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A SYSTEMATIC APPROACH TO THE PREDICTION OF PROPERTIES TEXTILE PRODUCTS

One of the most promising areas for expanding the range and improving the quality of textile products is the application of a systematic approach to predicting their properties. The systematic approach takes into account the interconnection of operations throughout the entire chain of the textile manufacturing process, so its application is appropriate and relevant.

The systematic approach is a set of methods and the appropriate sequence of their application, which provides a comprehensive view of a particular problem and directions for its solution. It is typically applied to all technological systems that are of an orderly nature.

Technological processes in the textile and light industry are sequential chains of certain operations that are interconnected and allow you to get the final product in accordance with the technical specifications. Each technological operation requires compliance with

СИСТЕМНИЙ ПІДХІД ДО ПРОГНОЗУВАННЯ ВЛАСТИВОСТЕЙ ТЕКСТИЛЬНИХ ВИРОБІВ

Одним із перспективних напрямів у розширенні асортименту та підвищенні якості текстильної продукції є застосування системного підходу до прогнозування її властивостей. Системний підхід враховує взаємний зв'язок операцій на всьому ланцюжку технологічного процесу виготовлення текстильної продукції, тому його застосування є доцільним та актуальним.

Системний підхід є сукупністю методів та відповідною послідовністю їх застосування, що надає всебічне уявлення про певну проблему та напрями її розв'язання. Він має типове застосування для всіх технологічних систем, які носять упорядкований характер.

Технологічні процеси в текстильній та легкій промисловості є послідовними ланцюжками певних операцій, які пов'язані між собою і дають змогу отримувати кінцевий продукт відповідно до технічного завдання.

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the requirements for equipment and personnel qualifications, which affects the quality of the semi-finished product and the finished product as a whole.

The aim of the study is to analyse the application of a systematic approach to predicting the properties of textile products, improving their quality and expanding their range.

The systematic methodology consists of a set of methods and a certain sequence of their application. It provides a comprehensive view of the goal and ways to achieve it.

An in-depth analysis of existing systematic approaches in some industries has been conducted.

To predict the properties and quality of textile products, it is advisable to apply a systematic approach that allows to identify the elements of the system, their grouping into subsystems and the relationships between them and to guarantee their rationality. The properties of finished products are directly influenced by the properties of the derivative raw materials, the state of technological equipment and the level of qualification of production and management personnel.

The following articles will highlight further research in the application of a systematic approach to predicting product properties at Ukrainian textile and light industry enterprises, which will allow us to build a mathematical model and a general algorithm for predicting product properties and managing their quality.

Keywords: systematic approach, textile products, product properties, raw materials, yarns, textile products.

Виконання кожної технологічної операції потребує дотримання вимог до устаткування і кваліфікації персоналу, що впливає на якість напівфабрикату та готової продукції в цілому.

Метою дослідження є аналіз застосування системного підходу до прогнозування властивостей текстильних виробів, підвищення їхньої якості та розширення асортименту.

Системну методологію становить сукупність методів та визначена послідовність їх застосування. Вона дає всебічне уявлення про мету та шляхи її досягнення.

Проведено поглиблений аналіз наявних системних підходів у деяких галузях промисловості.

Для прогнозування властивостей та якості текстильної продукції доцільно застосовувати системний підхід, який дає змогу визначити елементи системи, їх групування в підсистеми та взаємозв'язки між ними і гарантувати їх раціональність. На властивості готової продукції безпосередньо впливають властивості похідної вихідної сировини, стан технологічного устаткування та рівень кваліфікації виробничого й управлінського персоналу.

У наступних статтях буде висвітлено подальші дослідження в застосуванні системного підходу до прогнозування властивостей продукції на підприємствах текстильної та легкої промисловості України, які уможливлять побудувати математичну модель та загальний алгоритм прогнозування властивостей продукції й управління її якістю.

Ключові слова: системний підхід, текстильна продукція, властивості продукції, сировина, нитки, текстильні вироби.

