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FEATURES OF THE FORMATION OF FLEXIBLE TECHNOLOGICAL PROCESSES FOR THE PRODUCTION OF ATTRACTIVE AND COMPETITIVE PRODUCTS

Abstract: *In the article, the authors recommend that the market revise the concept of forming it with in-demand and import-substituting goods, taking into account their attractiveness. Such a concept will fully correspond to the consumer's desire to satisfy his desire and desire to make a purchase, taking into account his social status, providing manufacturers with the sale of their products in full and guaranteeing enterprises sustainable TPE of their activities.*

Key words: *flexible production, attractiveness, demand, competitiveness, import substitution, demand, profit, financial condition, stability, sustainable TPE, assortment, assortment policy.*

Language: *English*

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Introduction

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The attractiveness of the product can become a magnet that initiates the interest of the buyer. It was not for nothing that V.I. Dal interpreted attractiveness as attractiveness, magnetism. The economic system is formed by production relations, therefore, there will not be radical transformations of the existing system of the economy, there will be a restructuring, a reboot, which changes not the system, but the order of functioning of the system, the vector evolution of economic policy. The economic system will be optimized by realizing the costs of minimizing the costs of the assortment.

Does the consumer benefit? Apparently, yes,

provided that manufacturers and sellers do not skimp on research work on consumer demand. Here, the simplest research is not enough, it will require a deep analysis and integration of different approaches - economic (marketing), sociological, cultural, ergonomic, sanitary, focusing scientific research on regional, national characteristics. The prospect of real participation in the process of real-level students will open, accelerating their qualification formation

The transition from good to better in any field of activity is associated with an increase in implementation costs, including risk financing. In our view, the analyzed transition to a new economic policy should justify the expectations - lead to a reduction in costs, losses, environmental burden, but the result will largely be determined by the construction of scientific, technical and educational educational policy. Good intentions often end up with worse results due to poor management.

The time has come again to temporarily disconnect from the production of goods and, following the example of Karl Marx, focus on the cell of the modern economic organism - the commodity, but, unlike the author of "Capital", place the commodity not in production, but try to fit it into the subsystem of market relations. Capital without circulation is not capital. Capital is a process. The process of capital reproduction is a characteristic way of its implementation. The market ensures the reproduction of capital, creating conditions for the sale of marketable products. For production, initial capital in financial form is required, for implementation, as a condition for reproduction, demand for a commodity is required, which must be provided by the market - conditions linking the producer with the consumer. Everything, as we can see, rests not even on the characteristics of the product, but on the organization of the market. Of course and the properties of the product are important here. The doctor is able to revive the dying, but he is not able to revive the corpse. The same can be said for the market.

The transition to market-oriented production based on the structure of concretized consumption can be viewed as a way to resolve the growing contradiction between growing socio-cultural needs and natural sources. And in this sense there is sufficient reason to speak about the objective completeness of the development of reproduction. The center of concentration of activity is shifting to the territory of the market, its scientific potential is being updated. Question # 1 lean production - is the market ready to increase allocations for researching the structure of the needs of the mass buyer? It is not difficult to find individual examples. At the end of June 2019, Google conducted a survey of the culinary preferences of Russians in order to make a rating of 20 basic products and the same number of dishes. The taste of Russian consumers has encouraged marketers and terrified nutritionists. However, experts are convinced that there will be no changes in two or three years. Manufacturing, providing the grocery market received the necessary information for thinking about the directions of investment in production. Now it is important to avoid a rush of restructuring, to agree on quotas within the corresponding unions, banknotes and other associations of producers.

"Attractiveness" is transformed from an advertising category into an economic one, more precisely, into a market brand. Theoretically and even methodologically, "Attractiveness" refers to the "cross-cutting" concepts that characterize the activity and its products. There are hardly any opponents of this statement. The essence of considering “attractiveness” in the light of our problematics is not in defining “attractiveness” as such, but in its concrete historical manifestation. Activity is a way of implementing an idea; outside of practical activity, the idea will not go beyond the element of consciousness, it remains knowledge and is likely to lose its meaning after some time. The relevance, meanwhile, is not inherent in the activity itself, but in the way of implementing the plan, while the way in which the activity is carried out is regulated by space-time coordinates, revealing and limiting the relevance of the mode of action. History is made up of actual historical periods - actual stories. A historical phenomenon, regardless of its nature - material or ideal, becomes not when it happens, but only when it is included in the historical chain of events. In dialectics, social development is therefore described by a pair of categories "historical-logical", and historical phenomena can "drop out" from the logic of the historical process, which is natural. Otherwise, development would involuntarily make one think about the Divine creation of social history. when included in the historical chain of events. In dialectics, social development is therefore described by a pair of categories "historical-logical", and historical phenomena can "drop out" from the logic of the historical process, which is natural. Otherwise, development would involuntarily make one think about the Divine creation of social history. when included in the historical chain of events. In dialectics, social development is therefore described by a pair of categories "historical-logical", and historical phenomena can "drop out" from the logic of the historical process, which is natural. Otherwise, development would involuntarily make one think about the Divine creation of social history.

"Attractiveness" in a broader context has always stimulated activity. In recent history, this concept has acquired a new meaning and, accordingly, a new meaning. It found itself at the center of economic contradictions in the market. It is actively exploited in their own interests by all those for whom the market is the main source of speculation, they will go to "all the hard". Those who have retained the honor of a

professional manufacturer see it as a salvation for consumers.

The concept of "product attractiveness" is partially revealed in the concept of "product value". In special literature, "product value" is defined as "a set of quality parameters expected by the consumer for the product he needs and their values that meet the needs of the consumer." The product value unfolding is called the "customer satisfaction tree".

In order for the value of a product to cause consumer satisfaction, it is important not only to be concerned about the quality of the product, but also to remember that the consumer's consciousness is not a constant, it moves and matures. The expression "the client is ripe" characterizes the process of interaction between the producer and the consumer. The consumer in such an interaction is represented by mental activity, first of all. The sources of mental readiness to accept the manufacturer's proposal as coinciding with their own idea of the attractiveness of the product are not uniform. Usually they include:

- manufacturer's credibility;
- information from reliable sources; consumer communication, informal communication; the presence of the product in the past experience of the buyer; the relevance of this purchase to the buyer.

If the "buyer" is considered outside the socio-economic context, then the answer to the second question looks very clear. The market is waiting for a buyer with high solvency. There are also buyers in Russia, but their share does not exceed 7 percent, and they rarely go to the lucrative market for the masses, rather by chance than by necessity. The mass consumer is extremely economical and it is difficult to "shake" it for purchase. It requires a certain type of product that can charm, and the presentation of the product, "cultural packaging". It is necessary to attract the buyer, to bewitch. Like a reflection the desire to comprehend the specifics of the status of demand for a product on the market, one should consider the revival of interest in the concept of "product attractiveness". It is much more specific in its content in comparison with the close and more pseudo-scientific concept of "demand for a product by the market". It contains fewer economic statistics, formal signs that allow to measure pressure, but in full there is a "human factor" that determines market dynamics.

If psychologically the image of the product as attractive has formed, then relations from the phase of abstract possibility pass into real possibility. The next step - the transformation of a real opportunity into the reality of purchasing a product you like will depend on the ratio of producer and consumer costs. For the first, we are talking about the ratio of cost and price, for the second - the price and quality of the product.

Main part

In all modern quality management systems in the context of provisions on prestigious awards (EFUK, UOK, IAQ, TQM, etc.), such an indicator as the degree of satisfaction with consumer products stands above all others, occupying in a weight ratio from 1/5 to 1/3 cumulative points. This indicator has the least points - 180 (out of 1000) in the Regulation on the Prize of the Government of the Russian Federation in the field of quality.

We understand that customer satisfaction with a product should not be limited to the consumer appeal of a product. Product attractiveness is superimposed on satisfaction, remaining part of attractiveness. There are products that initially, perhaps, did not belong to the range of attractive ones, for example, gifts or something purchased "on the occasion", by necessity. The attractiveness was discovered later, as it was used for its intended purpose. But the comparison between satisfaction and attractiveness is quite correct and indicative. Moreover, at the junction of these concepts there is a test zone for characterizing the degree of development of production. Figure 1 shows the consumer expectation architecture.

To study the status of the concept of "Product attractiveness", a questionnaire was developed, shown in Table 1.

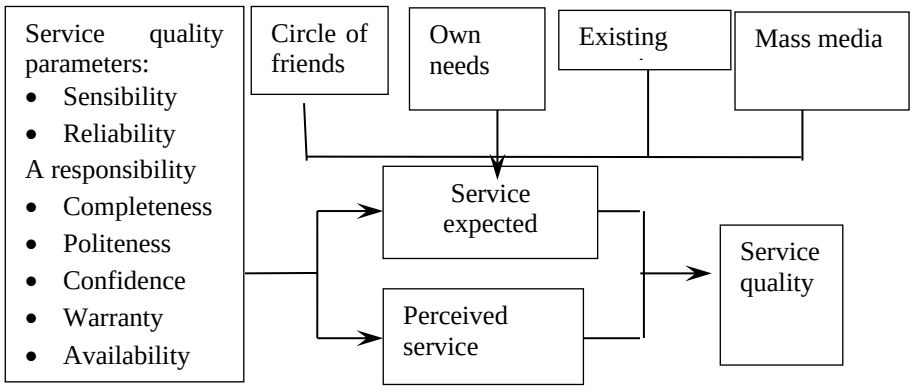

Figure 1. The architecture of customer expectations

Table 1-Analysis and study of the status of the concept "Attractiveness of goods"

No.	Indicators of "Product attractiveness"	Rank
1	Feeling the need to buy a product	7
2	Reliability of goods	2
3	Manufacturer's responsibility for the quality of the goods	1
4	Completeness of goods	3
5	Service courtesy	17
6	Trust in the seller, manufacturer	16
7	Impressive warranty period	4
8	Product availability	8
9	Communication with the seller	25
10	Mutual understanding with the seller, his interest in selling products	26
11	Service culture	27
12	Affordability	9
13	Customer satisfaction	10
14	The level of readiness of the consumer to make a purchase	11
15	The level of interest of the manufacturer in the formation of "Product attractiveness"	19
16	Consumer buying opportunity	12
17	Authority of the manufacturer	5
18	Consumer communication	24
19	The consumer's opinion about an earlier purchase of an identical product	13
20	The need for the consumer to purchase "Attractive product"	23
21	The relevance of this purchase to the buyer	14
22	Possibility of subsequent exchange of goods	20
23	Availability of several necessary functions for the product	6
24	Modern design	22
25	Payment method for purchase	15
26	Ease of operation of the product	21
27	Organization and availability of service support for purchased goods	18

An analysis of the results of a survey of respondents on the influence of the criterion "Attractiveness of goods" confirmed the importance of the rehabilitation of this criterion in marketing activities to form sustainable demand not only for light industry products, but also for all consumer goods (Table 2).

