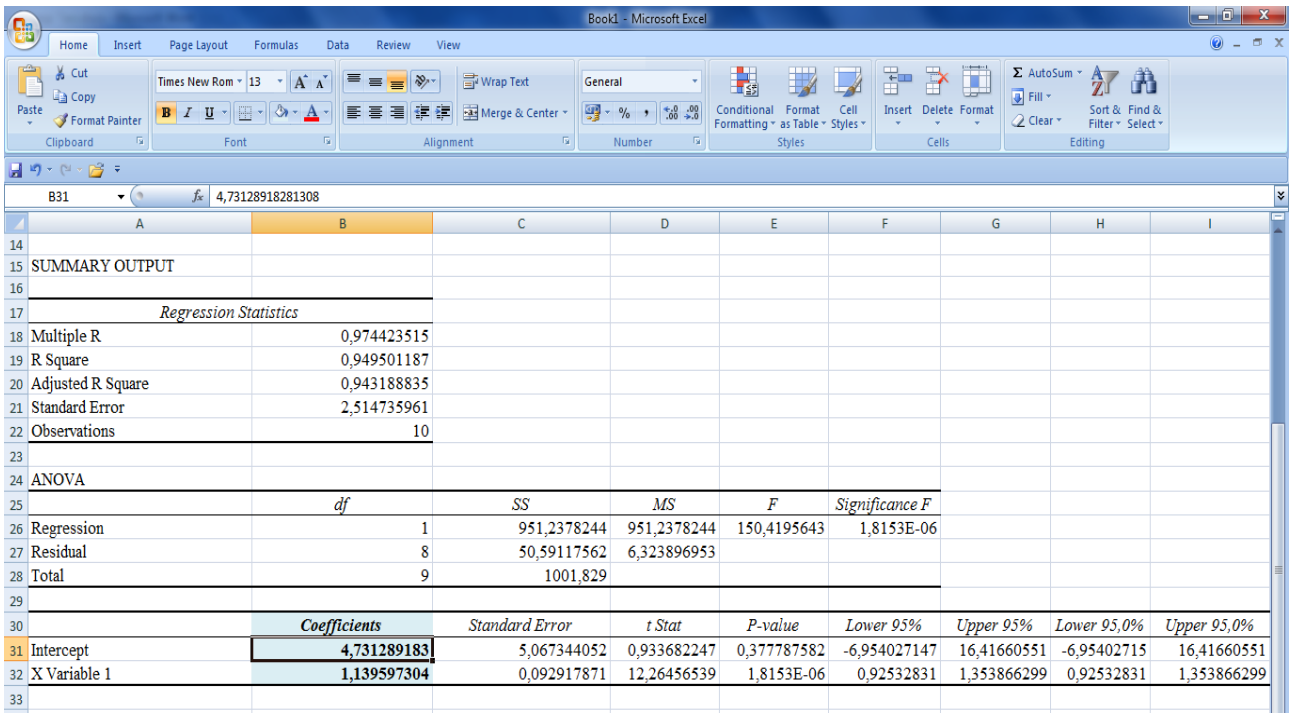
	A	B	C
1	Months	Volume of services, thousand UAH	Cost of services provided, thousand UAH
2	January	61,5	51
3	February	73	61,3
4	March	52,8	42,2
5	April	47,9	38,9
6	May	61,4	50,7
7	June	71,6	53,9
8	July	64,2	53,9
9	August	70	54,6
10	September	78,2	65,2
11	October	80,5	66,9
12	**November forecast**		
13	**December forecast**		

Figure 3.2 – Regression dialog box

The first box is the “Input Y Range”, we have to highlight the data on dependent variable (i.e. cost of services provided). Then we have to fill “Input X Range” by entering the cell reference for the range of data on volume of services. When the confidence Level is 95%, we are of 95% sure that the volume of services forecast will be accurate. To fill “Output range” we have to enter the reference for the cell (A15) of the output table and press OK.

The regression output is shown on Figure 3.3. Figure 3.3 provides with information necessary for the regression model building.

Quantitative values of the coefficients: b_0 is opposite “Intercept” (b_0 = 4,73128); b_1 is opposite “X Variable 1” (b_1 = 1,1395).



