VYTAUTAS MAGNUS UNIVERSITY
FACULTY OF ECONOMICS AND MANAGEMENT

TRANSFORMATION OF THE ECONOMIC SYSTEM IN THE CONTEXT OF INFORMATION TECHNOLOGY CHALLENGES

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ORGANIZATIONAL AND ECONOMIC MECHANISM FOR REENGINEERING BUSINESS PROCESSES OF INDUSTRIAL ENTERPRISES

Summary

In the post-crisis context, enterprises face the challenge of ensuring sustainability and development. The key task is to create an effective change management mechanism. Reengineering includes a variety of means and methods, including modern information technologies, aimed at radically improving key performance indicators. The application of business process reengineering as an innovative approach to strategic change management is of great importance, especially in the conditions of unstable market conditions of domestic enterprises.

The need to adapt to changes occurring both in macroeconomic level, and at the level of each enterprise, requires the use of special methods and tools to set up business processes enterprises regarding rapidly changing external and internal conditions, and as well as business rules. These funds must provide adequate information about the activities of the enterprise and form the basis for analyzing this information in the aspect of enterprise business processes, their bottlenecks and possible optimization.

Introduction

The current state of industrial enterprises is in a constantly changing difficult economic situation; enterprises are faced with new problems that require quick solutions. Due to the dynamic development of the marketing sphere, industrial enterprises need to promptly respond to market changes and rebuild internal business processes. Industrial enterprises will be helped to meet this need by introducing reengineering of business processes in the marketing sector, which will allow them to achieve the necessary marketing effect. In this case, the marketing potential of the industrial enterprise and the possibilities of its implementation should be taken into account. Therefore, for the successful functioning of industrial enterprises, the research and development of scientific and methodological foundations and improvement of methods for the practical implementation of reengineering of business processes in the marketing sphere of industrial enterprises is an urgent task. The founders of the theory of

reengineering are James Champy and Michael Hammer, according to whom reengineering is fundamental changes in the activities of an enterprise to improve the efficiency of its functioning.

The study of reengineering was developed in the works of such foreign scientists: T. Davenport, J. Lempel, M. Robson, G. Darnton, K. Drury, G. Mintzberg, F. Ull, W. Stevenson. Among Ukrainian scientists, A. Khmelevsky, A. Vinogradova, N. Chukhrai, V. Voronkova, V. Komandrovskaya and A. Lysenko dealt with the issue of studying reengineering.

The purpose of the work is to study the state of development of the industrial market of Ukraine and identify ways to improve the marketing activities of business entities.

Achieving the set goals led to the solution of the following tasks: studying approaches to the formation of strategies for marketing activities of industrial enterprises; research into the marketing potential of industrial enterprises; development of ways to improve the performance of industrial enterprises.

In order to ensure the likelihood and validity of the research results, the following methods were used: logical-dialectical and historical, methods of scientific knowledge, comparison method, graphical method, method of tabular expression of statistical data.

Chapter 1. Basic fundamentals of optimization of business processes in the activities of industrial enterprises

In order to exist in an increasingly competitive environment, enterprises need to constantly improve their business. Reengineering is a relatively new approach, which represents a modern direction in the theory and practice of change and business management; with the help of reengineering, qualitative transformations in the management system are achieved. Through reengineering, qualitative transformations in the management system are achieved. This approach aims to make radical changes in an organization's processes, structure and culture to improve efficiency and competitiveness. It allows enterprises to adapt to new market conditions faster and

Reengineering is a fundamental rethinking and radical redesign of business processes to achieve significant improvements in the company's key performance indicators (quality, costs, efficiency and level of service) [1].

So, the main essence of reengineering is based on a system of fundamental changes in the organization. This is a revolutionary method of selective or complex changes in a company, contributing to a significant increase in efficiency by changing business processes and adapting the existing business model. Modern companies are increasingly aware of the need for reengineering in order to improve the overall efficiency of the company.

The following factors lead to this:

– the need to present the company's activities to investors taking into account international standards when describing business processes;

– preparing the enterprise for certification according to the international quality system ISO;

– creation of new areas of the company's activities or new departments.

– regulation and clear definition of the results of each employee's work;

– a clear description of the activities of all departments of the organization;

– easy automation, computerization and informatization of the process control system;

– staff reduction, clear description of qualification requirements;

– compliance with ISO quality standards;

– freedom of choice and flexibility when creating organizational structures;

– openness of the business system, simplification of the process of implementing planned budget mechanisms [2].

Cases when reengineering is necessary:

1. If the enterprise is in a deep crisis, which can manifest itself in an uncompetitive level of costs and there is no demand for products. The problem is also aggravated by factors such as declining management levels and the decline of traditional commodity markets.

When the current state of the organization can be considered satisfactory, but the forecasts for its future activities are unfavorable. That is, the company is faced with undesirable trends in such areas as demand levels, profitability, and competitiveness. Then, before unfavorable changes in circumstances have yet become fatal, they are responded to using reengineering methods.

Fast-growing, prosperous and aggressive companies know and can use the possibilities of reengineering. Their main task is to quickly increase the gap with their closest competitors and create a unique competitive advantage. In such a situation, the best option for running a business is reengineering. If a company believes that it has found a better operating model that does not need to change, then it will eventually be displaced by more successful and flexible companies, and it will become increasingly less able to adapt to demand and general market conditions. Therefore, reengineering can be considered a modern means of survival for companies.

There are two types of it: crisis and strategic. The need for the latter arises when development forecasts are unfavorable or for the purpose of greater differentiation from competitors. It forms an integral part of the overall strategy of the enterprise and one of the tools for achieving long-term goals.

If you use business process reengineering wisely, you can reduce costs, increase labor productivity and product quality, increase the flexibility of management systems, which is most important for the majority of industrial

enterprises with an outdated organizational structure, and ultimately can lead an average company to a higher position.