What is interesting is the fact that is due to the coincidence of the studies carried out by the authors on the formation of the architecture of customer satisfaction based on the criterion - Product attractiveness - as one of the main factors on demand and the results of a priori ranking on its impact on the sale of consumer goods, for participation in which students-commodity experts, students - experts in the field of certification and standardization, students - technologists, constructors and designers, teachers of these specialties and graduates of the same specialties, who are currently leading specialists in enterprises engaged in the production of this very product for consumers in the regions of the Southern Federal District and the North Caucasus Federal District.

Table 2 - Results of the survey of respondents on the influence of the criterion "Attractiveness of goods" on the demand for demanded and competitive products

No.	Expert opinions / Factors	All respondents	Teachers and specialists	Students	Agreed
1	Feeling the need to buy a product	2	2	2	2
2	Reliability of goods	12	12	12	12
3	Manufacturer's responsibility for the quality of the goods	1	1	1	1
4	Completeness of goods	3	3	3	3

5	Service courtesy	21	8	21	21
6	Trust in the seller, manufacturer	8	21	8	8
7	Impressive warranty period	4	4	4	4
8	Product availability	17	6	24	17
9	Communication with the seller	24	16	17	24
10	Mutual understanding with the seller, his interest in selling products	6	17	7	6
11	Service culture	16	19	13	13
12	Affordability	7	26	5	7
13	Customer satisfaction	13	24	20	5
14	The level of readiness of the consumer to make a purchase	20	7	16	16
15	The level of interest of the manufacturer in the formation of "Product attractiveness"	5	23	6	23
16	Consumer buying opportunity	23	13	23	20
17	Authority of the manufacturer	26	20	26	26
18	Consumer communication	11	5	27	14
19	The consumer's opinion about an earlier purchase of an identical product	14	11	14	11
20	The need for the consumer to purchase "Attractive product"	15	10	11	27
21	The relevance of this purchase to the buyer	27	14	15	19
22	Possibility of subsequent exchange of goods	19	15	22	15
23	Availability of several necessary functions for the product	10	18	10	10
24	Modern design	25	9	25	18
25	Payment method for purchase	22	27	18	25
26	Ease of operation of the product	18	25	19	22
27	Organization and availability of service support for purchased goods	9	22	9	9

If customer satisfaction is formed at the expense of the manufacturer's level, i.e. its test level is formed by the price availability of the product, which is offered by the assortment range, of course, by quality, and at the expense of the consumer level, i.e. its test level assumes the presence of a culture of customer service, the attractiveness of the product, customer satisfaction, and, of course, the solvency of the consumers themselves, then the respondents who took part in the survey believe that consumer satisfaction will be ensured with the reliability of the product, its affordability, and the availability of the opportunity for buyers make purchases, i.e. their solvency. Natural product quality, variety of assortment range, attractiveness by design decision, i.e. correspond to fashion, products should have a sufficiently long warranty period, and, interestingly, all respondents are unanimous that manufacturers should fight for respectful attitude of buyers towards them, win their trust and desire to make a purchase of the products of these enterprises, i.e. the brand and image are always in demand, which together solves the main task - provides consumers with domestic products within the framework of import substitution.

The criteria for assessing the competitiveness of a light industry enterprise using the software developed by the authors made it possible for the first time to formalize the role of experts - respondents on the basis of their competence to the problem under consideration. The need for such an approach is due to the desire to have an objective assessment of competence, taking into account not only the opinion of the invited party of expert respondents to participate in the survey, but also using the assessment criterion - the coefficient of concordance (W) - the value of which varies from 0 to 1. And if W = 0-0.5 - this is their lack of agreement with the opinion of those experts whose value of the coefficient of concordance (W) tends to 1, which confirms their high competence and the possibility of their further participation as expert respondents. The results of a survey of experts on assessing the competitive potential of light industry enterprises, although they received the value of the coefficient of concordance (W) in the range of 0.4-0.6, but excluding heretics, that is, those respondents whose opinion does not coincide with the opinion of most other experts, we found it is a pleasant fact that the opinion of those respondents whose authority is beyond doubt, and those whom the program classified as heretics, have an unambiguous or close opinion that the factors characterizing the influence of competitive potential on the competitiveness of an enterprise are identical, and they can be used in further research in assessing

this very competitiveness of enterprises, assuming that he is able to manufacture import-substituting products for consumers in the regions of the Southern Federal District and the North Caucasus Federal District. At the same time, manufacturers have every reason for these criteria, namely: the ratio of the quality of the product and the costs of its production and marketing; sales growth rates; costs of innovation; labor productivity; the level of partnerships with interested participants in the production of import-substituting products; costs per ruble of products sold, and the main criterion; the competitiveness of the goods weighted average for the range of products should be considered in demand.

But at the same time, all the responding experts were unanimous that the company's competitiveness will be more stable over time if the company's share in the demand market is stable. In any case, it will not decrease over time if it is guaranteed a return on investment and, of course, a stable profitability of the total assets of the light industry, engaged in the production of import-substituting products, is ensured. The opinion of all experts is justified that the competitiveness of an enterprise is also influenced by a stable trade turnover on the basis of direct contractual relations with the sellers of the products of these same enterprises.

We agree with them on the issue of the role of highly qualified personnel, which of course, although it was reflected in the questionnaire in the form of one criterion - the staff turnover rate - but did not cause the experts, with regret, concern about the liquidation of lyceums, colleges, on the basis of which they trained highly qualified workers and middle managers - foremen, technicians, mechanics, technologists, engaged in servicing not only the innovative technological process, but also innovative equipment. And it is completely sad that the training of engineering and technical personnel has practically ceased, explaining all this by the lack of their demand, although the heads of enterprises themselves are at a loss. There is also a downside to this situation, namely, that managers have withdrawn from the training of these highly qualified specialists through targeted training in colleges and universities, not wanting to bear the costs of this very training, forgetting the Russian proverb: "A miser pays twice." It is also disappointing that the majority of enterprise managers believe that everything will be resolved by itself, but if a shoemaker, a seamstress-minder, a furrier can be trained in the workplace, then it is unlikely to prepare a leading engineer - a manager and a production manager for filled technological processes with an effective innovative solution.

Once again I want to recall one more Russian proverb: "That until the thunder breaks out, the man does not cross himself." Is it really necessary to step on a rake, get a tangible blow on the forehead and shout - "Ugh, I remembered the name of this instrument, that this is a rake." the light industry, which was confirmed by the experts - the respondents, showing unanimity, on the main criteria for assessing the competitiveness of light industry enterprises. Summing up the analysis of the concept of "product attractiveness", its relationship with the closest economic concepts, it is methodologically expedient to arrange the relations of these concepts systematically. Table 2 shows the results of a survey of all respondents on the formation of the image of goods and its attractiveness. ensuring competitiveness and demand among consumers.

Unfortunately, the respondents, when filling out the questionnaires offered to them, did not pay due attention to communication with sellers, methods of payment for a purchase, the possibility of exchanging a purchase made if necessary: the level of service and other factors, and only because our consumer is not spoiled by all this list of services service, both the manufacturer and the trade still have a lot of opportunities for improvement in interaction with consumers in order to guarantee themselves a steady demand.

Thus, the criteria "Product attractiveness" has a right to life and are more significant for both the manufacturer and the buyer to ensure sustainable demand for products manufactured in the regions of the Southern Federal District and the North Caucasus Federal District, and this is the most important and dominant wish for meeting needs, which consumers of these regions would like to sell.

The 21st century has sharpened the scientific, philosophical and practical interest in competition by improving the quality of manufactured products. The scale, content, forms and significance of competition put it in a number of global problems of human development with one important clarification: it is not humanity itself that benefits from achievements in the competitive struggle, but individual subjects of human activity, starting with the personality of the performer and the head of the enterprise, and up to those states in whose interests they work. Therefore, the organization of effective participation in competition should be considered as a leading indicator of professional competence, spiritual maturity and political consciousness, bearing in mind, of course, economic policy. We all wish ourselves and our neighbors success in life, and we associate this with happiness. We explain this condition more often - by external factors: luck, luck, support. Less often - internal - personal qualities.

Judging by the interest in different types of testing, expert assessments, the question generally remains open: what determines success in life?

Often, subconsciously, we feel our inefficiency, but, not understanding the origins, we react to it in different ways: some with even more frenzy pounce on disgusting work, others, with no less zeal, begin to conflict with others, blaming them for their failures.

Success is usually associated with the fact that the more you produce, the more you do, the higher your efficiency, your success. They are very often confused (and sometimes even deliberately) with performance, forgetting or not knowing that the result will be effective if it is not measured against costs.