Book1 - Microsoft Excel

B31: 4,73128918281308

	A	B	C	D	E	F	G	H	I
14									
15	SUMMARY OUTPUT								
16									
17	*Regression Statistics*								
18	Multiple R	0,974423515							
19	R Square	0,949501187							
20	Adjusted R Square	0,943188835							
21	Standard Error	2,514735961							
22	Observations	10							
23									
24	ANOVA								
25		*df*	*SS*	*MS*	*F*	*Significance F*			
26	Regression	1	951,2378244	951,2378244	150,4195643	1,8153E-06			
27	Residual	8	50,59117562	6,323896953					
28	Total	9	1001,829						
29									
30		***Coefficients***	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
31	Intercept	**4,731289183**	5,067344052	0,933682247	0,377787582	-6,954027147	16,41660551	-6,95402715	16,41660551
32	X Variable 1	**1,139597304**	0,092917871	12,26456539	1,8153E-06	0,92532831	1,353866299	0,92532831	1,353866299
33									

Figure 3.3 – Regression output table

The regression model for predicting services volume (Y) for November and December :

$$Y = 4{,}73128 + 1{,}13959 \cdot X_{1t} . \qquad (3.4)$$

The regression model (2) is used to make the services volume forecast, but the quantitative forecast value using Data Analysis we can not find. We need to make forecast of independent variables and get the predicted value of cost of services provided for November and December.

By looking at statistical data on cost of services provided for 10 months we highlighted the cells with digital data on cost of services provided and selected “Insert” → “Line” → “Line with Markers”, “Trend Type” → “Polynomial” and “Display Equation on chart” (Figure 3.4).

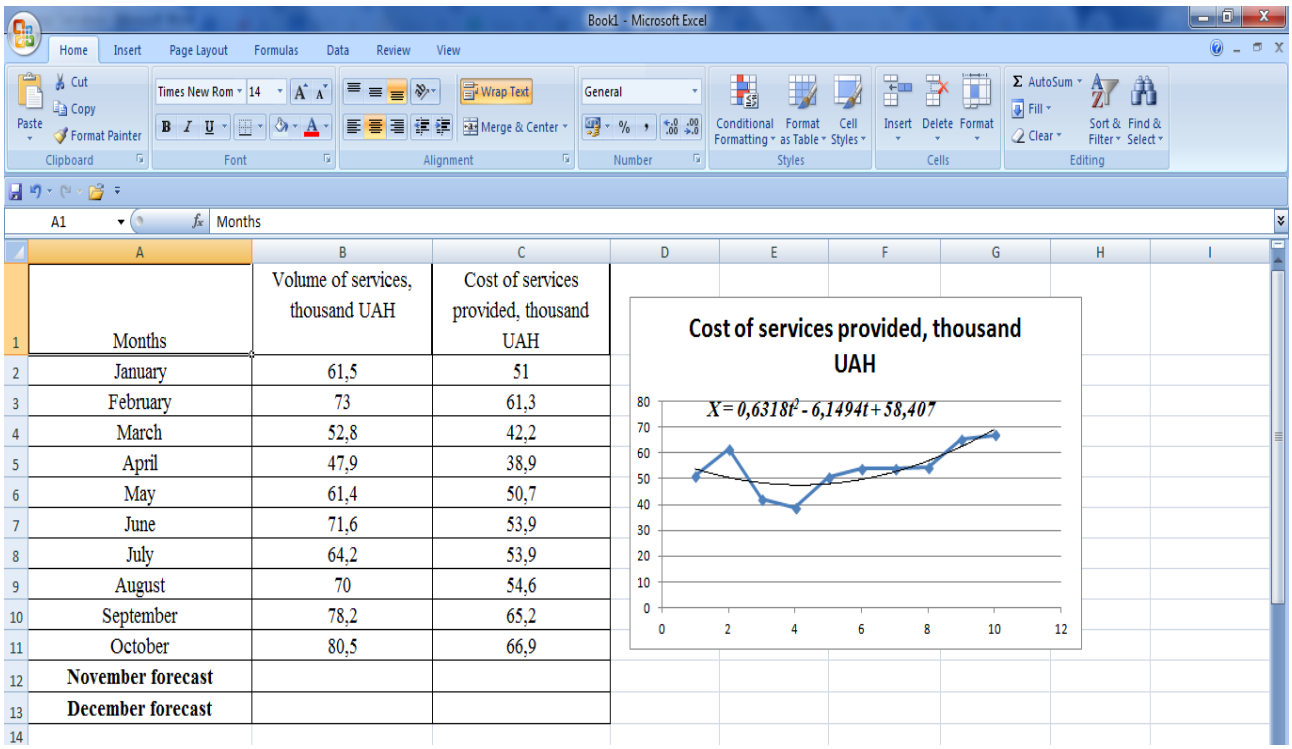


Figure 3.4 – Polynomial equation for cost of services provided prediction

We've got a trend equation that will be used to predict the cost of services provided for November and December:

$$X_{1t}=0,6318*t^2-6,1449*t+58,407.$$

Then, the cost of services provided forecast for November:

$$X_{1t}=0,6318*11^2-6,1449*11+58,407=67,2 \text{ thousand UAH.}$$

The cost of services provided forecast for December:

$$X_{1t}=0,6318*12^2-6,1449*12+58,407=75,6 \text{ thousand UAH.}$$

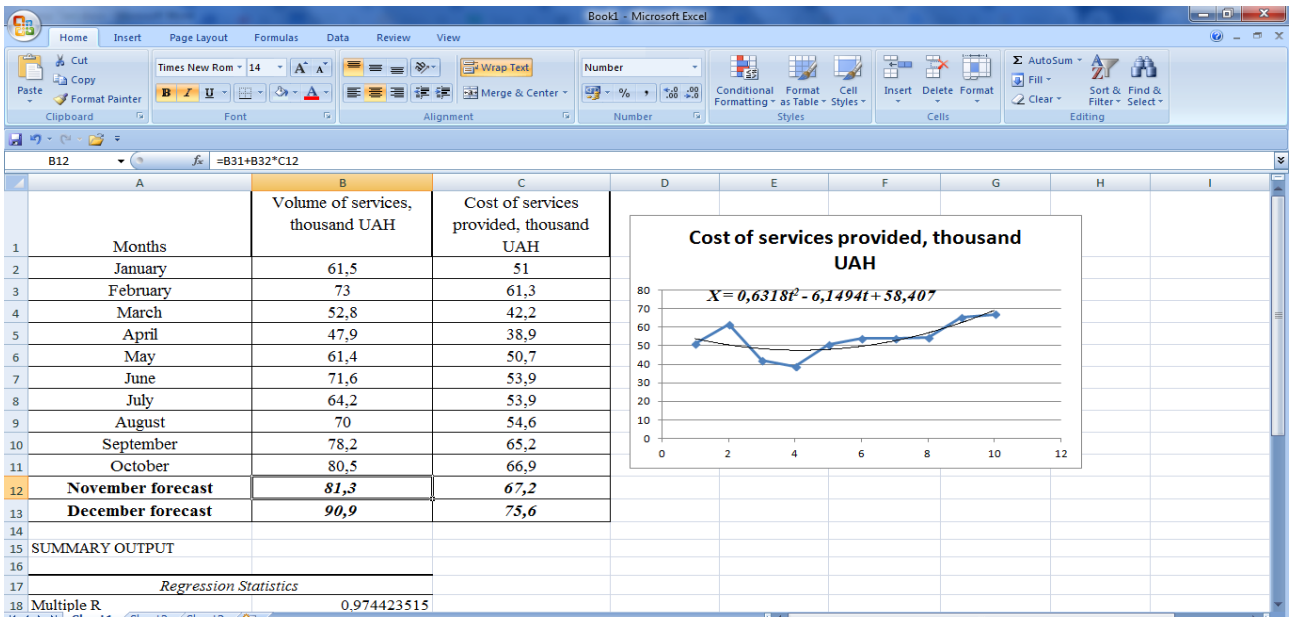
To compute the predicted value of volume of services for November we have to use regression model (formula 2):

$$Y = 4,73128 + 1,13959 \cdot 67,2 = 81,3 \text{ thousand UAH.}$$

To compute the predicted value of volume of services for December we have to use regression model (formula 2):

$$Y = 4,73128 + 1,13959 \cdot 75,6 = 90,9 \text{ thousand UAH.}$$

All computations are done with Microsoft Excel and shown on Figure 3.5.



	A	B	C
1	Months	Volume of services, thousand UAH	Cost of services provided, thousand UAH
2	January	61,5	51
3	February	73	61,3
4	March	52,8	42,2
5	April	47,9	38,9
6	May	61,4	50,7
7	June	71,6	53,9
8	July	64,2	53,9
9	August	70	54,6
10	September	78,2	65,2
11	October	80,5	66,9
12	**November forecast**	***81,3***	***67,2***
13	**December forecast**	***90,9***	***75,6***
14			
15	SUMMARY OUTPUT		
16			
17	*Regression Statistics*		
18	Multiple R	0,974423515	

Figure *3.5* – Computation results

The services volume forecast under influence of cost of services provided for November equal 81,3 thousand UAH and for December equal 90,9 thousand UAH. The use of forecasting helps PP "Novatsia-service" to make rational decisions related to the organization of production at enterprises. It is also used to plan its activities, volumes and structure of service provision.

CHAPTER 4
OCCUPATIONAL HEALTH AND CIVIL SAFETY AT THE ENTERPRISE

4.1 Occupational health at work

They say health is wealth which is true in the fact that when the health of the employees are not held with great importance, it leads to the slowdown of productivity thereby costing the organization in resources, time and even financially.