After the implementation of reengineering, the management system of the enterprise changes. By reevaluating existing management methods, the company will act in a new way, focusing on new solutions. When reengineering, one of the tasks is to remove those processes that do not produce the desired result.

In Ukraine, the emergence and development of business process reengineering is associated with the desire to radically improve market activity, attract new blood, and get rid of crisis phenomena. Therefore, now the strategic task of every domestic enterprise is to achieve modernization and significant improvement in business efficiency through the implementation of a comprehensive reengineering program, which simultaneously includes a qualitative improvement in key business processes and the use of new information technologies in order to ensure sustainable development of the country's economy.

Business processes, both external and internal, are aimed at minimizing factors that influence the production process and market conditions.

The following factors can be classified as internal environmental factors:

– imperfect production technologies;

– ineffective management policy (imperfect management at all levels of the company);

– unmotivated personnel of the enterprise;

– weak marketing and sales policy.

External business processes are aimed at adapting the enterprise to changes in the environment that the enterprise cannot influence. These include relationships with creditors and suppliers, the epidemic situation, market fluctuations, government tax policies and changes in legislation.

Taking into account the needs and specifics of production, based on time, business processes are divided into temporary, cyclical and continuous.

Temporary business processes are not permanent in an enterprise and arise when necessary. Cyclic are business processes that are repeated over time at the same time interval. They are typical for agricultural enterprises or enterprises with a long production cycle. Continuous business processes concern management and technological processes, namely the production of goods.

Assessing the effectiveness of business processes is a necessary condition for their improvement. Therefore, they are divided into social, economic and managerial.

Through social business processes, effective personnel policies should be ensured and a favorable environment for the professional development of employees should be created.

Economic business processes are aimed at monitoring the performance indicators of the investment, financial and operational activities of the enterprise and the constant search for financial resources that meet the production needs of the enterprise.

Management of business processes of an industrial enterprise forms the tools, methods, activities of the organization and control of business processes at all stages of organizing production and sales of products [10].

Theoretically, the formation of a business process management system is a series of approaches that contribute to their rational organization:

– Functional approach – provides management of several functions that provide for the implementation of the main functions of the enterprise.

– An integrated approach – involves a general assessment of the incoming and outgoing signs of enterprise growth according to qualitative and quantitative parameters and a comprehensive study of cause-and-effect relationships.

– Normative approach – sets standards at each stage of enterprise development. This helps improve the quality of production and control of business processes.

The continuous approach treats business process management as a continuity of interrelated functions: adjustment, planning, adaptation, modeling and research in the field of innovative development;

– Integration approach – focused on improving the efficiency of cooperation between structural units and coordination of their actions;

– The administrative approach through the formation of the necessary documents (instructions, standards, regulations, orders, regulations) presupposes a clear distribution of duties, functions and responsibilities of personnel in the enterprise.

Social approach – involves motivating employees, creating conditions for personnel development through professional development at the enterprise, the opportunity for self-expression and self-realization, which will contribute to the development of business processes;

– Marketing approach – aimed at primarily meeting the needs of the consumer, which is the main task for all structural units of the company;

The systems approach explains that the success of an enterprise depends on the interaction of all elements as a whole, and not on a single element. Therefore, all divisions of the enterprise are considered as an interconnected whole;

– The innovative approach is aimed at saving costs and guaranteeing the safety of resources by searching for innovative methods for organizing business processes [11].

Enterprise business process management, like any interconnected system, uses principles that can guarantee the efficiency and integrity of the management organization (Table 1.1).

Table 1.1

Principles of organizing business process management [11]

Principles	Characteristic
Continuity	Continuous improvement of the enterprise's business processes
Flexibility	Adaptation of the management system to changes in the internal and external environment of the enterprise
Purposefulness	The business process management system must meet the strategic goals of the enterprise
Compatibility	Changes in business processes should not contradict each other and be in constant interaction
Alternatives	Consider different options for improving business processes in order to maintain competitive advantages
Rationality	Business process management should take place with a rational approach to the use of financial resources of the enterprise
Responsibilities	Creation of a personnel motivation system to improve the quality of business processes
Analytics	Implementation of management based on analytical data of the comprehensive development of the enterprise
Sociability	Taking into account the interests of staff and society as a whole when improving business processes
Operativeness	Creation of an appropriate methodological apparatus for responding to the operational activities of the enterprise
Certainty	Availability of criteria to assess the effectiveness of organizing business processes of an enterprise
Manageability	Ability to adjust business processes at each stage of management
Equilibrium	Creating a balance between the business process management system and the environment of the business organization

Also, business process management must be adapted to the strategic goals of an industrial enterprise. The following main principles of organizing the production process can be distinguished:

− savings in production – in the process of management and production activities, it is irrational to help reduce the use of financial resources of the enterprise;

− supply of high quality products for production in accordance with technological requirements and standards;

− continuous personnel training – improving the professional skills of employees at the enterprise, improving the level of their professional abilities;

− reducing production costs by improving production technologies or reducing the production cycle;

− reducing balances in warehouses through the integrated sale of enterprise products and derivative goods;

− minimizing environmental pollution by reducing emissions into the atmosphere and adapting to these production technologies.

To effectively manage business processes, it is necessary to constantly monitor and evaluate the effectiveness of management (Figure 1).