Production, thoughts and things with a positive interaction of man with the world obey the general law of Nature: existence is possible only under the condition: the arrival of energy must be greater than its consumption. True efficiency is a function of its two constituent elements: the achieved result (P), as well as the resources and means (PC) that allow it to be obtained: remember the fable about the peasant and the goose that lays the golden eggs. Efficiency lies in the balance of its components, ie "P / PC = MEASURE". Indeed, if you adopt a behavior that focuses only on the golden eggs and neglects the goose, then you will soon be left without the resources that produce these golden eggs. On the other hand, if you only care about the goose, forgetting about the golden eggs, then soon you will not be able to feed yourself and the goose.

So, the Efficiency of the activity lies in the proportionality of the result with the resources and means: "R / PC = MEASURE".

The resource of an enterprising person is the whole world around him, but first of all he himself.

A person's personal resources are in his mind and character, in the skills and abilities of interacting with the world.

There is a Pareto rule: 20/80. If you try to use it in our case, you get the following. In relation to an individual, this is: 20% of actions and thoughts give 80% of a positive result. It is striking the persistence with which a person, having been unsatisfied with the result for decades, repeats monotonous actions, but at the same time he never once has the thought: “I’m doing something wrong!? Or - is there something wrong!? " It is very easy for a person to get used to doing stupid, hard physical or monotonous intellectual work and it is very difficult for him to look at himself through the eyes of a researcher, through the eyes of a Master.

They say: "they change a person - situations", but only the Master in them deeply experiences what is happening, is their active participant. The situation for the Master is filled not only with novelty, but also with meaning, in it he finds differences, changes, points of growth. He sees his goal in her. The problem evokes in him a sense of rivalry, a sense of readiness and mobilizes all his forces, which, with such a mood, only multiply with each positive decision. We learn from mistakes, but he has no mistakes, there is only experience, positive experience.

It is the Masters who make up those 20% of people who account for 80% of success. And therefore, our eternal problem has the form of a dilemma: either you become a Master, or all your life you chase in the "collective" of an eighty percent crowd after the ghost of twenty percent success. And the question is justified, will we become the master of our destiny with the inner resource of the Master?

The strategies and behaviors developed can be assessed as productive or unproductive, depending on their relevance to the situation: let us recall the tale of a fool, a man and a goose that lays the golden eggs.

The technical term for thinking styles is query modes. Query modes represent a basic set of targeted worldview techniques. They are built on previously acquired preferences, learned values and views of the world - concepts of the world and the nature of reality, which are related to the map as a system of landmarks used when moving.

To achieve success in learning, you just need to start working with the material, try it without any prejudices, and consolidate its assimilation with appropriate exercises.

In any “masterful” skill or action, we can find a certain “strategy”. His Master strategy includes a series of thoughts and actions that lead relentlessly to success.

Cherished goals serve as a measure of success. Choosing and achieving goals (these include dreams, hopes, desires and specific goals) can be considered the most important components of human experience. In addition to the satisfaction of success achieved, choosing the right goal can literally change our lives. Usually the desired is achieved through personal qualities. It is personalities that turn clear goals into motivation, self-confidence, perseverance and other human qualities that steadily lead to success. One of these qualities is undoubtedly considered ambition.

The activity of imagination and the development of will, undoubtedly, is much more beneficial than overtime work.

Behavior has a purpose, because it must lead to a particular result, and we interpret our actions as aimed at a certain outcome. We ourselves attach importance to them, although sometimes we do it only afterwards, “in hindsight”.

Even in cases where we act without realizing, we still have a fundamental motivation - an unspoken goal.

Consciously and accurately formulating your own goals, that is, a "well-defined outcome", increases the chances of transforming our desires into appropriate actions on the path to success.

Let us analyze this in the context of the general movement towards perfection, namely:

1. Decide what you want (formulate and set a goal for yourself).
2. Do something.
3. See what happens.
4. If necessary, change the approach until you achieve what you want.

Setting the right goals means being able to "correctly formulate the result."

The main principles of the formation and selection of their goals are:

1. Selecting goals that deserve to be achieved.
2. Choosing a goal that you can achieve on your own.
3. State your goal in affirmative terms.
4. Express your goal accurately, in sensory terms.
5. Match your goal with the situation.
6. Soberly assess the consequences of achieving your goal.

Perhaps we began to understand that if we want to change something, then we must start the change with ourselves. And in order to change ourselves effectively, we must first of all change our perception.

The need for a flexible organization of the production system is explained by economic and organizational laws. The relationship between the producer and the consumer determines the economic law of mutual benefit. Organizational laws determine the requirements for adapting the production system to an open economy, which in turn is adjusted by the law of ensuring the adequacy of the internal structure and possible types of organization of footwear production to the conditions of the external market environment. By expanding the assortment and ensuring high quality of manufactured goods, enterprises gain new sales markets and maintain their positions in an already conquered market. The idea of working for an individual consumer allows enterprises to fulfill additional orders without changing the main production plan even in conditions of large-scale production.

Flexibility is the dominant concept in the literature on the most progressive development trends in modern industry. Therefore, it is necessary to clearly define this concept based on the analysis of modern systemic concepts. The following works are devoted to the issues of production flexibility: V.F. Gorneva, M.Kh. Bleherman, V.N. Vasilieva, I.M. Makarova, E.G. Ginzburg, B.V. Prykina, Yu.M. Solomentseva, V.N. Samochkina, Yu.A. Mezentseva, S.G. Selivanova and others.

It should be noted that the main research related to the flexible production system was carried out for the conditions of mechanical engineering, due to the widespread use of numerically controlled machines in this industry, including machining centers, industrial robots and other computer-controlled equipment, which is not typical for light industry.

A large number of publications and authors dealing with the problem of production flexibility predetermines different approaches to the content of this concept. So, V.F. Gornev understands flexibility as the possibility of a fairly quick and economical change in the structural elements of the production system, parameter arrangements, algorithms and operating programs. At the same time, the flexibility of the production system is determined by the range of changes in the technical characteristics and elements of the production system; versatility of technical solutions for main and auxiliary equipment; the time required to change the technical characteristics; improving the management system. The author compares the concept of flexibility with the concept of adaptability of production processes.

M.Kh. Bleherman refers to flexibility as the ability of a production system to adapt to changing operating conditions with minimal cost and no loss or with very little loss of productivity.

The concept of flexibility according to D.A. Nysu reflects the ability of the system to maintain certain production parameters (productivity, accuracy, economic efficiency) within specified limits under non-stationary operating conditions and compensate for various external influences by changing internal parameters according to appropriate criteria in space and time.

Yu.M. Solomentsev proposes to consider the flexibility of automated machine tool systems (ACC) as their ability to adapt to a change in the nomenclature of parts and various production situations. In this case, adaptation is understood as the transition of the ACC from an inoperative state to a working one, and by a production situation - organizational features associated, for example, with equipment and tool failures, with the launch of extraordinary parts for processing, etc.

V.N. Samochkin defines the flexibility of an enterprise as "the ability to obtain the desired result, which allows it to master, within a certain period of time, a regular number of products that can be demanded by the market and, in turn, allow it to obtain the necessary result in the future, ensuring the survival and development of the enterprise" ...

P. Blyton considers the concept of flexibility by J. Atkinson only as the flexibility of the workforce, including functional in terms of number, time and financial flexibility.

Thus, flexibility is a system characteristic reflecting the ability of any system to adapt to the dynamics of internal and external influences, maintaining the performance indicators at the required level of efficiency. The main principles, the implementation of which allows you to achieve an appropriate level of flexibility, are modularity, variance, consistency, information content.

Flexible technology - the ability to structural changes, quick adaptation of production elements in conditions of dynamism and intensification.

The concept of flexibility reflects the ability of a system to maintain certain parameters (productivity, economic efficiency) within specified limits under non-stationary operating conditions. It also compensates for various external influences by changing internal parameters according to appropriate criteria in space and time.

There are other interpretations with a significant range of understanding of flexibility from readjustment to full automation. Even a cursory analysis of the views reflected in the literature on the concept of flexibility of the production system indicates that it has not yet been finally formulated. To a greater extent, it is revealed in the definition proposed by B.V. Prykin, who considers flexibility as the ability of a system to perceive innovations and adapt to new conditions of functioning in the event of deviations from its existing state without violating its integrity. Based on the study of all available views on the problem of the flexibility of the production system, the concept of the flexibility of the production system is formulated as follows.

"The concept of flexibility is to create a production system that reflects the ability to be adaptive to changing external conditions only on the basis of changes in internal organizational and technical parameters, while maintaining the main economic indicators and performance indicators."

The integration processes taking place in the world economy are influenced by two main directions that have developed in the new technological paradigm: an orientation towards increasing productivity and competitiveness. Structural restructuring of the economy at the end of the XX century. was carried out under the influence of the spread of new information technologies, increased operational uncertainty and the development of new models of management and marketing. The ongoing processes were reflected in the new reorganizing strategies of Shore, Sabel, Harrison, Storper and were summarized by Manuel Castells in his work "The Information Age: Economy, Society and Culture." The rationale for the transition to new organizational structures is the transition from "mass production to flexible production" (Piore, Sabel) or from "Fordism to post-Fordism" (Corea).

The mass production model was based on increasing productivity through economies of scale in a conveyor mechanized process of manufacturing standardized products, subject to the control of a vast market by a specific organization - a large corporation built on the principle of vertical integration and an institutionalized social and technical division of labor. These principles were embedded in management methods called "Taylorism" and "scientific organization of labor."

When demand became unpredictable in terms of quantity and quality, world markets diversified and as a result became difficult to control, and the pace of technological change made highly specialized production equipment obsolete, the mass production system became too rigid and expensive for the new economy. The provisional response to this rigidity was a flexible manufacturing system. It was practiced and conceptualized in two different forms: as flexible specialization, as formulated by Piore and Sabel, based on the experience of the industrial regions of Northern Italy, where "production adapts to incessant changes without pretending to control them" in the structure of industrial crafts or custom production.