Occupational health should be very important in the setting up of the work environment/space , making sure there are no threats to the employee's health and also setting up resources and plans to combat in cases where those risks/threats cannot be prevented/avoided. As when such things are not put into consideration it puts the organization in unavoidable legal and financial situations.

Occupational health is about how work affects a person's health and how someone's health affects their work.

Occupational health's main aim is to promote and maintain the health and wellbeing of employees, with the aim of ensuring a positive relationship between an employee's work and health. Having access to specialist occupational health practitioners is key to unlocking the benefits for employees and organizations.

This factsheet outlines the role of occupational health services and the professional groups providing specialist services, from doctors and nurses to physiotherapists and psychologists. It stresses that confidentiality and consent are central to the relationship between occupational health professionals and employees, and it's essential that employers uphold the legal and ethical guidelines surrounding that confidentiality. The factsheet concludes with a look at pre-employment health queries and what is legally permissible.

Businesses/ Organizations must recognise that managing employees' health is just as important as controlling financial and capital resources.

The objectives of occupational health in the workplace are to:

— Develop a healthy workplace culture, contribute to the business' success and assist with compliance requirements.

— Provide early intervention to help prevent workers from being absent for health reasons.

— Help improve opportunities for people to recover from illness while at work.

— Promote individual health and wellbeing and enhance employee wellbeing and engagement.

— Ensure healthy workplaces to protect people from harm.

The protection of health and safety of health workers contributes to improving the productivity, job satisfaction and retention of health workers. It also facilitates the regulatory compliance of organizations with national laws and regulations on occupational health and safety, bearing in mind the specific working conditions and occupational hazards in the sector. Unsafe working conditions resulting in occupational illness, injuries and absenteeism represent a significant financial cost for the organization.

Every Organization should have a policy regarding occupational health of the employees and the steps needed to ensure their ability to recover and get back to work.

When the state of an employee's health could affect their job or when they're affected by their job/work, their employer can request for them to undergo an assessment with an occupational health adviser.

The occupational health adviser is a person who carries out the assessment of employees and reports back to the employer.

This assessment report enables the employer understand what their employee needs inorder to:

— feel better;

— return to work;

— do their job efficiently and adequately;

— avoid anything that could cause further health or absence issues.

The occupational health adviser inquires from the employees about any previous or existing health issues, treatment they're having and any concerns they have about going back to work.

Sometimes the occupational health adviser might need to get more information from the employee's doctor. In this case, the employee should be told the reason and asked to sign a consent form.

The employee has the right to see the doctor's report before it is sent to the occupational health adviser. Whether the employee gets paid for attending occupational health appointments should be written in the organization's policy, so it's a good idea to check. The employee does not have to agree to an occupational health assessment, but it's a good idea as it can help them:

— get any support they might need;

— get back to work quicker.

An occupational health assessment is a useful addition to a doctor's medical report because it's more focused on:

— how the employee does their job;

— how the job affects the employee's health.

The employer should consider the recommendations of both the occupational health and doctor's reports.

If there is any conflicting advice, they should talk with their employee and come to an agreement on the best course of action.

The occupational health adviser will check with the employee first that they can show their report to the employer.

The employer and employee can then plan the best course of action to help the employee back to work.

They might agree that the employee needs:

— a phased return to work, for example reduced working hours or lighter duties

— a referral for an appropriate course of therapy, for example physiotherapy or counseling

— adjustments to their workspace, for example an ergonomic chair

— more time off work.

Depending on the health issue, the employee's progress might need to be assessed again before a firm agreement can be made about their return to work or to full duties. If an employee is unhappy with how occupational health has been used, they should raise the issue with their employer.

It is also the role of the employees to follow the organization’s rules, policies for prevention of work related illnesses or conditions and also their responsibility to utilize every infrastructure or resources made available to combat work related health issues or general health issues, including mentally(mental health) and physically.

Every organization/business should have an occupational health and safety management system which encompasses more than just the health and safety program. It includes health and safety policies, systems, standards, and records, and involves incorporating your health and safety activities and program into your other business processes. Having an effective management system improves your ability to continuously identify hazards and control risks in your workplace.

The Components of an effective Occupational health management system.

The following elements are components of an effective Occupational health management system. The scope and complexity of the system may vary, depending on the size and hazards of the workplace and the nature of the work performed.

1. Management leadership and commitment

Leadership and commitment by senior management provides the vision, establishes policy, sets goals, and provides resources to lead and support the implementation of the occupational management programs and system.