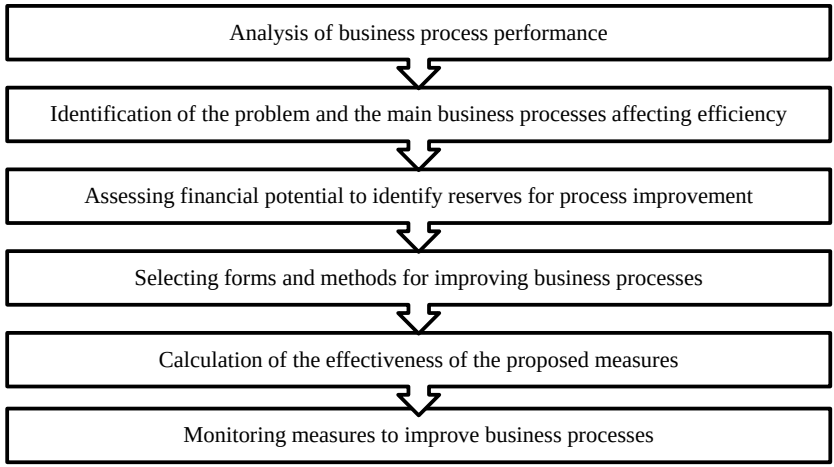


Figure 1. Step-by-step assessment of enterprise business process management [12]

Stage 1 – analysis of the effectiveness of business processes includes the following activities: conducting an audit of business processes at all levels of the enterprise and creating a system of indicators describing the effectiveness of business process management;

Stage 2 – identifying the problem and the main business processes that hinder their further development. At this stage, a SWOT analysis of business processes is carried out, their distribution and identification of weaknesses;

Stage 3 – assessment of financial potential to identify reserves for improving business processes involves studying the market and production potential of the company;

Stage 4 – selection of forms and methods for improving business processes includes the selection of indicators and parameters, means and methods for improving business processes in production;

Stage 5 – calculation of the effectiveness of measures proposed based on an assessment of opportunities to reduce costs and the effectiveness of applying the proposed ways to improve the business processes of the enterprise;

Stage 6 – control over measures to improve business processes – occurs on the basis of audit, amendment and approval of improvement measures.

It should be noted that the organization of business processes at different levels is a complex multi-element process, the formation of which takes into account the interaction of all departments in the enterprise. Despite the form of organization at an enterprise of the industrial complex, the organization of business processes involves the use of the following stages [13]:

1. To determine the purpose of creating a business process, it is necessary to formulate a clear task that will answer the question: “For what purpose? For what?". In addition, the purpose of creating a business process should be determined by the strategic goals of the enterprise.

2. Determination of the powers and boundaries of the organization. At this stage, functional and organizational responsibilities are distributed, aimed at the effective and rapid development of a business process.

3. Identification of participants in the process. This stage involves determining the relationships between the participants involved in the organization and development of the enterprise’s business process in the future, both internal and external.

3. Determination of process participants – the relationship between internal and external participants involved in the organization and further development of the enterprise’s business process is determined.

4. The need for resources to support the organization. To develop and implement a business process into a production or management process, it is necessary to search for resources. Their attraction can occur by refinancing profits, using their own sources, or by borrowing funds on an investment or loan basis.

5. Definition of standards for assessing the effectiveness of business processes. At this stage, criteria are formed with the help of which an objective assessment of the effectiveness of the process can be ensured. The content of these characteristics directly depends on the area of activity of the production process. Indicators can be both economical and technological.

6. By planning relevant indicators of economic or regulatory content or predicting results through the use of mathematical programming tools, using a certain algorithm of actions, a process development diagram is formed.

7. Development of measures to improve the newly created processes. Necessary adjustments are made to the development of the business process of an industrial enterprise, based on expected results or on the basis of simulation modeling.

8. Development and creation of the necessary structure of documents – formed at the initial stage of organizing business processes and the final one. At this stage, technological documentation, acts, standards, annotations, orders are developed and appropriate reporting forms are determined. Methods for

improving business processes of industrial enterprises are also being formed, which is due to the organization of business processes and their further development. These methodological approaches have certain features of their organization and application in practice.

Consequently, a significant part of industrial enterprises in Ukraine at the present stage of development is aimed at obtaining maximum profit from their activities. However, rapid changes in the external environment have led to the need to reformat the strategic goals of the enterprise based on trends in European business, and not just change the processes of organizing activities.

This led to the introduction of a process approach that applies to all areas of the enterprise. Trying to satisfy the needs of consumers, both in foreign and domestic markets, business processes are focused on new strategic goals.

After all, the organization of processes in the manufacture and sale of products directly depends on the correct organization of business processes from the purchase of raw materials and the sale of finished products at an industrial enterprise. The correct hierarchy of business processes helps to distribute responsibilities and functional responsibilities in accordance with technological compliance and job descriptions.

It should also be noted that the creation and implementation of business processes depends on several factors. The main ones include the ways the enterprise carries out competition, the form of organization of business activities, the strategic goals that the enterprise sets for itself, the industry of the enterprise, and others.

Due to the rapid process of social transformation in the modern economy, to promote goods or services, the use of marketing tools, events or concepts that were effective just recently is no longer relevant, because they have lost their effectiveness and suitability. It is necessary to use new approaches in marketing activities that are effective and adaptable [14]. Based on this, there is a need to ensure the proper level of competitiveness of domestic enterprises in an industry that needs to improve management methods. The need to use marketing principles was due to the need to independently search for markets, increased consumer demands for product quality, and increased competition.

Under such conditions in enterprises, the components of the marketing mix need clear organization in order to maintain a high level of activity and maintain a stable position in the market. All processes occurring at industrial enterprises must be regulated and manageable; thanks to the marketing system, it is possible to establish feedback connections with the market environment and have information about the current situation on the market. And in order to be able to understand strategy and tactics, highlight goals and increase production profitability when making management decisions, it is necessary to use a marketing approach.

Marketing activity can be defined as a management concept, science, a separate type of activity, a social process or a business philosophy.

The main goal of marketing activities for industrial enterprises is, first of all, to satisfy the needs of the consumer, and on the basis of this, making a profit, strengthening the position in the market, increasing the volume of products produced and sold due to competitive advantages.