At the same time, the concept of flexible specialization is based on the methods of implementing the “flexible production paradigm” as the most adequate response to market changes.

However, the practice of industrial management in recent years has introduced another form of flexibility: dynamic flexibility, in Corea's formulation, or flexible manufacturing with a large volume of output, as defined by Cohen and Zisman, also adopted by Bairn, characterizing the transformation of the insurance business. Flexible, high-volume manufacturing systems, typically associated with growing demand for a given product, combine high production volumes for economies of scale, with customized, easily reprogrammed production systems that save on scale. New technologies make it possible to rebuild assembly lines typical of a large enterprise into a set of easily programmable production units,

In industrialized countries, large-scale and mass production is only 20%, and single, small-scale and batch production is 80%.

For many decades, the most efficient technological systems, in terms of flexibility, were automated lines built on the basis of an aggregate principle from standardized parts in a mass production environment. These lines are designed taking into account a specific technology, volume and cycle of production, capabilities and production areas of the customer, etc. The technical revolution in all areas of technology has led to frequent product changes. The trend towards diversification has manifested itself in the creation of various models of all types and types of shoes, adapted to the specific requirements of the consumer. The rapid renewal of the range of shoes and the decrease in serial production as a result of the appearance of modifications (individualization of consumer demand) led to the fact that that traditional rigid automated lines in many cases ceased to meet the requirements of modern technological development, and their use hinders the production of new models of footwear. In order to resolve the contradictions caused, on the one hand, by the small batch of production facilities, and on the other hand, by the large scale of production itself, methods of group technology were developed. These goals are achieved by creating technological systems for processing shoe parts and assemblies, which are complex complexes with a high flexibility and level of automation. All technical means in the complexes are controlled by computer controllers of different levels from control devices for individual elements to an automated production control system (ACS) and an automated process control system (ACS). From these positions, flexibility acquires the following definition: the ability

of a technological system to maintain the necessary performance characteristics and parameters when the goals and objectives of the production of footwear change within the specified limits, which is achieved by changing the structure, organization and program of the system. Modern equipment for small batch production offers almost unlimited flexibility, since is a universal equipment with manual control. In these systems, the main problem was and remains not the problem of flexibility, but the problem of automating all functions while maintaining the existing flexibility. Thus, in the development of modern shoe production systems for small-scale industrial production, a different technical and organizational approach is characteristic, which ensures the achievement of high flexibility.

– division of tasks in the production cycle between specialists, autonomous groups or independent firms in such a way that each unit can maximize the "economics of scale" and expertise gained from specialization in one area, and at the same time be able to vary the final product in quantity and form without losing overall efficiency ;

– rejection of Taylorism (reliance on skills, versatility, participation of workers in the struggle for product quality and the flow of ideas; reintegration of mental and physical work);

– decentralization of the decision-making mechanism (to reduce the alienation of workers, increase their responsibility and increase the speed of response to changing market signals);

– development of multipurpose technologies that are flexibly adaptable to various tasks and volumes;

– a culture of cooperation, the development of a negotiation process between firms and within firms as a key condition that maintains the necessary interdependence and flexibility.

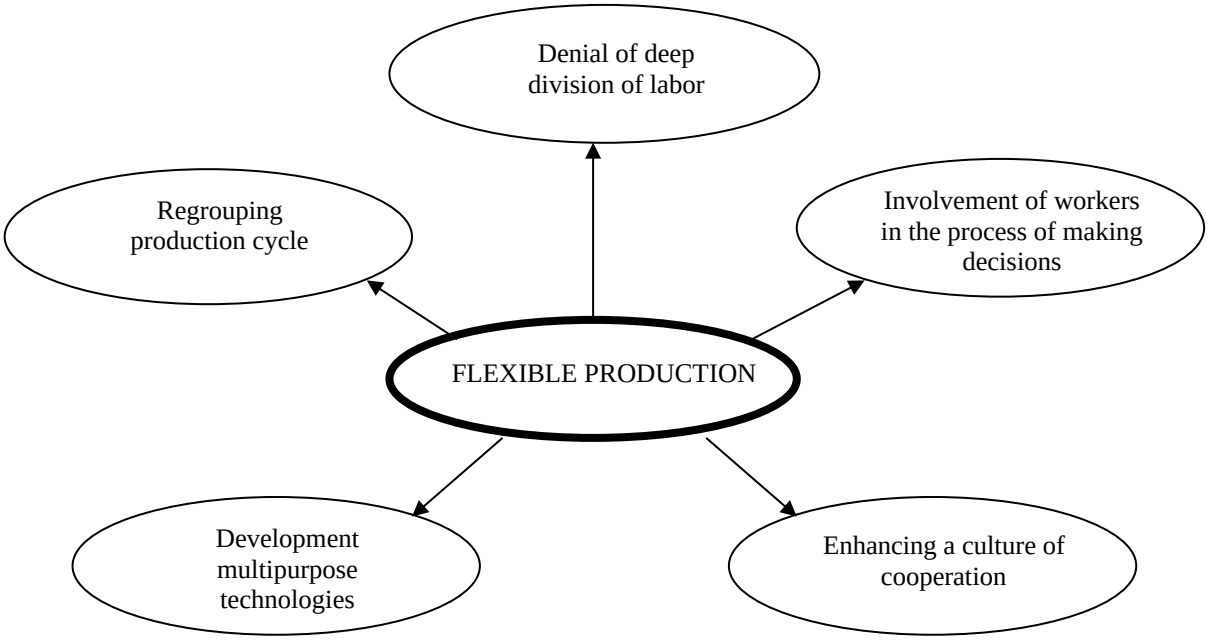

Fig. 2- Methods for ensuring production flexibility

The challenge of ensuring flexibility must be addressed not only for newly created enterprises, but mainly for existing ones. In this case, it is divided into two components: flexibility associated with the preparation of production, and flexibility associated with the functioning of the production itself, which in turn are subdivided into the flexibility of design solutions; flexibility of the technological process; flexibility of the organizational structure; information flexibility. The formation of flexible technological processes is a reaction of production to the individualization of consumer demand, and a change in production is seen as a change in the purpose of production. In turn, changing goals requires the transition of the production system to a new state.

Consider Figure 3 of regulation of a flexible system with one degree of freedom, which is equivalent to regulation of one parameter in a system with an arbitrary number of degrees of freedom, assuming complete independence of this parameter from the other. In this scheme, X (t) and Y (t) are the “production goal” variable and the “input parameter” variable with the given constraints, respectively; f (t) - external disturbance; t is time.

For example, Y (t) is the current value of the unit cost, and X (t) is the current number of model names simultaneously processed in a flexible system, each of which is characterized by a vector (labor intensity; number of workers, operating and maintenance costs; cost of basic and supporting materials). Then the

transfer function of the system for the goal Wc = dY / dX reflects the intensity of the change in the input characteristics of the system depending on the change in goals or, in other words, the dependence of the cost on the change in the components of the specified vector, which is described by a certain mathematical model. On the assumption that the process is continuous and the connections are linear or linearizable, the transfer function of an open-loop dynamic system can be used for frequency analysis of the stability of its given state.

The response of the system to external disturbances is characterized by the transfer function for external influences Wwn = dY / df. This function determines the stability or margin of stability of the system to external influences in a steady state. Thus, each steady state is characterized by indicators of dynamic quality: stability, stability margin, resistance to external influences.

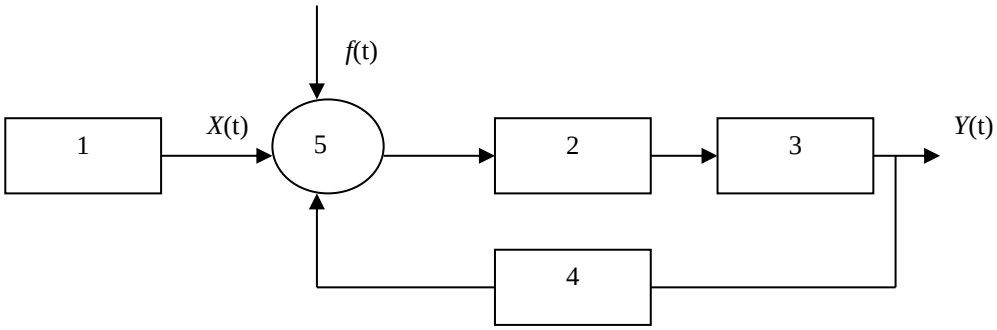

Fig. 3 - Block diagram of flexible system regulation:
1 - the formation of goals and objectives of processing; 2 - generation of options for structure, organization and action program; 3 - decision making;
4 - analysis of the accepted option; 5 - analysis of deviations

Changing the goal of production requires the system to transition to a new state. The transient process is characterized by the time, speed and accuracy of the transition. These characteristics are dynamic indicators of the flexibility of the technological system. Unlike static ones, they characterize the limiting possible changes of a particular parameter and the number of technologically distinguishable (definable, quantized) states.

In connection with the multicriteria and multiparametric nature of steady states and transient processes in the system, the transition of the system to a new state in accordance with the set goal can be considered as its exit into the range of permissible values, and not into the optimal point of the criteria space. This is due to the fact that in a real multi-criteria system, the optimal value of one of the indicators is achieved only when the other deteriorates.

Figure 4 shows a diagram of the system transition from state 1 to state 2 and the corresponding admissible areas ΔX_{one} and ΔX_2adjustable parameters. It can be seen from the diagram that the transition of their state 1 to state 2 is characterized by the transition time T, the static deviation X0, the overshoot valueδ (oscillation), as well as permissible values ΔX_{one} and ΔX_2 adjustable parameter (X2>X1). Thus, the speed of overcoming the crisis situation, which is associated with a reorientation to the production of a new range of footwear and the development of new technologies, is an indicator of the flexibility of technological and production processes.