2. Safe work procedures and written instructions

Safe work procedures and practices ensure that everyone in the organization knows their responsibilities and are able to perform their duties adequately and efficiently. There should be safe work procedures on an organizational level, such as how to conduct a risk assessment, as well as on a worker level.

3. Health and safety training and instruction

Everyone in the workplace ─ from senior management to frontline workers ─ needs to understand their responsibilities when it comes to implementing and maintaining a healthy and safe workplace. Senior management should understand their role in establishing policies and continually driving the OHS management system and programs. Employers must ensure that workers are trained, qualified, and competent to perform their tasks. Supervisors must provide adequate instruction and oversight to workers so they can safely perform their work. And workers need to work safely, according to how they were trained.

4. Identifying hazards and managing risk

Managing the risk in your workplace includes identifying hazards, assessing the risks those hazards present, and controlling the risks to prevent your workers from getting injured.

5. Inspection of premises, equipment, workplaces & work practices

Workplace inspections can help you to continually identify hazards and prevent unsafe working conditions from developing.

6. Investigation of incidents

Conducting incident investigations helps identify immediate, and root causes of unsafe conditions. It also identifies ways to prevent similar incidents from happening in the future. The Occupational Health and Safety Regulation has specific requirements for incident investigation documentation and reporting that employers are required to meet.

7. Program administration

Regularly assessing how well your organization is doing when it comes to meeting its health and safety goals is essential to improving your occupational health management system. Maintaining accurate records of your Occupational health management system activities will provide useful information to help you continually improve.

8. Joint health and safety committee & representatives

Joint health and safety committees and health and safety representatives assist the organization by bringing together employers and workers to jointly

identify and resolve health and safety issues in your workplace. They also participate in developing and implementing your Occupational health management system.

9. Occupational health and safety programs

Occupational health and safety programs are an essential part of your OHS management system.

10. System audit

The COR auditor reviews key aspects of your OHS management system to ensure that its quality and effectiveness meet the expectations of the COR program standards and guidelines. This helps maintain the credibility and value of COR certifications.

4.2 Improvement of civil safety of enterprise employees

Civil safety can be defined as a set of actions and measures undertaken, often at a local level, to ensure that citizens of a community are secure from harm, injury, danger or risk.in this case they are actions taken by an enterprise to ensure the safety of its employees and secure them from harm, injury and danger.

It also provides training and assessment services to increase people's health and safety, knowledge and abilities. Every enterprise should take the safety of their workers/ employees serious because the employees are the heart and soul of every organization/enterprise, and when their safety is compromised, they do not work efficiently and they often tend to be absent thereby slowing down the goals of the enterprise or even cousin a financial setback.

In recent years, the economy of enterprises has developed rapidly. Most enterprises focus on economic interests and ignore the safety and health of employees, resulting in an increase in the occupational morbidity rate of employees. Occupational insecurity of corporate employees will reduce the work efficiency of employees. In turn, it will affect the economic development of the enterprise. Paying attention to the safety development of corporate employees is a necessary measure

for corporate economic development. The sustainable environmental strategy of enterprise development can well control the risk factors that endanger the occupation of enterprise employees, and it is conducive to the health and safety development of enterprise employees and enterprises.

The director of the company is responsible for civil safety readiness and organization in a company.

The employee's safety can be improved by setting up a civil safety system to help prevent and manage the risks.

The purpose of the civil safety system:

1. To help the directors, if the extreme situations are imminent or they have already emerged, to avoid them or to incur as less damage as possible.

2. To maintain peace, to preserve the life, possessions of his or his employees and environment.

3.To ensure the optimal use of the company's material resources if extreme situations are impending or they have already emerged.

4. To prepare the employees for hands-on actions, if the extreme situations are impending or they have already emerged.

5. To warn and inform the employees about the impending or emerged extreme situation, possible outcomes, outcome removal means and safety measures.

Though there has been an overall improvement in the workplace where employee health and safety are concerned, hazards continue to pose a major threat.

— Slips and Falls

— Musculoskeletal Disorders

— Falling Objects

— Loud Noises

— Vibrations

Many of these threats can be controlled with appropriate mitigation measures but require a proactive approach to address the risk before it leads to an accident. Therefore, to bring down safety incidents, companies need to establish standard operating procedures related to potential hazards and sensitize employees to the

associated risks. Additionally, the employees should be trained to look out for safety observations and must have a readily available digital tool to report the same to the safety team.

II. An extreme situation is a state, which forms due to the environmental, technical, ecological, social reasons or actions of war and it conditions a quick and huge danger to the human lives or health, possessions, environment or it causes death, injury or material losses.