Marketing at industrial enterprises should be based on a marketing information system, focus on the consumer, make management decisions, and apply an integrated approach to achieve the goals of increasing demand and supply.

Components of the marketing activities of an industrial enterprise:

1. The goals and objectives of the enterprise and the external and internal environment are taken into account when planning marketing. At this stage, measures should be prescribed to control marketing activities at an industrial enterprise.

2. Marketing must be organized after determining the budget, in the presence of the results of marketing research and analysis of the capabilities of the enterprise as a participant in the market process, market segmentation and development of a development strategy.

3. The approach to managing a marketing system must be comprehensive and systematic, because the marketing management process is a complex system containing a set of tactical and strategic measures, interconnected and focused on the effective implementation of the enterprise's activities, obtaining high profits by meeting consumer needs.

4. Monitor marketing activities systematically, objectively, responsibly, consistently, while complying with the requirements of the standards.

For a marketing system to be effective, it is necessary to navigate the sequence of actions when managing it. The management process occurs in seven main stages:

1. Analysis of the company's capabilities in the market.

This stage involves researching tactical and strategic demand, indicating the market opportunities of a particular enterprise. The main task of assessing market opportunities is to determine the competitiveness of the enterprise, and this stage consists of identifying new market niches and exploring marketing opportunities.

2. Determination of target markets.

At this stage, demand for the products of an industrial enterprise is assessed and forecasted, market segmentation and selection of target market niches are carried out, and products are brought to market.

1. Development of marketing strategies.

The purpose of the enterprise and its main objectives for each product, the market as a whole and market segments for a certain period of time are

highlighted. Based on the current market situation and the capabilities of the enterprise, commercial and production activities are carried out.

2. Development of a marketing mix.

At this stage, marketing tools and activities are developed. This stage is characterized by many marketing tools and combinations of actions, mutual influence of marketing tools, insufficient resources, and incomplete certainty of the result of marketing activities.

3. Creation of a marketing program.

At this stage, the objectives and goals of an industrial company, its marketing activities and the marketing environment are taken into account when developing a marketing program.

1. Implementation of the marketing program.

This stage is based on the application of methods to achieve the main goal of the enterprise – meeting the needs of customers in practice and making a profit for the enterprise.

2. Control of the marketing system at the enterprise.

At this stage, the marketing activities of the enterprise are analyzed and the effectiveness of the marketing system implemented at the industrial enterprise is checked. This stage is the final stage in the marketing management process.

Marketing activities of industrial enterprises must perform the following tasks:

– Feedback with the consumer;
– Encouraging the consumer to make a purchase again;
– Providing the consumer with a feeling of satisfaction from the purchase;
– formation of a loyal consumer attitude;
– Ensuring a positive image of the product;
– Promotion of goods on the market;
– Analysis of the competitive environment;
– Target audience research;
– Support for positioning of the enterprise's products among competitors;
– Formation of a feeling of unsatisfied need;
– Price adjustment;
– Access to high market positions.

The described tasks can be performed separately or combined. One of the main elements of marketing activity is the sale of the company's products. In order to sell products in large volumes, it is necessary to comply with the assigned tasks.

In practice, domestic industrial enterprises carry out marketing activities by using marketing tools that are combined with tasks. There are eight groups of marketing tools (Figure 3).

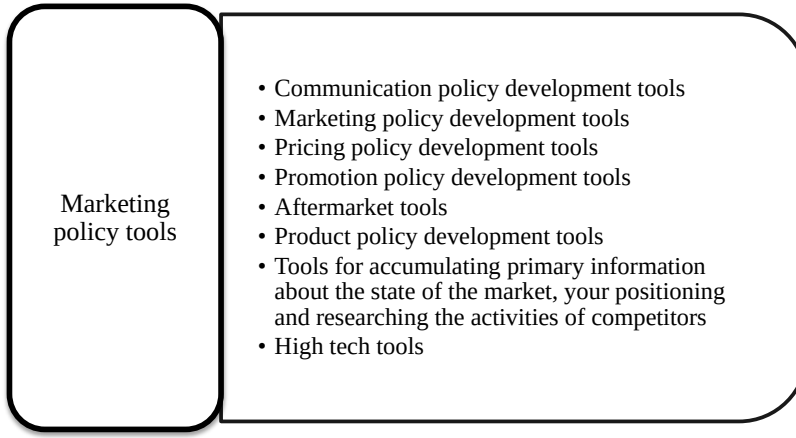


Figure 3. Types of marketing policy tools of an industrial enterprise

Industrial enterprises produce these tools in their marketing activities. The last group of tools – high-tech tools – is the most common in modern conditions of development of the latest technologies. The introduction of marketing at industrial enterprises allows you to better recognize the needs of consumers and become customer-oriented. However, before making marketing decisions, it is necessary to clearly justify them, analyze compliance with the strategy, profitability and innovation.

Therefore, for a high level of functioning of an industrial enterprise, it is necessary to implement a marketing system at the enterprise. Because the risks and level of competition are constantly increasing for him. By organizing work at domestic industrial enterprises, using a marketing approach, it is possible to improve the efficiency and effectiveness of the enterprise and increase competitiveness in the market.

Chapter 2. Analysis of the current state of development of industrial enterprises

The modern economy of Ukraine is in a state of constant transformation, occurring under the influence of various factors, such as political changes, global economic trends, technological innovations and other factors. An important area of change is the modernization of industry and the transition to a more innovative type of economy, which helps increase productivity and competitiveness.

Competitiveness acts as a key aspect of the functioning of a market economy, which affects the efficiency of all participants in the market environment and ensures the stable development of this system. The success of an enterprise in

a market economy is determined by its financial results, including expenses and income.