The analysis of the dynamic transition scheme to a new state allows us to consider flexibility as a property that provides the best quality of the transition process and maintenance of the new state. From the presented dynamic model of the transition to a new state, two tasks can be formulated, the solution of which should be provided by the properties of flexibility. Firstly, this will improve the quality of the transient process (time, speed, accuracy), and secondly, ensure the maintenance of the new state. Obviously, the transition process is an adaptation to a new range of products, or, in other words, preparation of production for the transition to a new product. In turn, maintaining a new state is nothing more than adaptation to various production situations.

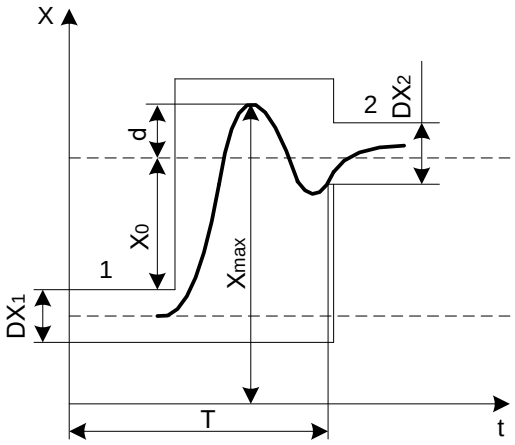

Fig. 4 - Scheme of the system transition to a new state:
***T*- transition time; X0 - static deviation; Xmax - dynamic deflection;**
δ - the amount of overshoot; ΔX_{one} and ΔX_2 - the range of admissible values of the controlled parameter in states 1 and 2; *t* - current time

Thus, flexibility allows the transition of a dynamic system of shoe production from one stable state to another in accordance with the production goal.

The greater the required deviations of the system and the higher their speed, the more complex the regulators and technical means, the higher the costs of creating and operating the system. Therefore, there is an economically rational flexibility for defining production conditions and a rational level of automation for its implementation.

In serial and large-scale production, the nomenclature of fixed models of one type of footwear is limited and the regulation system is significantly simplified; operating costs and changeover costs are split into large batches of models, resulting in an overall cost-effective production.

Consider the classification of the flexibility of the production system, taking into account the preparation and operation. YES. Nys distinguishes the following forms of flexibility: constructive, technological, parametric. (fig.4). According to this classification, the constructive form of production flexibility is realized through the configuration of the machine transport system and the control system. Technological flexibility is provided by the following components: route, operational, software types of flexibility. It is obvious that the configuration of functional systems is determined by the adopted technological process and means of technological equipment, while the concept of constructive and technological flexibility according to D.A. Nysu can be combined into a single technological flexibility.

Parametric flexibility allows you to adjust reliability, transition time to a new state, efficiency, transition accuracy, productivity. It is fundamentally nothing more than organizational flexibility. its influence on such components as reliability, transition time, productivity is determined not only by the nature of the technological process, but also to a greater extent by organizational reasons.

Yu.M. Solomentsev et al., The flexibility of a machine tool system is taken as its transition from a non-working state to a working one and adaptation to changes in various production situations, which are understood as possible equipment and tool failures, the launch of extraordinary parts for processing and other organizational features. At the same time, technological, structural and organizational flexibility stand out separately. Technological flexibility should ensure the adaptation of the system to the changing nomenclature of parts. The structural flexibility of the system should allow it to fulfill its service purpose in the event of a failure of any of the components (machine tool, CNC system, tool, etc.). In addition to reliability, structural flexibility includes the ability to transfer the functions of a failed component to another.

When analyzing the presented classifications, the general characteristics of the forms of flexibility of Yu.M. Solomentsev and D.A. Nysa Technological flexibility according to Yu.M. Solomentsev is substantively identical to those identified by D.A. Lowered constructive and technological forms, united into a single technological one. Structural and organizational form of flexibility Yu.M. Solomentseva corresponds to the parametric one according to D.A. Nysu.

M.Kh. Bleherman identifies the following types of flexibility - the flexibility of expanding the system; flexibility of the nomenclature and volume of production; system adaptability; technological flexibility. The flexibility of system expansion implies the possibility of modular expansion of the production system. The flexibility of the nomenclature and the volume of production provides for the ability to

update products and manufacture them with any launch batch. The adaptability of the system reflects the duration and cost of the transition to the manufacture of the next part name. Technological flexibility (route and operational) - the use of various options for the technological process to compensate for all kinds of deviations. All of these flexibilities are also one technological flexibility.

V.F. Gornev distinguishes between the flexibility of the basic elements of the production system; flexibility of technological equipment; structural flexibility; flexibility of the control system. The flexibility of the basic elements of the production system is ensured by the design capabilities and technical characteristics of equipment and technical controls, their full or partial interchangeability or economically effective replacement. The flexibility of technological equipment can be considered by groups of technological equipment: separately by fixtures and instrumentation. Both of these forms of flexibility are determined by the design capabilities and technical characteristics of technological equipment: equipment and technological equipment.

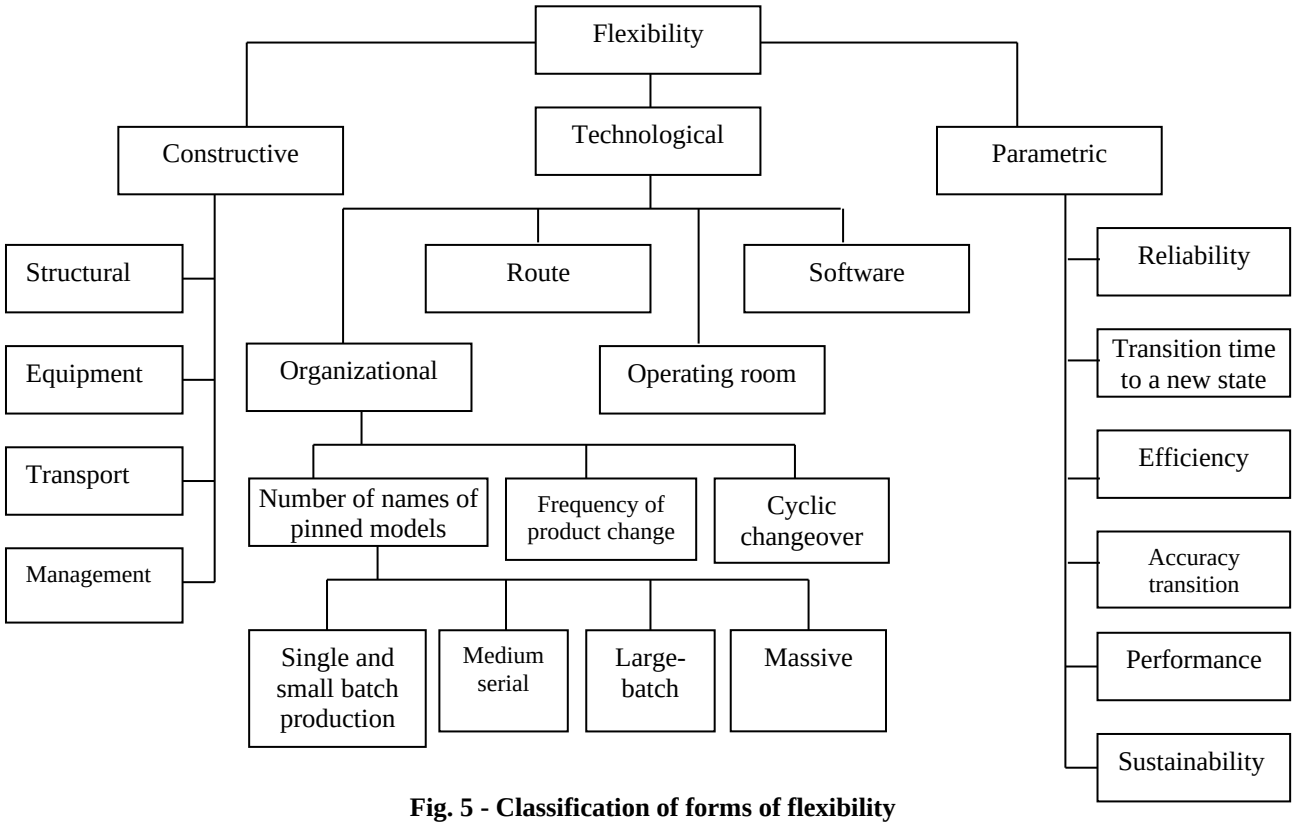

Fig. 5 - Classification of forms of flexibility

Structural flexibility is determined by the possibility of implementing different variants of technological processes within the same production system in order to optimize the process when conditions change due to the appropriate structure of the system. Flexibility of the control system, in the presence of which it is possible to jointly or separately operatively change short-term production plans relative to the projected ones, intra-module and organizational control due to the presence of unplanned technological disturbances.

Both structuring and flexibility of the management system solve organizational problems, being a generalized organizational form of flexibility.

In turn, B.V. Prykin as one of the properties of the system introduces the concept of mobility, i.e. the ability of the constituent elements of the system to move, concentrate in the necessary combinations and function rationally in specific situations, which is also a component of organizational flexibility.

On the basis of the foregoing, the structural nature of the concept of flexibility becomes obvious, it is natural that the hierarchy and content of levels in accordance with the tasks to be solved can be measured, expanded and refined. The analysis of the considered approaches makes it possible to establish that there are no fundamental differences between them.

All the proposed forms of flexibility are grouped into two main ones: technological and organizational. The diagram shown in Figure 6 reflects the influence of the reasons and tasks of adaptation of production to

the prevailing economic conditions and forms of flexibility that contribute to the implementation of these tasks on the flexibility of production as a whole.