JEL Classification: O32, O33.

Introduction.

A systematic approach is not only an effective tool for various activities, but also a means of thinking. It has its own theoretical, legal and practical basis. To determine the scientific basis of forecasting the properties of textile threads and products in the process of their manufacture, a comprehensive consideration of technological processes is required, starting from the preparation of raw materials and ending with the production of finished products. These issues are solved by applying the methodology of a system approach and analyzing the technological

processes and properties of intermediate and final textile products, taking into account the factors that affect the quality of products.

Technological processes for the production of textile threads and products are a set of interconnected lines of technological equipment and processes that interact within the production system with the production of the final product. To determine the state of the technological system for the production of textile threads and products, it is advisable to present the methodology of the system approach and analysis.

The aim of the study is to analyse the application of a systematic approach to predicting the properties of textile products, improving their quality and expanding their range.

To study technological systems of production of textile threads and products, as well as to solve issues that affect the formation of product properties and quality management, the application of a system approach and analysis is relevant.

Achieving the above-mentioned goal is related to the definition of the system of changes in the properties of textile threads and products depending on the technological process of their manufacture. In this regard, it is necessary to analyze the factors that affect the properties of products and their quality, as well as to determine the criteria for the effectiveness of the specified system.

1. Basic information.

In accordance with the general theory of systems, each system has certain goals of its operation, which determine its main purpose and the nature of its operation. The goals (aim) of system operation are mostly achieved by a certain performance of relevant tasks. Solving these problems constitutes the content of the functioning process, as a system as a whole, as well as its component subsystems and elements.

For the correct formation of system approaches in predicting the properties of textile materials, it is necessary to consider in detail alternative approaches in various industries that have similar system chains.

Thus, in work (Onishchenko & Zamulko, 2020), the peculiarities of the technological processes of the enterprises of the food industry of Ukraine are considered. The complex use of system analysis and energy management was used in the research. These tools help to optimize management decisions to achieve better performance indicators of technological systems and the quality of equipment at food industry enterprises. The general technological processes and equipment of the food industry enterprises of Ukraine were also analyzed. Complex use of system analysis and energy management allows to identify system elements to improve management decisions.

Possibilities of using assessment of fuel and energy resource consumption at Ukrainian food industry enterprises have been identified.

The work (Pidgorny & Rahimi, 2021) uses a system approach as a methodology for building information technology, which allows to improve the efficiency of the supply chain system. Such a combination of information and production technologies allows to significantly improve the service of the entire supply chain of goods. The system approach made it possible to form the necessary information environment, which helps to solve the complex task of improving various levels of management of the entire supply chain of goods.

On the basis of the system approach (Dyubanov, 2017), ways of analyzing military systems were determined using the example of auto-technical support. Problematic issues and ways to overcome them were investigated. The methodology of system analysis was used to determine the optimal solution for increasing the efficiency of the auto technical support system.

In work (Kyrychenko, 2022) it is stated that the basis for modern management is technology, which is a tool thanks to which changes are made in enterprise systems. It allows to transform and optimize processes in enterprise systems. Research has determined that thanks to the adaptation and synchronization of all subsystems and elements of the enterprise management system, the efficiency of the enterprise's functioning is increased.

A systematic approach to forecasting based on time series models is interesting (Bidyuk, 2003). The proposed approaches to constructing forecasting functions for stationary autoregression and moving average autoregression processes, as well as for processes with deterministic and stochastic trends, heteroskedastic and cointegrated processes, are investigated. As a result of the research, forecasting functions obtained without solving the equations and based on their solution were given. A random step model with noise and drift was applied to describe the stochastic trend. To describe heteroskedastic and cointegrated processes, the main types of equations were considered.

In (Shubenkova et al., 2017), a systematic approach to modeling and forecasting based on regression models and the Kalman filter is considered. The research used the concept of adaptive modeling of financial and economic processes. This concept was based on the simultaneous use of regression models and the optimal Kalman filter, which allows to reduce the impact of random disturbances and measurement errors of statistical data. The authors developed software that was necessary for calculating the results of the experiments. Regression models were built for the processes considered in the work. Analysis of the developed forecasting system for the obtained financial and economic data showed that the obtained absolute error of about 5–8 % is acceptable for short-term forecasts.