The reasons of extreme situations:

1. Environmental reasons are clear changes of climate conditions, which cause elemental disasters (a very heavy storm, squall, freezing rain, snow storm, heat wave), mass forests and peat bogs fires, geologically dangerous phenomenon, very dangerous or mass epidemics (humans, animals, plants);

2. Technical reasons are various technological processes' malfunctions, which cause fires, explosions, chemical and radioactive pollutants get into the environment, buildings collapse, various vehicle accidents occur, energetics (electricity, heat, gas, utility's emergencies) and other extreme events specific to industrial objects and communications occur;

3. Ecological reasons are those, which produce the changes in the condition of the land, atmospheric composition and characteristics and in hydrosphere's condition (pollution of the environment's air, water and soil; nuclear accident, pollution with oil products);

4. Social reasons are mass riots and unrests, theft of electronic data or malfunction, taking a person hostage, diversions, acts of terrorism, mass influx of foreigners, as well as actions of war in the territory of Lithuania or a neighbour country;

5. Other extreme event is a high flammability, a dangerous find, the destruction of a cultural object, the disorder of people's health, changes in psychological condition, cases of death due to the contamination, poisoning or physical conditioning.

Enterprises should Enquire, whether property operators in their vicinity do not pose any danger to you or to your employees (e.g., there is a gas station not far from you. You can't be sure of its safety. That's why you have to ensure the safety of your business and your employees).

It is the duty of the management of enterprise to ensure that all employees undergo civil safety trainings and classes to enable them avoid risk, harm and danger. The type of trainings required varies for different business industries/field, civil safety training exercises include fire safety training, First aid training, training in the safe use of equipments, hazards and their control measures, proper handling and working with chemicals,etc.

It is good practice if organizations make a record of their significant findings – the hazards, how people might be harmed by them and what is in place to control the risks. Any record produced should be clear, practical and focused on control measures.

The paperwork produced as part of the risk assessment is intended to assist organizations to communicate and manage the risks in their business. For most this does not need to be a complex exercise – just note the main points down about the significant risks and what was concluded.

Actions for Improvement of employees safety. Arrangements should be established and maintained for preventive and corrective actions resulting from safety management system performance monitoring and measurement, safety management system audits and management reviews. These arrangements should include:

— identifying and analysing the root causes of any non-conformities with relevant occupational safety regulations and/or OSH management systems arrangements; and

— initiating, planning, implementing, checking the effectiveness of and documenting corrective and preventive action, including changes to the occupational safety management system itself.

When the evaluation of the management system or other sources show that preventive and protective measures for hazards and risks are inadequate or likely to

become inadequate, the measures should be addressed according to the recognized hierarchy of prevention and control measures, and completed and documented, as appropriate and in a timely manner. Arrangements should be established and maintained for the continual improvement of the relevant elements of the OSH management system and the system as a whole.

CONCLUSIONS

PE "Novatsia Service" was founded in 2003. This enterprise was created with the aim of saturating the market with high-quality services in the field of trade and service of electrical goods. The subject of the company's activity is the organizational and methodical supply of the market with the latest technologies, the practical implementation of works related to the introduction of the latest technologies and the provision of other services in the field of information technologies.

The company's activities are financed mainly from the profits received from the production of products and the provision of services. There was an improvement in the Organization’s Financial stability, Increase in profitability in 2021 after a decrease in 2020.There was also a challenge with labor productivity due to the ineffective use of working time. So, the conducted analysis proved that the change in the size of the working time fund in 2021 relative to 2020 was influenced by:

- positive: change in the number of employees;

- negative: change in the average number of days worked by one employee, change in the average length of the working day.

In today's economic conditions, expanding the scope of services provided by PE "Novatsia Service" is very important in meeting the needs of consumers. The role of the service sector will steadily grow, as the needs of the population are constantly growing, and their diversity is constantly expanding. Development of the field of household services and improvement of its efficiency in meeting the needs of the population is directly related to innovations.

In order to achieve success and stay ahead of competitors, "Novatsia Service" PE needs to manage services and their quality and assortment. In order to improve the organization of the activities of the PE "Novatsia Service" we offer home appliance repair services. For this the enterprise should purchase equipment in the amount of UAH 130,000. The net present value of the project is 120.2 thousand UAH, the profitability index is 1.75, the simple payback period is 1 year 9 months, and the

discounted payback period is 2 years 4 months, which is acceptable. Taking this into account, PP "Novatsia Service" it is expedient to implement the provision of services for the repair of household electrical appliances.

With the right forecast method and incorporation of employee payment scheme according to creating an effective incentive system for employees interested in the high final results of the company's work, it should be important to increase the stimulating role of the tariff salary. In particular, we propose to implement the concept at the company's flexible tariff, the essence of which is that the tariff salary is next to the main task of motivating employees to improve their qualifications, and should take into account the individual results of their work, first of all productivity and quality of products (services).