Thus, the creation of flexible technological processes is a complex transitional process, realized through technological and organizational flexibility.

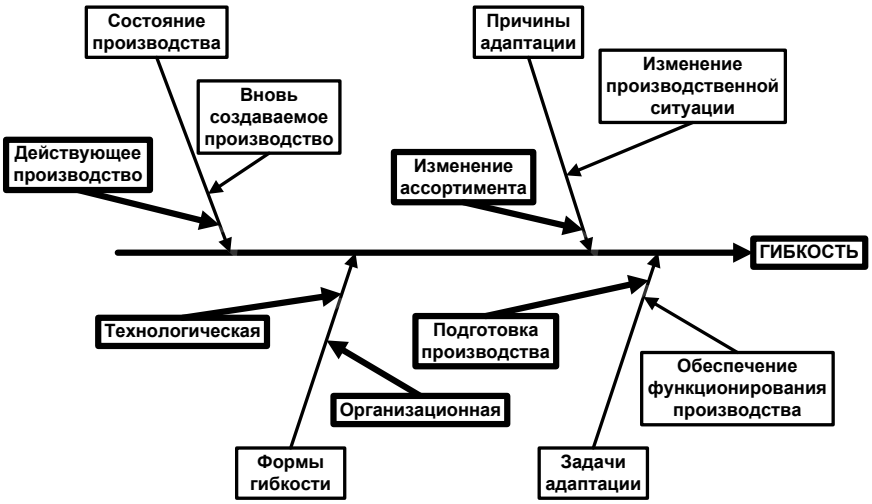

Fig. 6 -. Diagram of indicators affecting production flexibility

4.3. Process flexibility as a factor of enterprise competitiveness

It is known that the concept of competitiveness can be applied to various objects: documentation of technology, products, production, etc. from all categories of competition philosophical, social, psychological, market, economic, unconditional importance for production are market and economic, since they characterize its ability as a complex open the organizational and economic system to predict its future, to produce specific products and thereby provide a profit sufficient for the normal functioning and development.

The competitiveness of an enterprise is determined by external and internal factors. The factors of the organization's competitiveness, determined by the external environment, are elements that must be taken into account when forming the flexibility of a production system of any kind, however, in the future, only the influence of internal competitive advantages is considered.

Market and economic categories of competitiveness of enterprises and the industrial products they produce have been studied in detail in the works of M. Porter, J.-J. Lamben, W.J. Stevenson and others.

So, M. Porter singles out as innovations that allow creating a competitive advantage of production or its products, new technologies, new or changed customer requests, the emergence of a new segment of the industry, changes in government regulation, changes in the cost or availability of production components. At the same time, the changed requests of buyers, the emergence of a new segment of the industry, a change in government regulation, a change in the cost of production components are classified according to the classification of J.-J. Lamben to external factors that do not affect the costs of production itself.

Buyers' actions are manifested in completely new requests or their assessments change dramatically, which serves as an impetus for the design and release of new or modified products. The emergence of a new segment of the industry allows you to enter a new group of buyers. Changes in the cost of components, changes in government regulations, undoubtedly, are factors of external influence on production efficiency.

Then the changes in production components and new technologies identified by M. Porter should be considered as the reasons due to which internal factors of the enterprise's competitive advantage appear. Indeed, changing technology creates new opportunities for the development and production of goods. For an already operating production, replacing the entire technological process is an expensive measure, and the improvement of individual stages provides real opportunities for increasing the level of competitiveness of the enterprise. In any case, technology upgrades are almost always associated with additional costs.

W.J. Stevenson proposes to form the competitive advantages of an enterprise through price, quality, specific features of goods or services (production or service orientation), mobility (flexibility) of production, time or timing of processes (timing of certain operations). Of these factors, internal factors include price, quality, production flexibility, time and timing of processes. Product quality, production flexibility and the duration of processes are mainly

determined by the technical and organizational level of the enterprise. At the same time, there is a clear influence of flexibility on the price of products and the duration of its production cycle. Indeed, flexibility provides a quick restructuring for the release of a new range of products, which leads to a reduction in the duration and costs of its production.

R.A. Fatkhutdinovs are invited to take into account structural, resource, technical, managerial and market factors as internal factors.

Structural factors involved in the design of an organization include:

– production and organizational structure of the enterprise;

– the mission of the organization;

– specialization and concentration of production;

– accounting and regulation of production processes;

– informational and normative-methodological base of management, etc.

Resource internal factors for achieving a competitive advantage of an organization are associated with the specifics of relationships with suppliers, taking into account and analyzing all types of resources, with a functional-cost analysis of manufactured products, optimization of the efficiency of resource use, etc.

The technical factors of the organization's competitive advantages are realized through technical innovations, including: possession of patent novelty or know-how of products and technologies, an increase in the proportion of progressive technological equipment and a decrease in its average age, etc.

Administrative internal factors of the organization's competitive advantage: these are the managers themselves, the level of their qualifications, as well as the functioning of management systems, information support for decision-making, quality management in the organization, etc.

The increasingly fierce competition in the international consumer goods market poses new challenges for the shoe industry. This is the problem of the criticality of the time required for creating a product and organizing its sale, and improving the quality of design and production processes, and problems associated with competition in the maintenance market, and problems associated with direct cost reduction (direct capital; labor compensation in production and etc.).

The results of a study in the field of the state of shoe enterprises in Russia and the Southern Federal District, in particular, showed their inability to cope with the growing difficulties from the external and internal environment. Having embarked on the path of transition to market relations, shoe enterprises faced a crisis in their economic systems.

The old directions in the management of a shoe factory, emerging in the internal environment (organization of production, cost reduction, efficient use of all resources, growth in labor productivity, etc.) do not give a way out of this situation. It is necessary to develop and use new approaches in the field of economic management of the enterprise, including marketing and the development of the competitive status of the enterprise, which facilitates adaptation to the external environment.

Thus, the success of a shoe business depends on how quickly the threat to its existence is identified. This once again confirms the main conclusion based on the results of the study of the state of shoe enterprises, that their adaptation to the external environment, with the absolute importance of the internal environment, should become paramount and manifest in strategic forecasting and flexible development of the enterprise.

It is important for shoe enterprises to be able to navigate in the use of the achievements of scientific and technological progress in order to identify new trends in time, to work out the concept of developing these achievements for specific production conditions, to prepare for their implementation and ensure their implementation.

The flexibility of the enterprise is the ability of the enterprise to obtain the necessary result, which allows it, without a radical change in the basic production assets, to master within a certain period of time a regular (necessary) number of new models of footwear that can be demanded by the market and, in turn, allow in the future period to obtain the necessary result that ensures survival and enterprise development.

The structure of footwear production is quite complex and differs in a variety of assortment of raw materials and finished products. A feature of the footwear industry is the frequent change of production facilities (assortment). The design of new models of footwear provides for the development of technological processes for their manufacture. This work must be carried out in a short time and with minimal costs, and the optimal production option is selected, since at the design stage of the technological process, the intensity of the enterprise's functioning is set in advance, i.e. the possible level of technical and economic indicators of its work. At the design stage, the foundations of product quality are also laid, since its properties largely depend not only on the appearance, functionality, fashion compliance, etc., but also on the manufacturing process.

In this regard, it would be more correct to talk about the need to create a structural model of shoe production that would ensure the functioning of a flexible technological process with the obligatory implementation of the main requirement - ensuring the manufacture of shoes in an assortment that meets the needs of the market and realizes the requirements of competitiveness.

A generalized structural diagram of the flexible development of an enterprise is shown in Figure 7.

The structural model of production will be effective even if the behavior of the proposed range of products in its "life" is taken into account. all stages of the product life cycle (LLC) will be implemented:

– marketing and market research;

– design and development of technical requirements for the products being created;

– material and technical supply;

– preparation and development of technological processes;

– production;

– control, testing and inspection;

– packaging and storage;

– sale or distribution of products;

– installation, operation;

– technical assistance in maintenance (repair, etc.);

– disposal after the end of use of the product.

Fig. 7. Generalized block diagram of agile development enterprises:
G - mathematical dependence, providing a scheme for the development of flexible technological process of manufacturing a range of products;
Wob - resistance (result) to renewal in different development cycles this production;
Sob - the ability to update in different cycles of development of this production

A distinctive feature of the light industry is the short life cycle of products, since the clearly defined aspiration of people for individuality in clothing, footwear, and accessories necessitates the production of a wide range of products. This leads to frequent product model changes, reduced batch sizes, and increased launch frequency.

Organization of multi-assortment production with maximum use of the capabilities of the equipment used, labor resources and production areas and the possibility of periodic change and renewal of footwear with minimal cost and time for organizing its production are the main requirements for modern production.

In the general case, the average production time of a unit of TEP production is determined by the average time of performing operations T, the average value of the preparation for the launch of the

corresponding batch of TK, the average time of preparation for production for a given TPP model, the average number of batches of manufactured products during the life cycle B, the average batch size A. definition of TEP has the following form:

$$T_{EP} = T + TK / A + TPP / AB. (1)$$

The preparation time for the launch of a batch of technical specifications includes labor costs for the selection of materials, adjustment of equipment, planning the production of a batch of products, etc. and is calculated at a time for each batch. The production preparation time of the CCI includes: model selection, design, technological preparation, costing, pricing, production planning, which are calculated at the same time, but for the entire production program of a given model.

In the shoe industry, there is the concept of a basic model, for which the main design and technological developments are carried out, refined for working models, the so-called model features. In this regard, the concept of a conditional life cycle of the base model overlaps the life cycles of working models (Figure 8).