Methods of system analysis in analytics are considered in (*Varenko,* 2019). The research determined the possibilities of applying basic methods of system analysis to work with information in information and analytical activities (IAD). Depending on a certain method of system analysis, there are specific features of its application in the information and analytical process. It was determined that the application of system analysis methods is an effective tool for optimizing information and analytical activities.

The application of the system approach to agricultural technological systems is presented in the paper (Tsurkan, 2021). It is noted that modeling and system analysis are the main methods of research in agricultural technological systems. The research determined that the technological processes of post-harvest processing of pumpkin seeds form a hierarchical system consisting of certain subsystems and elements. The paper considered the main features of the system components, which included the technological process and technological operation. At the entrance of the technological system for drying pumpkin seeds, the operating parameters of the equipment and indicators of the quality of raw materials are determined. As a result of the study, a structural diagram of the pumpkin seed production system was developed, the target function of the system in matrix form and an algorithm for implementing the target function of the pumpkin seed production system were selected. The results of the work will be used in the analysis of the technological system of pumpkin seed production. This made it possible to determine the efficiency of the technological system for a certain enterprise, as well as the possibilities of its optimization.

The application of the system-functional approach in the management of innovative development of construction enterprises was considered in the paper (Perevozova et al., 2021). Research has determined that due to the innovative development of construction technologies and construction enterprises, a decrease in the cost of construction occurs. It was determined that the use of a system-functional approach in the management of innovative development of construction enterprises is effective and expedient. This allowed us to come to the conclusion that cost-effective buildings are those that are produced at a low cost while maintaining high standards of design and comfort. The use of a system-functional approach is appropriate for finding effective methods of managing the innovative development of construction enterprises.

The system-functional approach is one of the effective methods of managing the innovative development of construction enterprises, which allows you to achieve optimization with synergy effects and determine the best economic and energy-efficient solutions.

The application of a system approach to quality control of the development of an industrial enterprise is considered in the work (Shostakovska, 2017). Research has determined a systematic approach to quality

control of industrial enterprise development. It allows for possible types of inconsistencies that have a systemic nature of occurrence. This systemic approach takes into account the decisions to implement the necessary measures for the development of an industrial enterprise, which are taken by management subjects in accordance with development programs or market trends.

In work (Linnik, 2019), a systematic approach to justifying the technological scheme and structure of a combined machine for processing corn stubble is applied. The research is aimed at improving quality and reducing energy consumption in agrotechnical technological operations. They are based on a rational technological scheme of equipment operation. It is noted that the detailing of the technological process of the equipment's operation is related to the clarification of the parameters of the conditions of the initial state of the soil with plant residues. At the same time, the technological structure of the machine, interconnections and interactions of working bodies are taken into account. Technological modes of machine operation are also determined and the influence of all factors on its operation is investigated.

A systematic approach to technological forecasting is presented in (Jones, 1975). Forecasting methods and a systematic approach to their use in practice are reviewed and classified. The authors state that technological forecasting has four main elements or dimensions: qualitative, quantitative, time and probability. In the event that all these elements are identified, the technological forecast can be sufficiently reliable and used in research and development.

The work (Kucharavya et al., 2023) presents the RFm method, which combines a problem approach and a logistic function united by the paradigm of applied resources. The article states that strategic forecasts are mainly based on expert opinions. Transforming these thoughts into consistent knowledge about the future requires managing cognitive biases with proven models. Observed forecasting methods provide useful tools for leveraging expert knowledge and data, but the management of cognitive biases remains underdeveloped. To ameliorate the situation with cognitive biases in technological forecasting, Research Futures Method (RFm) proposes a mixed methods approach.