In connection with the conduct of hostilities on the territory of Ukraine, limited access to world markets, increased risks when making management decisions and intensified competition for increasing market share both at the external and internal levels, the problem of ensuring the profitability of the activities of Ukrainian enterprises arises [1].

Industry plays a leading role in the Ukrainian economy; it is the industrial sector that produces a significant part of GDP, develops innovative activities, and guarantees the receipt of large export income.

The main purpose of industry is the extraction and processing of natural resources. The state of all other sectors of the economy, administrative-political and socio-cultural development, and, as a consequence, the level of development of society and the state and the life of the population depend on the development of industry in the country.

There are two main branches of the industry. This is heavy, which includes the production of means of production, and light, which involves the production of consumer products. There are also sub-sectors of industry that depend on the final product. These are food, textile, coal mining, oil and other types. Sub-sectors are then divided into sub-industry sectors. In general, due to the combination of many sub-sectors, industry is a very complex system. Therefore, the structure of government bodies governing it is also complex.

There are four main types of industry: processing; mining; quarrying, supply of electricity, gas, steam and air conditioning; water supply, sewerage, waste management.

Processing industry is an industry in which products obtained from the mining industry (ore, coal, oil) or agricultural products (wool, grain) are used as raw materials. The main branches of the processing industry: meat, oilseeds, mining, sugar, flour and cereals, tobacco, dairy, canning, alcohol fermentation.

Extractive industry is an industry engaged in the extraction of fuel and raw materials. It combines the extraction of peat, coal, oil, oil shale, steel ore, gas, fishing, seafood, hunting, and timber harvesting.

The industrial sector provides millions of jobs, fills the state budget through tax revenues, contributing to the established socio-economic development of the country.

For the property of the size of industrial production, the indicator “Industrial Product Index” is used. By tracking changes in this indicator, one can characterize the decline or rise of the national economy.The industrial production index is calculated based on data on the dynamics of production of types of products by relating the current volume of production in monetary terms to the volume of production of industrial goods in the previous period [4]. Table 2.1 presents the Industrial Production Indices in 2019–2022.

Analyzing the above data, we see that at the beginning of 2022 there was a sharp decline in Ukrainian industry; in March, industrial production was 57.2% compared to the previous month. And the total percentage of production in 2022 relative to 2021 is 55.3%. This sharp decline was caused by Russia's full-scale invasion of Ukrainian territory, which affected most of Ukraine's industrial enterprises.

Table 2.1

Indices of industrial production in 2019–2022, % to the previous month

Year	2019	2020	2021	2022
January	86,2	91,6	83,9	87,0
February	98,1	100,4	100,3	87,4
March	112,0	103,6	110,9	57,2
April	98,2	87,2	96,8	111,9
May	99,5	104,9	96,6	107,5
June	96,3	104,1	100,0	100,3
July	103,6	103,9	103,2	100,6
August	98,6	96,5	96,7	101,9
September	101,7	104,5	102,9	102,3
October	105,6	105,8	107,8	105,0
November	95,4	101,1	100,1	99,3
December	98,3	102,8	101,1	96,3
In total	**91,7**	**104,5**	**97,8**	**55,3**

In order to understand in more detail the dynamics of industrial production, it is necessary to analyze separately the types of industrial products. Table 2.2 provides information on the Industrial Production Index by type of activity [4].

Table 2.2

Indices of industrial production by types of activity in 2019–2022, % compared to the corresponding period of the previous year

Year	2019	2020	2021	2022
Industry	99,5	95,5	101,9	63,3
Mining and quarrying	98,4	97,0	101,4	70,0
Processing industry	100,9	94,1	102,4	59,0
Supply of electricity, gas, steam and air conditioning	95,6	99,1	100,8	69,4

Examining the indices of industrial production by type of activity, there is a slight increase in the rate of production at industrial enterprises in 2021 and a sharp decline caused by the impact of martial law on the territory of Ukraine in 2022.

To analyze the development of industry in Ukraine and form the energy balance, annual statistical information on the volume of sales of industrial products by type of enterprise engaged in industrial activity in Ukraine is compiled.

Table 2.3 provides information on the volume of sales of industrial products by types of activity during 2019–2022.

Table 2.3

Sales volume of industrial products by type of activity in 2019–2022, UAH million

Year	2019	2020	2021	2022
Mining industry	395058,0	355018,0	575124,6	397908,1
Processing industry	1597572,3	1603800,7	2198676,1	1507420,3
Supply of electricity, gas, steam	457387,8	485435,5	770043,0	874824,6
Water supply, sewage, waste	30290,7	35082,8	40407,3	33637,1
In total	2480308,8	2479337,0	3584251,0	2813790,1

Based on the data from the table, we can conclude that the processing industry occupies the largest share in the Ukrainian industry. The lowest volume of sales of products is in the field of water supply, sewerage and waste. An increase in volume in 2021 and a decline in 2022 are being tracked.

Analyzing the volumes of sold industrial products in Ukraine in 2022, we can see that the processing industry in 2022 occupied the largest share (54%) and amounted to UAH 1,505,743.6 million.

The processing industry includes the following main sub-sectors: food, mechanical engineering, light, chemical, metallurgical and others. Mechanical engineering is important for improving the economy of Ukraine and its establishment as a highly developed state.

Among other industries, mechanical engineering has a complex sectoral composition, which consists of more than 300 branches of production and is constantly changing.

New industries are developed, which eventually become new ones, and eventually become generally accepted.

The bulk of machine-building enterprises produce products for industrial or final purposes, but there are also enterprises diversified by product structure, engaged in the manufacture of various goods for different groups of consumers.

Based on the market the products produced by machine-building enterprises are aimed at, they are conventionally divided into the following groups (Figure 2.1).