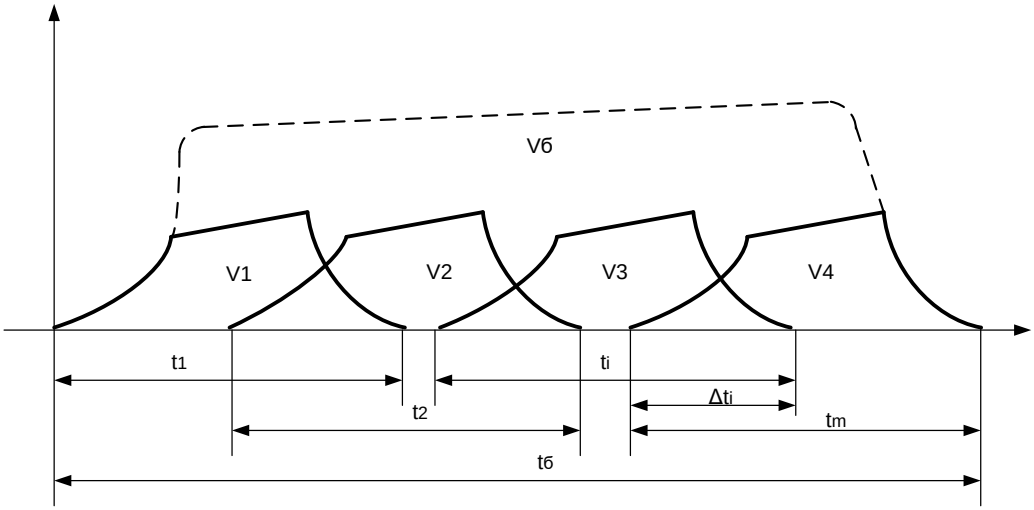

Fig. 8 - Relationship of the life cycle of the base model with life cycle of working models

It is obvious that the total volume of production of products based on the basic model V_b will be determined:

$$V_б = \sum_{i=1}^{m} V_i , \quad (2)$$

Where V_i is the production volume of the i-th working model;

m is the number of working models released on the basis of the base one.

In turn, you can write:

$$t_б = \sum_{i=1}^{m} t_i - \sum_{i=1}^{m} \Delta t_i , \quad (3)$$

Where t_b - conditional life cycle of the base model;

t_i is the life cycle of the i-th model;

Δt_i - time of alignment of life cycles of working models.

When launching n models per year based on k, the base total labor costs for the production of products will be:

$$\sum_{i=1}^{n} T_{ЕП_i} = \sum_{i=1}^{n} T_i \cdot A_i \cdot B_i + \sum_{i=1}^{n} T_{3_i} \cdot B_i + \sum_{j=1}^{k} (T_{ППб_j} + \sum_{x=1}^{l} \Delta T_{ППр_x}) , (4)$$

Where $T_{ППб_j}$ - preparation time for production of the j-th basic model;

$\Delta T_{ППр_x}$ - change in the preparation time for production of the x-th worker models based on the j-th base;

l is the number of working models released based on the j-th basic.

The influence of the components of the TK and CCI on the total labor costs is determined by the level of seriality. With a small serial production, the value of total labor costs is significantly influenced by the second and third components of formula (5) for determining the average production time of a unit of TEP products. They become comparable in size to the first component, since they are one-time and are

distributed over a small number of batches and products in each batch.

In this regard, a change in the average time of the main work operations performed cannot significantly affect the total labor costs. Hence, it becomes obvious that with a small serial production level of automation and specialization of equipment, it is impossible to significantly change labor costs. This is in line with the internal structure of a small business.

In mass and large-scale production, the change of models during the year is relatively small, i.e. products are produced in large batches and for a long time. Enterprises of this type mainly produce specialized footwear with practically no product variability (for military personnel, etc.). In this case, the second and third components do not have a significant effect on the total preparation time for the launch and the production preparation time is distributed over a large number of products. The determining influence on the total labor costs is the average time of operations. Based on this, the selection of equipment and the qualification of personnel should be carried out.

The implementation of the concept of flexibility becomes possible with the rapid execution of various volumes of orders from small-scale, almost one-off, to orders with a large series, for example, with the level of medium-series production. This entails the need not so much to reduce labor costs for preparing production and preparing the launch of batches, as in reducing the time of these preparatory work. Consequently, the technological process for the production of products should be easily reconfigurable. This implies the unconditional use of quickly adjustable and sufficiently specialized and automated equipment. The qualifications of operators and maintenance personnel must be comparatively high in order to ensure high performance for everyone in different workplaces. Flexibility should be provided for restructuring not only the technological process, but also the entire staff. In this case, all three components of the average production time of a unit of production become significant and manageable.

The characteristics of the requirements for increasing the flexibility of the functioning of production in conditions of frequent changes in the assortment are shown in Figure 9.

Due to the large volume of products and the small number of manufactured models, the principles of flexibility when applied to mass and high volume production are not significant. As for small-scale and individual production, it is already flexible in terms of its internal organization. Consequently, the concept of flexibility is important for medium-scale production, in which models of a wide range are produced at sufficiently large volumes.

For the successful operation of enterprises, a high level of renewal of the range of footwear is required. The main objects of renewal are the means of labor (equipment, tools, objects of labor, basic and auxiliary materials, components), production technology, organization of production and labor, and, finally, the footwear itself. The renewal of the first three objects is directly reflected in the renewal of the shoe assortment. Socio-economic factors also play a significant role in updating the range of footwear: the level of income of the population, the degree of saturation of the market with footwear, consumer demand and fashion. Under the influence of fashion, not only the shape of the shoe, the number of parts and their arrangement changes, but also the nature and methods of processing parts and their connections, finishing, materials used, etc. Factors determining shoe renewal

The directions of renewal of the assortment of footwear are determined by various combinations of factors. So, under the influence of scientific and technical factors, the production of new shoes is possible using new technology on existing equipment using previously used or new materials, using existing technology on existing equipment using new materials, using new technology on new equipment, etc.

The production renewal is of a chain nature. So, a change in technology is usually accompanied by a complete or partial change in the design of shoes; the introduction of new equipment requires the improvement of technology, and the latter is associated with the design of the product.

The large variability of socio-economic factors of product renewal, as well as the influence of socio-economic factors, make it possible to distinguish three types of renewal of the range of products that are characteristic of shoe enterprises.

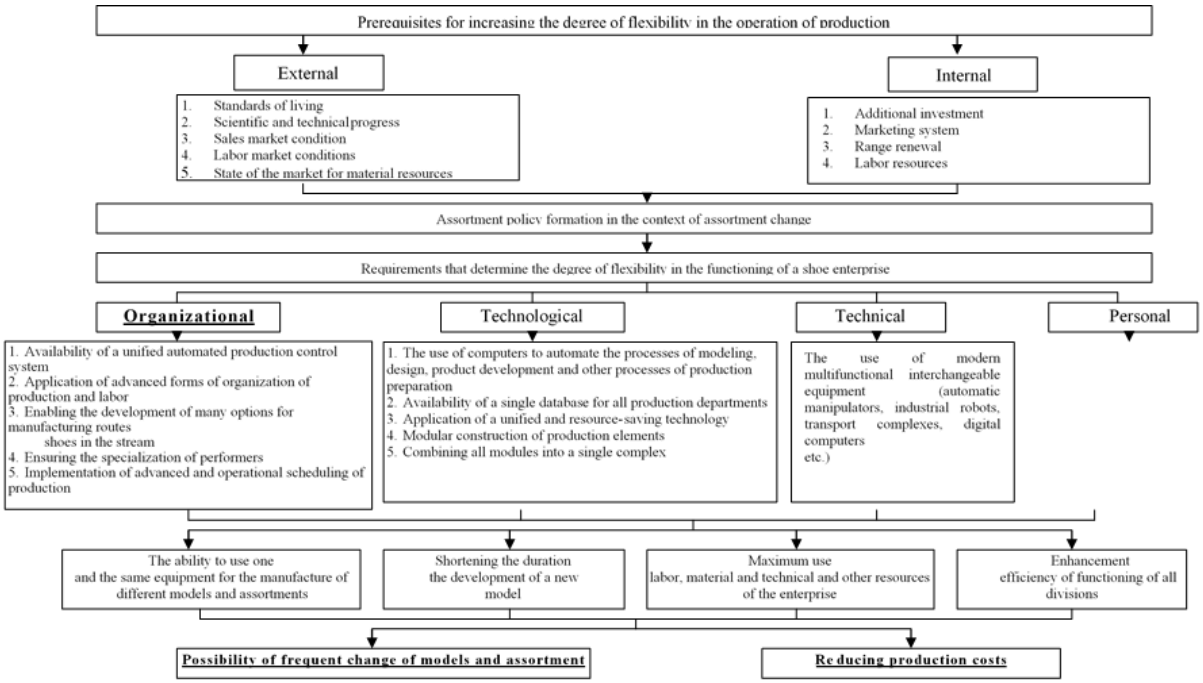

Fig. 9 - Characterization of requirements for increasing the degree of flexibility of operation production in conditions of multi-assortment production

The first type of renewal of light industry products is characterized by the introduction of products that are fundamentally new in terms of design and technology, which have not been previously produced at any enterprise and are the result of scientific research and design work. These products are distinguished by new consumer properties and technical and economic indicators, because are produced according to new technology using new materials based on nanotechnology and on new equipment using innovative technologies.

The second type of renewal of the product range is characterized by the fact that the enterprise creates modifications of previously produced products to extend the maturity phase of their life cycles.

The third type of renewal of the assortment of light industry products is characterized by the development of the production of fashionable novelties and high-quality products, fashionable structural elements, fashionable styles, new types of materials, and the release of especially elegant products in small batches. This type of renewal also includes the seasonal change of the product range. The third type of renewal of the product range is most closely related to the change in fashion, it contributes to the growth of the competitiveness of the enterprise and the formation of a positive innovative image.