The future prospects of the development of the provision of services to the company are predicted by the volume of services, looking at forecasts and analyzing past data on costs, volumes of services. Business forecasting is very important because we can predict and improve business performance. It is also important for PP "Novatsia-Service" to forecast the amount of costs for the provision of services, since they affect the final financial results of the activity of this firm.

The regression model used to make the services volume forecast was developed by us, but the quantitative forecast value using Data Analysis we can not find. We need to make forecast of independent variables and get the predicted value of cost of services provided for November and December. The services volume forecast under influence of cost of services provided for November equal 81,3 thousand UAH and for December equal 90,9 thousand UAH. The use of forecasting helps PP "Novatsia-service" to make rational decisions related to the organization of production at enterpris. It is also used to plan its activities, volumes and structure of service provision.

REFERENCE

1. Associates, C. a. (2010, november 24). *Salary Structures: Creating Competitive and Equitable Pay Levels*. SHRM. Retrieved December 21, 2022, Available at: https://www.shrm.org/resourcesandtools/hr-topics/compensation/pages/salarystructures.aspx

2. Athanasopoulos, G., & Hyndman, R. J. (2018). *Forecasting: Principles and Practice*. OTexts. Available at: https://otexts.com/fpp2/

3. Blessington, M. (2015). *Sales Forecasting: A Practical Guide*. CreateSpace Independent Publishing Platform. Available at: https://corpdyn.com/wp-content/uploads/2020/01/Blessington-Quotas.pdf

4. Boyles, M. (2022, June 21). *Financial Forecasting Methods to Predict Business Performance*. HBS Online. Retrieved December 20, 2022, Available at: https://online.hbs.edu/blog/post/financial-forecasting-methods

5. Burns, T., & Thompson, J. (n.d.). *UNIT 1: EVOLUTION OF THE PROCESS OF MANAGEMENT AND ITS PRESENT STATUS*. Uttarakhand Open University. Retrieved December 21, 2022, Available at: https://www.uou.ac.in/sites/default/files/slm/HM-104.pdf

6. Doyle, A. (2022, July 18). *What Is Workplace Flexibility?* The Balance. Retrieved December 21, 2022, Available at: https://www.thebalancemoney.com/workplace-flexibility-definition-with-examples-2059699

7. *The Evolution Of Risk Management And Workplace Safety*. (2022, September 8). EHS Today. Retrieved December 21, 2022, Available at: https://www.ehstoday.com/safety/article/21250118/the-evolution-of-risk-management-and-workplace-safety

8. *Fixed Asset Analysis - expenses*. (n.d.). Reference For Business. Retrieved December 21, 2022, Available at:

https://www.referenceforbusiness.com/encyclopedia/Fa-For/Fixed-Asset-Analysis.html

9. Forecasting: theory and practice (2021). *Volume 38*,(3), Pages 705-871. Available at: https://doi.org/10.1016/j.ijforecast.2021.11.001

10. *Forecasting Types and its Various Methods | Quick Guide*. (2022, September 5). XenonStack. Retrieved December 21, 2022, Available at: https://www.xenonstack.com/insights/what-is-forecasting

11. Health and Safety Authority. (2021). *Occupational Health?* What is Occupational Health? Retrieved November 17, 2022, Available at: https://www.hsa.ie/eng/workplace_health/occupational_health/

12. Health Service (HSE). (2022, March). *Management referral (information for employees) - Staff site*. healthservice.ie. Retrieved November, 2022, Available at: https://healthservice.hse.ie/staff/benefits-and-services/occupational-health/management-referral-information-for-employees/

13. The Institution of Occupational Safety and Health (IOSH). (2016.). Occupational health management in the workplace. *Occupational health management in the workplace*, *13*(2), 28. Retrieved November 15, 2022, Available at: https://iosh.com/media/4975/occupational-health-management-in-the-workplace-advice-guide.pdf

14. International Labor Organization (ILO). (2019, July 29). Occupational Safety and Health - A Guide for Labour Inspectors and other stakeholders (Labour administration and inspection). Available at: https://www.ilo.org/global/topics/labour-administration-inspection/resources-library/publications/guide-for-labour-inspectors/lang--en/index.htm

15. Jouany, V. (2022, February 22). *8 Employee Engagement Statistics You Need to Know in 2022 [INFOGRAPHIC]*. Haiilo. Retrieved December 21, 2022, Available at: https://haiilo.com/blog/employee-engagement-8-statistics-you-need-to-know/