Heavy engineering includes a group of industries, the development of which is determined primarily by the investment activity of the transport, energy, construction and metallurgical complexes.

Tractor and agricultural construction develops depending on the solvency of agricultural producers and processors of agricultural products and partly depends on consumer demand.

Railway engineering is an industry group aimed at meeting the needs of the country's railway industry.

The automotive industry, when producing products, is guided by the demand of executive authorities, firms, enterprises (production of buses and trucks) and the demand of the end consumer (production of passenger cars).

Mechanical engineering, instrument making and electrical engineering – these industries are developing, adapting to the needs of other industries, including mechanical engineering, since they are manufacturers of component parts.

Machine-building enterprises, as a rule, are concentrated in large cities. They are a specialized industry in almost all cities with a population of more than 100 thousand people.

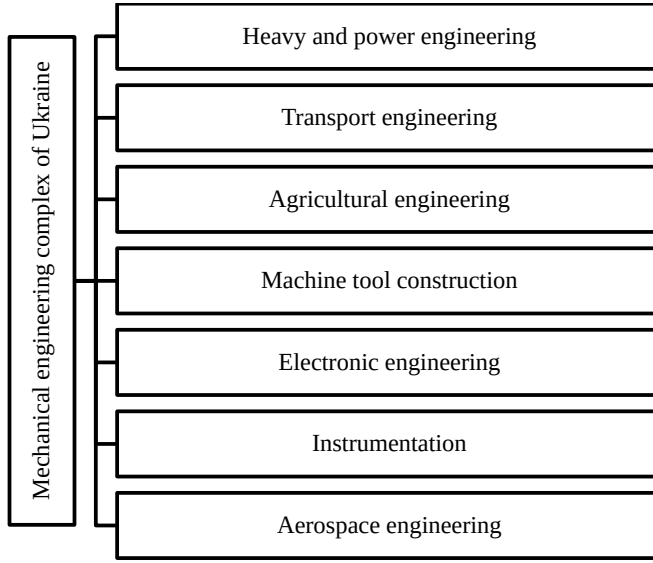


Figure 2.1. Grouping of branches of the machine-building complex of Ukraine

The use of various approaches to managing competitiveness is an important area of activity for enterprises, since in order to develop a competitive strategy it is necessary to determine one's advantages and weaknesses as a competitor in order to improve the efficiency of the enterprise in a highly competitive

environment. Mechanical engineering is the most developed and strategically important among other industries in Ukraine. Since the level of competitiveness of enterprises in the engineering industry largely determines what place the country will take in the global competitive environment and the international division of labor.

Mechanical engineering accounts for 10.2% of the total processing industry in Ukraine. The largest share in the structure of sold products among mechanical engineering enterprises is occupied by the category "other vehicles," which includes the production of railway locomotives and rolling stock, military vehicles, the construction of ships and boats, as well as the production of air and spacecraft. The smallest share is the creation of computers, electronic and optical products. A high volume of products sold was recorded in 2021, and peak profits were reached in 2019. However, due to Russia's full-scale invasion of Ukraine in 2022, there is a sharp decrease in industrial production by 36.9%. Production volumes have decreased significantly, and enterprises in the mechanical engineering industry have lost their main markets [3].

According to the State Statistics Service of Ukraine, the following components of mechanical engineering in Ukraine are distinguished [4]:

1. Production of computers, electronic and optical products.
2. Production of electrical equipment (electric motors, generators, transformers, etc.).
3. Production of machinery and equipment not classified as other groups (general purpose machinery and equipment, metalworking machinery and machine tools, etc.).
4. Production of vehicles, trailers and semi-trailers.
5. Production of other vehicles (railway locomotives and rolling stock, air and space aircraft, military vehicles, etc.).

Table 2.4 shows the volumes of products sold by Ukrainian enterprises in the mechanical engineering industry.

Sales of products from mechanical engineering enterprises in 2020 decreased by 8%, in 2021 increased by 18%, and in 2022, as a result of russia's full-scale invasion of Ukraine, they decreased significantly by 25.4%.

One of the main indicators of the economic stability of a state and its intellectual development is the state and level of mechanical engineering. At the same time, mechanical engineering is very vulnerable under the conditions of an economic crisis because it has a long technological cycle, heavy knowledge-intensive production, deep production cooperation and integration with enterprises of other countries. In addition, mechanical engineering products are considered fixed assets, and in times of crisis they are renewed and paid for on a residual basis.

Table 2.4

Volumes of products sold by Ukrainian mechanical engineering enterprises for the period 2019–2022, UAH million [4]

Year / Components of mechanical engineering of Ukraine	2019	2020	2021	2022
Production of computers, electronic and optical products	12898,5	12313,3	14862,0	10625,6
Production of electrical equipment (electric motors, generators, transformers, etc.)	34271,1	31444,9	40708,6	27897,6
Production of machines and equipment, not classified in other groups (machines and equipment of general purpose, metalworking machines and machine tools, etc.)	62307,9	60302,3	71661,7	37929,0
Production of motor vehicles, trailers and semi-trailers	30187,4	27420,8	32581,3	35628,7
Production of other vehicles (railway locomotives and rolling stock, air and space aircraft, military vehicles, etc.)	48416,8	41596,7	45038,6	40843,5
Total products	188082,3	173078,0	204852,2	152924,4

An important step is the implementation of the production plan. By comparing the actual (reported) values of indicators based on planned data and the values of the previous period, the dynamics of production and sales of products and the implementation of the plan are determined. The volumes of products sold directly depend on the volume of production and output of goods, therefore the analysis of the use of the plan and the dynamics of product sales is based on the results of an analysis of the production of marketable products.

The task of analyzing product sales is to determine the reserve for growth of this indicator and study the factors that influenced changes in sales volumes.