New requirements for technology management that can help organizations prepare for the future and remain competitive are presented in (Simon, 2013). Technology management as a discipline must evolve and respond to societal and industrial needs, as well as to relevant technological challenges. Thus, after reviewing technology forecasting methodologies, an industry-wide approach to scenario planning was used to identify new technology management requirements. This structured framework provided an analytical lens to focus on the technology management requirements

of the healthcare, energy, and higher education sectors over the next 5 to 10 years. These requirements include the need for new business models to support technology adoption; integration of new technologies with existing delivery channels; management of technological options, including management of R&D projects; technological standards, verification and compatibility; and decision-making tools to support technology investments.

In (Saraji & Sharifabadi, 2017), the ability of dynamic systems to forecast various fields of research, such as marketing, supply chain, and the environment, was considered. It is determined that forecasting is part of the decision-making system and the results obtained from enterprises and industries are all the result of decisions made in the past, relying on future forecasting. When it's hard to predict mentally, we need to use simulation. The system dynamics modeling tool is based on systems thinking; therefore, it has the ability to model a complex system using feedback processes.

An important result of the system approach to solving technological problems is forecasting, which is presented in the paper (Feng et al., 2022). It has been determined that technological forecasting (TF) is an important way to address technological innovation in a rapidly changing market environment and increase the competitiveness of organizations in a dynamic and complex environment. The article reviews the literature on TF based on the point of view of complex systems.

In work (Pietrobelli & Puppato, 2015), the development of technological forecasting (TF) in different countries is considered. It is noted that TF and industrial strategy need to be mutually coherent, they need to be taken seriously, coherently developed and implemented in light of their role in shaping economic growth.

The study (Sonwane et al., 2018) proposed a methodology based on technological forecasting. This prediction involves the use of logic that produces a relatively consistent result, a predicted technological innovation, a specific scientific improvement that promises to perform a certain useful function at a certain time. The study evaluates technological forecasting and extrapolation and Delphi methods as they are so widely used in technological forecasting (TF). The article concludes with foresight how to choose a TF method for a specific production.

2. Results and discussion.

In textile production, all technological processes are characterized by interconnection, starting from raw materials and ending with finished products. Each stage of the technological process affects changes in the properties of the input product and is characterized by multifactoriality, the presence of feedback. The properties of the initial product of each stage of the technological process are influenced by the characteristics of the input

raw materials, the level of personnel qualification, the condition and quality of the equipment. Thus, all stages of the technological process of creating certain textile products are interconnected and practically form one process. As an example, we can cite the technological processes of manufacturing yarn, fabric, knitwear, etc.

To create a scientific basis for predicting the properties of textile products, a comprehensive approach should be applied, which consists in a detailed examination of each stage of the general technological process of manufacturing products, starting from raw materials to finished products. This consideration of the issue is related to the concept of a systematic approach to predicting the quality and properties of textile products. The technological process of manufacturing textile products is a subordinate chain of actions, methods and methods that result in the transformation of derived raw materials, energy and information from the original state into finished products. Accordingly, all successive elements of the technological chain are aimed at achieving a certain goal, which consists in obtaining the final product, which forms a certain system.

A system whose interrelationship and functioning of elements is regulated by simple methods is simple. In addition, systems where these relationships are regulated by complex methods are considered complex.

Certain elements of the system, which are characterized by relative indivisibility, can form groups among themselves. The nature of the connection between these groups differs from the nature of the connections between the elements of the system. In this way, the defined groups form between themselves subsystems within the whole system. Accordingly, the whole system is divided into subsystems with corresponding initial and final functions.

In sequentially connected elements and subsystems, each input is an output from the previous element and subsystem. Having thus determined the elements and subsystems in the existing technological process, their relationships are determined, which allow the production of certain products (semi-finished products) with the appropriate (predicted) level of quality at optimal (or predicted) resource costs.

System methodology consists of a set of system methods and their defined sequence of application. It gives a comprehensive idea of the goal and ways to achieve it.