16. Knapcikova, L., Perisa, M., Peraković, D., & Balog, M. (Eds.). (2022). *Sustainable Management of Manufacturing Systems in Industry 4.0*. Springer International Publishing. Available at:

https://essuir.sumdu.edu.ua/bitstream/123456789/87900/1/Yurchenko_jes_1_2022.pdf

17. Luther, D. (2022, February 18). *Manufacturing Operations Management: Strategies and Best Practices to Do It Well*. NetSuite. Retrieved December 21, 2022, Available at: https://www.netsuite.com/portal/resource/articles/inventory-management/manufacturing-operations.shtml

18. Houben, G, 1999. A knowledge-based SWOT-analysis system as an instrumentfor strategic planning in small and medium sized enterprises. Journal of AppliedEconomics, [Online]. Available at: http://www.cuaed.unam.mx/puel_cursos /cursos/d_gcfe_m_dos/modulo/modulo_2/m2-10.pdf

19. Masi, C. (n.d.). *Theoretical Foundations of Efficiently Organizing Production Processes: Using the Example of Combining Organizational Forms of Component Manufacture and Internal Transport.* Hindawi. Retrieved December 21, 2022, Available at: https://doi.org/10.1155/2014/513190

20. *Moving Average - Overview, Types and Examples, EMA vs SMA*. (2022, November 30). Corporate Finance Institute. Retrieved December 21, 2022, Available at: https://corporatefinanceinstitute.com/resources/data-science/moving-average/

21. . Maya Reynolds (2008) Applying the Boston Matrix to Publishing. Available at: http://mayareynoldswriter.blogspot.co.uk/2008

22. *Occupational health & safety management systems*. (2022, April 22). workSafeBc. Retrieved November 17, 2022, from Occupational health & safety management systems

23. *Production Process*. (n.d.). StudySmarter. Retrieved December 21, 2022, Available at:https://www.studysmarter.co.uk/explanations/business-studies/business-operations/production-process/

24. Reese, C. D. (2017). *Occupational Health and Safety Management: A Practical Approach, Third Edition*. Taylor & Francis Group. Available at: https://www.routledge.com/Occupational-Health-and-Safety-Management-A-Practical-Approach-Third-Edition/Reese/p/book/9781138749573

25. Seubert, T., & Vokey, G. (2020). *Manufacturing Execution Systems: An Operations Management Approach*. ISA. Available at: https://www.perlego.com/book/3262544/manufacturing-execution-systems-an-operations-management-approach-pdf

26. Spearman, M. L., & Hopp, W. J. (2011). *Factory Physics*. Waveland Press. Available at: http://repository.sgu.ac.id/226/7/Ivander%20Sudarnoto%2011212098%20Ref.pdf

27. Taboada, G. F. (Ed.). (2021). *Lean Management Solutions for Contemporary Manufacturing Operations*. Bentham Science Publishers. Available at: https://benthamscience.com/ebook_volume/3147

28. *What's the Hard Return on Employee Wellness Programs?* (n.d.). Harvard Business Review. Retrieved December 21, 2022, Available at: https://hbr.org/2010/12/whats-the-hard-return-on-employee-wellness-programs

29. *Why is Manufacturing Management Important?* (2022, April 28). Goodwin University. Retrieved December 21, 2022, Available at: https://www.goodwin.edu/enews/importance-of-manufacturing-management/

30. Teece, D. J. (2014). The foundations of enterprise performance: dynamic and ordinary capabilities in an (economic) theory of firms. *Academy of Management Perspectives*, *28*(4), 328–352. Available at: http://www.jstor.org/stable/43822373

APPENDIX

Appendix A

Characteristics of the specified types of production

Characteristics	Type of production		
	Unitary	Serial	Mass
1. Nomenclature of manufactured products	Big	Limited	Small
2. Sustainability of the nomenclature	Absent	Significant	Significant
3. Issue of volume	Small	Average	Big
4. Consolidation of operations by workplace	Missing	Partial	Complete
5. Applied equipment	Universal	Specialized	Special
6. Applicable tools and technological equipment	Universal	Universal and Specialized	Special
7. Qualification of workers	High	Average	Mostly low
8. Product cost	High	Average	Low
9. Production specialization of workshops and divisions	Technological	Mixed	Substantive, detailed
10. Technological process	Route	Typical	Operating
11. Production structure of the enterprise	Difficult	Moderately complex	Simple
12. Labor intensity of production of products	High	Average	Low
13. Specialization of jobs	Kz.o.>40	Large series: $1 < Kz.o \leq 10$ Average series: $10 < Kz.o \leq 20$ Small batch: $20 < Kz.o \leq 40$	Kz.o.=1