The main factors influencing the volume of product sales are the volume of products produced and the amount of remaining unsold marketable products.

Due to the influence of external and internal factors, such as an underdeveloped system for promoting manufactured products to consumers, the volume of unsold products at enterprises in the mechanical engineering industry of Ukraine is constantly growing. In order to better understand the reasons for changes in the phenomena being studied, and to more accurately assess the role and place of each factor in the formation of the value of

performance indicators, a classification of these factors was created. Using an integrated approach to the classification of factors, it is possible to model economic activity and, in order to increase the efficiency of the enterprise, search for on-farm reserves in a comprehensive manner.

The main features of enterprises in the mechanical engineering industry include the multivariate nature of serial production, the variety of types of work and specializations, the complexity of the industry structure, the high cost of labor, the high labor intensity of production, and the complexity of production and technological processes.

Cooperation between enterprises is also typical for machine-building enterprises. This is explained by the need to use tens of thousands of different parts for the manufacture of most modern engineering products. Since it is impossible to organize their production at one enterprise, machine-building enterprises need to establish connections and work closely with dozens or hundreds of other enterprises in order to receive parts and raw materials from them. That is, in the engineering sector, cooperation is a necessary form of organizing production.

The level of profitability of mechanical engineering depends on many interrelated factors, since each industry is characterized by certain efficiency indicators determined by its technical and economic characteristics.

Currently, machine-building enterprises have a number of problems, for example [5]:

– a large number of components and equipment are imported from abroad, according to the rules of foreign investors, although there are offers from domestic enterprises;

– lack of a certificate according to international standards for most enterprises;

– working through intermediaries is a necessary necessity;

– Due to outdated technologies and equipment, difficulties arise regarding the timing of the implementation of existing contracts (in most enterprises, production requires the involvement of thousands of specialists in the work, due to multi-batch production using the principle of variable flow lines, which is not required today due to small orders).

To conduct a detailed study of the internal and external environment of mechanical engineering enterprises, the traditional method of SWOT analysis was used in this work. The peculiarity of using this method is that it can be used to establish lines of communication between the strengths and weaknesses of a particular enterprise and external opportunities and threats. Therefore, when planning activities for the development of an enterprise, it is necessary to link its internal capabilities (strengths and weaknesses) and the external situation, which is partially reflected in possible opportunities and threats.

A SWOT analysis of mechanical engineering enterprises in Ukraine is presented in Table 2.5.

Based on the SWOT analysis, it can be summarized that the engineering industry of Ukraine is in a difficult situation. Due to socio-political and financial-economic instability, as well as high competition in the domestic and, especially, foreign markets, the future development of domestic mechanical engineering requires immediate effective measures from the owners.

A meaningful and justified system for promoting products to the end consumer will help improve the situation.

The most important problems of the mechanical engineering complex of Ukraine are related to the need to improve economic ties in the supply of components, the lag in technical development, the loss of familiar markets, and the low quality of products compared to international standards.

Table 2.5

SWOT – analysis of mechanical engineering enterprises in Ukraine

Strengths	**Weak sides**
1) the level of personnel is sufficiently high in terms of education, experience and abilities; 2) quite a lot of enterprises meet European quality standards; 3) in terms of price, Ukrainian products are somewhat cheaper than foreign ones; 4) availability of materials and components on the territory of Ukraine; 5) for the production of high-tech products in Ukraine there is an appropriate base (research centers, qualified labor force, resource base and transport infrastructure).	1)the need to adapt products to new safety standards; 2)difficulties with the timing of execution of existing contracts due to outdated technologies; 3)modernization of Ukrainian industry cannot be carried out without investment; 4)difficulties in finding partners and channels of access to new markets; 5)lack of financial resources.
Possibilities	**Threats**
1)possible corporate integration within enterprises; 2)access to innovation (Ukrainian enterprises gain access to the latest solutions and ideas in the field of technology, management and marketing); 3)opportunities for refinancing loans by powerful domestic enterprises in more favorable conditions. 4)increased competition as a result of the expected increase in imports from EU countries; 5)increased competition from foreign investors in the product market; 6)increased competition from foreign investors in the labor market.	1)increased competition as a result of the expected increase in imports from EU countries; 2)increased competition from foreign investors in the product market; 3)increased competition from foreign investors in the labor market.

Currently, it is necessary to establish the production of various components in the country, diversify the range and improve the quality of products, which are primarily necessary for domestic consumption and are of great export importance.

Characteristics of the general situation on the domestic mechanical engineering market in Ukraine:

– irrational horizontal and vertical connections in the management activities of the enterprise;

– low stability of orders due to the insufficient level of solvency of customers;

– the difficulty of establishing contractual relations between consumers, suppliers and, in fact, the enterprise;

– rising prices for technical resources;

– lack of mechanical engineering production infrastructure that meets the requirements of the modern market;

– there is a slow development of competition in the industrial market [6].

Chapter 3. Improving the activities of enterprises by implementing business process re-engineering

Using modern enterprise management methods, it is necessary to focus on business processes, their systematic identification, their management, and the interaction of personnel within the entire enterprise and individual processes. This approach to management is called Business Process Management.

Using it in practice, you can significantly increase the level of transparency and manageability of your business, improve performance indicators (customer satisfaction, cost, expenses, quality, time). If an enterprise needs serious radical changes, in almost all cases, it is necessary to develop a business process reengineering program [6].

Let us analyze the changes that should be made at domestic enterprises in the engineering industry, dividing them into five groups: personnel-oriented changes, technical and technological changes, cultural, structural and business models.

Personnel-oriented changes include the development of projects and programs for professional development, exchange of experience, including experience in change management, motivation of inventive and rationalization work, support for employees in the development of their creativity, training of managers to manage departments in an unstable external and internal environment, formation multi-level motivation system.