Systemic thinking in each element and subsystem of the general system of a textile enterprise is important in the application of the system approach. Systemic thinking largely depends on the intellectual abilities of personnel and the ability to apply a system approach.

The nature of ordering and organization of connections between system elements forms the overall structure of the system. It makes it

possible to explain why the quality of the system as a whole differs from the sum of its constituent elements.

Technological systems can have a different hierarchical structure of the location of their parts. They are arranged in the order from lower to higher, although grid options are sometimes possible. In such complex options, all subsystems and their elements are interconnected by complex feedback loops that influence each other, and therefore it is impossible to clearly distinguish their hierarchy.

In the technological systems of textile production, the following connections are distinguished:

- means of transport for supplying raw materials, semi-finished products and shipment of finished products;
- energy and raw material transmission lines;
- signaling systems to ensure information exchange between system elements.

According to which product is considered to be final, one can consider systems of higher and lower order. This feature is characteristic of complex systems. For example, for textile industries that produce yarn, the technological system is the entire chain of yarn production. Along with this, it is divided according to the characteristic of a certain semi-finished product into workshops that make up subsystems. Each shop has machines on which a certain part is manufactured, or a partial transformation of a semi-finished product is carried out, which is the final product for this shop. Such sections (certain units of equipment) make up the subsystem elements of a certain workshop.

According to the above, the properties of the fibrous product obtained on each element of the textile system (machine) and subsystem (shop) form the properties of the final product of the system - yarn. Therefore, such a technological system determines the technical, ecological, quality level and potential of the general production system of textile enterprises. Along with the above, for the entire textile enterprise, the technological system is a subsystem (albeit the main one). In the general system of a textile enterprise, there are also other subsystems (management, economic, information, transport, etc.), which also determine its competitiveness on the market.

To predict the properties and quality of textile products, it is advisable to use a systematic approach that allows you to determine the elements of the system, their grouping into subsystems and the relationships between them, and guarantee their rationality. The properties of finished products are directly influenced by the properties of raw materials, the condition of technological equipment and the level of qualification of production and management personnel.

Depending on the goal of functioning of the system, which must be achieved, two approaches to the formation of the sequence of its elements and subsystems are distinguished. The first forms the components of the system from the input to the output, and the second, on the contrary, from the output to the input.

If it is necessary to solve problems related to the need to produce high-quality products and update their assortment, then it is advisable to use the technological system of the second type. This allows you to determine those subsystems and elements of the system that can ensure the planned level of product quality and its assortment. Along with this, if you need to solve problems related to the determination of material support for the functioning of the technological system, then it is advisable to use the first approach – from input to output.

For textile production, where the properties of the final (finished) product are predicted, it is advisable to use the second approach of forming technological systems.

In textile production, the systematic approach to forecasting product properties in general is as follows:

- determination of the purpose of system operation;
- selection of system efficiency indicators;
- determination of factors affecting the system.

Having determined the technological chain of production of products at the enterprise, it is possible to single out certain aggregates that make up subsystems and single out elements in them that have the corresponding indivisibility. Each of the subsystems must have at least two technological operations as elements.

The goals of system operation are determined from practical and economic expediency, the condition of the equipment and the development of technology and equipment.

To select a system efficiency indicator, the problem it solves to achieve the set goal is determined. These can be the following tasks:

- increasing the quality of products while ensuring the determined cost price and productivity of the equipment;
- expansion of the product range while reducing its cost price and maintaining its quality indicators;
- increasing the productivity of the equipment due to the intensification of processes while maintaining the specified indicators of quality and cost of production.

The definition of factors affecting the technological system consists in the characteristics of the properties of raw materials, the condition of equipment and the level of its maintenance, the qualifications of production

and management personnel, as well as other factors that take place. in a specific technological system (*Slizkov* et al., 2013; *Slizkov*, 2010).

At textile and light industry enterprises of Ukraine, technological lines belong to complex systems. Such technological systems as a whole form the properties of finished products. It is expedient to divide them into subsystems and distinguish indivisible elements in them. At the beginning of the operation of the technological system, the entire chain of subsystems and elements adjusts to changes aimed at achieving integrity. This is expressed by the development of relationships between subsystems and elements, previously unrelated. The property of the technological system to quickly achieve integrity is an important condition for the production of quality products, the increase in labor productivity and the reduction of waste.

To achieve the set goals, a complete technological system must be resistant to external factors, which is achieved by the presence of a certain organization within the system and its management structure. Management of the technological system consists in the process of bringing it to order in accordance with the set goals. For the possibility of effective management of the technological system, reliable information about the operation of all its subsystems and elements is required.

There are three main blocks in the technological process management system:

- object of management;
- operative management of the system (regulator);
- optimization.

Thanks to these coordinated blocks, the production technological system adjusts to the action of external factors thanks to the restructuring of its structure. The block of the system management object can include indicators of the quality of semi-finished products and finished products that are affected by the processes of the technological system. Each stage of the technological process affects the change in the properties of these products.

The unit of operational control of the system (regulator) performs operational-calendar control of the system and may include the following functions:

- planning the level of product quality indicators in accordance with regulatory documents;
- planning the amount of finished products or semi-finished products;
- determination of the need for material resources and their use during a certain period;
- organization, accounting, control and analysis of the properties of derived raw materials, semi-finished products and finished products, as well as their use in specified periods.

The unit of operational management of the system (regulator), thanks to direct communication channels (scheduled tasks, orders, etc.), determines the modes of the production process, which are necessary to achieve the specified quality of finished products and semi-finished products. In the future, the regulator uses feedback channels (direct measurements, operational accounting and control documents) to make decisions that ensure the required quality of semi-finished products and finished products. This is achieved by maintaining the parameters of the technological system in a given state. The quality of work of block is determined by the amount of deviation from the given level of product quality and technical and economic indicators. The functions of operational management of the system (regulator) are performed by the management personnel of production sites.

The optimization block determines the best strategy for the production process. It forms and supports the following relationships:

- with external structures (association, industry, etc.);
- regulator (operational management);
- with a unit for forming product properties (production process).

The functions of this block are performed by the enterprise management apparatus.

External factors have a direct, but mostly ambiguous and undefined influence on the production technological system. In order to ensure continuity of operation of the technological system, the optimization unit must produce management solutions that would be aimed at eliminating the effects of negative external factors on the system and the quality of finished products.

Optimizing product properties, maintaining stable quality and production volumes depends on solving certain problems:

- quality stability of derived raw materials and auxiliary materials;
- observance of technological and production discipline;
- compliance with the quality of semi-finished products at all technological transitions;
- compliance with the high-quality operation of the equipment, equipment, auxiliary tools and control and measuring means;
- compliance with the quality of work of production and management personnel and improvement of their qualifications;
- constant analysis of the causes of defects and quality reduction of semi-finished products and finished products;

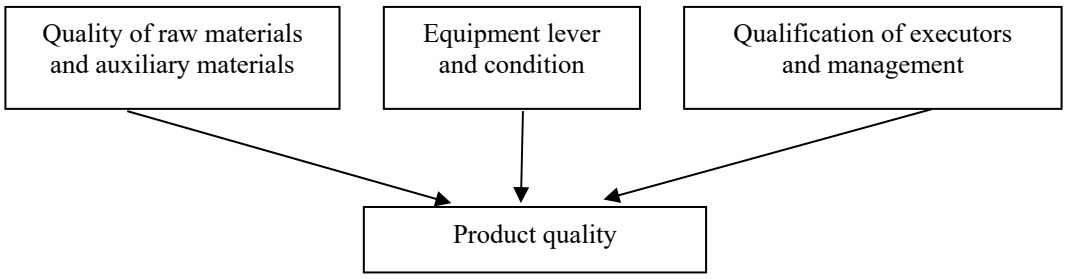
The effectiveness of the system for forecasting the properties of textile products should be determined by indicators that assess the degree of adaptation of the system to the fulfillment of the goals set before it and the tasks listed above.