Technical and technological configurations concern the production management function. Their main task is to improve the efficiency of industries involved in service and production processes. Their tasks: improving the

quality of goods and services, promoting and production technologies. Thanks to technological changes, the cost of production is reduced and its quality is improved.

Cultural changes are designed to support the cultural development of employees at a high level, develop corporate values, resolve misunderstandings between employees, support young professionals and promote their development, develop cooperation and coordination.

As for structural changes, they involve decentralization of management, improvement of horizontal and vertical structures of activity, simplification of hierarchy, creation of a new team of change management specialists, application of adaptive structures, support for energy savings, rational use of resources and inventions, implementation of measures to guarantee development and overcoming crises.

Changes to the business model in modern conditions are a necessary undertaking. Indeed, at present, most domestic enterprises operate according to a resource-based business model, and modern conditions dictate the need to transition to a Business to Worker business model.

Thus, enterprises will be able to increase the level of innovation, which is currently very low, by getting employees interested in participating in rationalization and inventive activities. As part of ensuring the innovativeness of the products offered to consumers, it is necessary to change the value proposition, guarantee the environmental friendliness of the products and their reliability.

In the activities of mechanical engineering enterprises, when emerging from the crisis, the introduction of a mechanism for managing adaptive changes will help stabilize their work (Table 3.1).

Reengineering is an advanced method and includes a program of strategic measures to financially restore an enterprise that is in crisis. Reengineering is innovative in nature, this is manifested in the introduction of completely new business processes in the enterprise, which are aimed primarily at the creation and application of technological innovations.

During the activities of domestic enterprises in unstable market conditions, the introduction of innovative management methods and business process reengineering, which will help improve the efficiency of economic activity, is undoubtedly relevant [7].

At the operational level, problems may arise in implementing business process reengineering in an enterprise from a practical point of view.

Table 3.1

Adaptive change management mechanism

Adaptation change management toolkit	
Methods are focused on technological changes	Innovation of production, technologies and technological processes; certification and ensuring high quality products; occupational safety management; intellectualization of production; environmental and energy-saving management; reducing the level of formalization of procedures; outsourcing
Methods focus on strategic change and restructuring	Modern information technologies; use of advanced management methods; development of key competencies; formation of a map of strategic resources; decentralization; adaptability and flexibility of the organizational structure; improvement of communication links
Methods are focused on design changes and business model changes	Documenting and optimizing business processes; taking into account ESG criteria (E – "environmental", S – "social", G – "governance", that is, taking into account the objectives of environmental, social development and corporate governance when making investment decisions) when selecting innovative projects; formation of cross-functional teams; determining consumer priorities; marketing benchmarking; business portfolio optimization
Methods are focused on personnel and enterprise culture	Establishing effective communication, building trust, professional development, involvement in change management, coaching, training, motivation and incentives, social responsibility, corporate code

The introduction of business process reengineering allows you to make the following changes:

– resolving problems of inconsistency or contradictions between the main goals of all functional departments;

– changing requirements for employee training. Thus, the activities of employees become diverse and multifaceted, this will act as a motivation factor;

– employees, within the framework of their powers, can independently act on their own initiative, choose possible options for further development to achieve goals and make decisions independently;

– change the criteria for assessing work efficiency and the level of its payment, that is, the rating scale at the enterprise should encourage the employee to perform his duties more efficiently and work for results.

Conclusions

In modern conditions, business entities need to effectively prevent the negative impact of both external and internal factors, implement measures to strengthen the competitiveness of the enterprise and maintain competitive advantages in the market. To solve these problems, it is necessary to introduce

business process reengineering into production, because it is a modern, effective tool that ensures the efficient operation of industrial enterprises and the effective functioning of the entire national economy.

Attempts to improve market activity and combat the consequences of the crisis situation led to the development of reengineering in Ukraine. Therefore, now every domestic enterprise is tasked with modernizing its business and significantly increasing its efficiency in order to contribute to the development of the Ukrainian economy through the introduction of business process reengineering, including the use of the latest technologies and innovations.

Having analyzed the state of development of the industrial sector, one can observe a sharp decline in all indicators of industrial activity in Ukraine in 2022. It was caused by the introduction of martial law as a result of a full-scale Russian invasion of Ukrainian territory. Industrial potential suffered catastrophic losses, many enterprises were destroyed and there is a constant threat of new destruction. Enterprises that manage to carry out their activities cannot do so fully, because due to constant rocket attacks on critical infrastructure, there are problems with the supply of electricity. However, the management of each enterprise and the state are engaged in constant support of industrial enterprises, since industry takes a leading role in supporting the Ukrainian economy.

An analysis of the engineering industry separately also showed a significant impact of the war on its functioning. There was a reduction in the production of engineering products and difficulties with their export. Despite this, the development of mechanical engineering in Ukraine has prospects, since there are the necessary volumes of raw materials, a capacious domestic market and innovative potential. It would be advisable to carry out a number of activities aimed at developing support programs and development strategies for industrial enterprises, and the use of the latest technologies in the manufacture of quality products.

In the course of the study, the main directions of enterprise development through the use of reengineering methods were described, and the levels and methods of business processes were outlined. The advantages and opportunities when using reengineering are highlighted. The basic principles for the development of enterprises in modern economic conditions are formulated. Ways to improve industrial enterprises were proposed at the level of the enterprise itself and at the state level.

In the future, it is necessary to continue an in-depth study of reengineering, its forms and methods of implementation in enterprises. Enterprises should take seriously the issue of practical implementation of business process reengineering, as this will provide them with a number of competitive advantages; using the experience of leading enterprises in their practice, it will not be so difficult to implement reengineering methods.

So, business process reengineering is a promising direction for improving the activities of enterprises, strengthening their competitiveness, developing the industrial sector and improving the economy of Ukraine.

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