To determine the system efficiency indicator, the majority assume that it should:

- be simple enough;
- objectively characterize the system;
- have a direct connection with the target purpose of the system;
- be sensitive to changes in the main parameters of the system;
- to fully characterize the quality of the system;
- take into account all the main properties and features of the system, conditions of its operation and interaction with the external environment.

Given that the goal of the system for predicting the properties of textile products is the transformation of input raw materials into a finished final product that meets the requirements of regulatory documentation and (or) the customer, it is possible to formulate requirements for the criterion of its effectiveness. So, for such a system, it is advisable to choose an indicator that determines the most economical, intensive and high-quality way of converting raw materials into a finished product.

Product quality indicators can be taken as an indicator of the efficiency of the above-mentioned system. This is determined by the fact that in the cost structure of the final finished textile product, the main part is the cost of raw materials, and the economic effect is obtained mainly due to an increase in the output of finished products. It is important to assess the quality of products, taking into account the dynamics of production, identifying the dependence of quality on technological parameters and the peculiarities of the functioning of the technological system. In general, the scheme of the process of forming product quality can be presented in the following form (*Figure*).



Scheme of the process of formation of product quality

At the same time, product quality is an object of management and regulation. It is urgent to create a system for forecasting product quality, its planning, management and regulation directly in the production process.

As can be seen from the scheme (see *Figure*), the essential factor that forms the quality of products is the quality of derived raw materials and

auxiliary materials, therefore it is important to comply with the requirements of regulatory documentation and achieve stabilization of the quality indicators of these materials. The technical level of the equipment, its condition and quality of service also significantly affects the quality of finished products, which largely depends on the culture of production and control. Also, one of the main factors affecting the quality of finished products, in addition to the factors listed above, is the qualification of production and management personnel and their constant improvement.

A feature of each (see *Figure*) factors form a feature of the organizational structure of the entire enterprise and, accordingly, the system of forecasting the properties and quality of products, which for a certain textile enterprise determines its competitiveness on the market.

The system for predicting the properties of textile products mainly functions under the influence of random factors, therefore the values of all these factors and individual indicators of the quality of semi-finished products and finished products are random. Accordingly, as an indicator of the effectiveness of the quality forecasting system, it is better to use a comprehensive assessment of the probable characteristics of these values. Quantitative evaluation of the system efficiency indicator should take into account information about the actual flow of the technological process and changes in product properties.

The quality of finished products depends on a significant number of factors that have different levels of influence on its properties. In order to simplify the assessment of the performance indicator of the system of forecasting product properties, it is necessary to highlight the most important factors that have a significant impact on product quality. For this, a priori ranking methods and factorial experiments with variance analysis of their results are used.

The application of a system analysis of the technological and organizational structure of the enterprise and the creation of a system for predicting the properties of textile products avoids the loss of raw materials and auxiliary materials, optimizes the technological chain, requirements for equipment and qualifications of performers, which allows management to find the most rational solutions to production problems and increase the competitiveness of the enterprise.

Further research on the application of a systematic approach to forecasting product properties at Ukrainian textile and light industry enterprises will allow building a mathematical model and a general algorithm for forecasting product properties and managing their quality. On the basis of the above, the enterprise is creating a system of information support for predicting product properties, which will allow to control the transformation of its properties at each technological stage of its manufacture.

Conclusions.

The application of a systematic approach to predicting product properties is based on a clear definition of elements, subsystems and the system as a whole, their optimal ordering, which is extremely important for increasing the competitiveness of Ukrainian textile and light industry enterprises.

Technological lines for the production of textile products form complex systems that consist of certain subsystems and elements united by their purpose and typical features.

The quality of finished products depends on the quality indicators of raw materials, auxiliary materials, the level and condition of technological equipment, the qualifications of production workers and management employees.

To evaluate the effectiveness of the system for predicting the properties of textile products, it is advisable to offer a comprehensive indicator of product quality, which also takes into account its economy and environmental friendliness.

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