Each of these types of renewal of the product range is characterized by its own complex of works, organizational features, duration of development, etc. Each type of update is also characterized by its own time intervals, within which the selected direction of the update is relevant. After a certain time, new, more progressive technological, technical and design solutions appear, therefore, the release of products based on previous solutions will lead to a decrease in the technical and aesthetic level and a deterioration in economic characteristics; such products of the enterprise will not be in demand among consumers.

To solve the problems of domestic light industry enterprises associated with updating and expanding the range of products, organizing the release of products that meet consumer requirements, research is needed in the field of managing the development process and launching a new range of products.

Product assortment management is the impact on the development processes, the formation of the composition and structure of the manufacture and sale of products in order to maximize the satisfaction of consumer demand with high technical and economic indicators of production.

The development and implementation of control actions aimed at meeting consumer demand for products must be performed within the framework of the product range management system.

If we take into account that control actions are carried out through various kinds of activities, then the subsystem of product assortment management can be understood as a set of interrelated organizational, technical and social measures for the development, formation of the composition and structure, production and sale of products in order to maximize consumer demand.

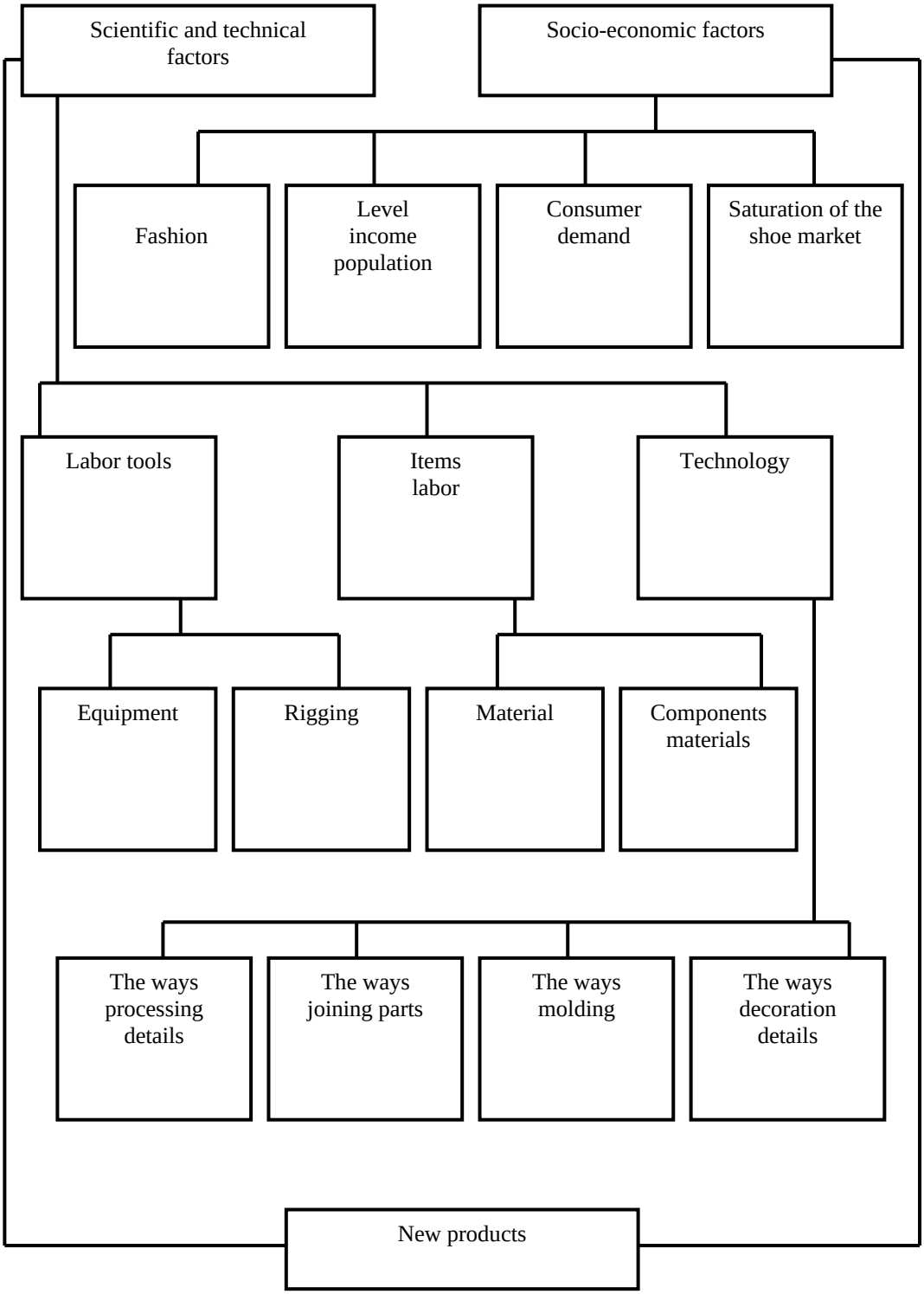

Fig. 10. Factors determining the feasibility of product renewal

Among the main functions of the product range management system are the following:

– formation of the composition and structure of products;

– organization and operational regulation of production with the aim of the fastest possible transition to new models and the development of the required production volumes;

– organization of product sales.

In addition, the system performs the functions of collecting, processing and preparing information

necessary for the implementation of basic functions. These include:

– analysis of manufactured types of products;

– analysis of the assortment policy of the main competitors;

– putting forward proposals on the feasibility of producing a new type of product and phasing out products that are not in demand;

– analysis of consumer attitudes towards new types of products.

An important criterion for the competitiveness of footwear on the market is its cost with the corresponding quality, as well as the purchasing power of the population.

The instability and dynamism of the external environment force enterprises to abandon the method of long-term planning based on the extrapolation of existing conditions, and switch to management methods based on foreseeing changes, setting objectives for the development of the enterprise.

Despite the individual nature of market research conducted by a particular shoe company, in the process of a comprehensive market study, it is necessary to perform the following independent, but interrelated and complementary research:

– filling with goods;

– market and its segmentation;

– customer behavior and consumer demand;

– analysis of the conditions of competition;

– forms of sales activities and measures to generate demand and stimulate sales.

Market research is carried out using a rich arsenal of various analytical methods, including questionnaires, various surveys, methods for analyzing patent information, methods of system dynamics, correlation-regression analysis, etc.

The main task of developing a marketing (market) strategy is to ensure sustainable commercial success of the enterprise, effective sales of products over a long period of time.

The market strategy is determined by the factors of demand, the level of competition and the general market situation and should ensure that the existing and potential benefits of the shoe company can be realized.

The availability of high-quality, competitive goods is a prerequisite for the highly efficient functioning of an enterprise. From this point of view, marketing can be viewed as a system of measures for the mutual adjustment of the product and the market in order to achieve sustainable commercial success by the enterprise.

In marketing theory, a product is a means by which a certain need can be satisfied, i.e. a set of useful properties of a thing. Thus, F. Kotler, a well-known specialist in the field of marketing, distinguishes the following components of the product, grouping them into three levels.

The first level is the fundamental characteristic of the product - its functional purpose, i.e. idea or concept of the product. A product in real performance has a number of characteristics that form the second level of product characteristics. These are such characteristics as the level of quality, specific design, brand name, packaging. And, finally, the third level is a set of additional services offered along with the product: after-sales service, a guarantee system, terms of delivery and payment for the product, accompanying documentation and the so-called "image" of the product, i.e. the image of the product and the image of the manufacturer of this product from the consumer of the product.

The solution of problems associated with the development of new products, causes, first of all, the need to clarify and clarify the economic meaning of the concept of "new products".

The art of planning a shoe assortment consists in the ability to translate existing and potential technical and material capabilities into products that bring profit to the manufacturer, have a consumer value that satisfies the buyer.

Assortment planning begins either from the moment needs are identified, or from the moment when, as a result of market research or on the basis of other information, a basic idea of the product has been formed. Regardless of the source of the idea of a new product, it is necessary to conduct market research sooner or later in order to find out whether the conceived product meets a perceived or not yet realized need.

When forming the assortment policy of footwear production, it is necessary to take into account the intra-production capabilities, which make it possible to diversify the assortment, satisfy the consumer and take into account the risk of lack of demand for the goods.

The network schedules for assortment planning, which can be developed at enterprises, allow you to determine the time from the moment the product is conceived to the beginning of its implementation in the region, with broad adherence to the sequence of stages included in the assortment planning. The duration of the entire cycle can be reduced, but subject to the attraction of additional resources and the application of additional efforts at critical stages.

Highlighting the main characteristics of a product is of fundamental importance, since it is they who determine the directions of creating the new. To make a new product, sometimes it is enough to change at least one characteristic. Here it is important to consider those characteristics of goods, the difference in which leads to differences in the marketing activities of enterprises.

The formation of an assortment policy based on product assortment planning is a continuous process that continues throughout the entire product life cycle, from the moment the idea of creating it was conceived

and ending with the withdrawal from the product program.

The creation of a new product is a complex design task associated not only with achieving the required technical level of the product, but also with giving its design such properties that ensure the maximum possible reduction in labor costs of materials and other means for its manufacture, but at the same time meet the requirements of buyers.

It should be borne in mind that all production areas are included in the work in a certain technological sequence, which depends on the technological complexity of the new product and the duration of certain operations, as a result of which a new procedure for performing operations is created. Due to the lack of production skills among workers when performing new operations, there is a decrease in labor productivity and the quality of work in the first days of production of new products, i.e. during the period of their development.

Designing a product to the proper level involves the need for criteria to evaluate its results. As such, indicators of the manufacturability of the design can act.

The development of principles and methods for performing design work, including a creative one, associated with the analysis of analogous models, the initial conditions for the formation of requirements for the product, the preparation of technical suggestions and selection of the best, assessment of the quality of the product.

Modern requirements for the organization of the process of developing new shoe models clearly show the shortcomings of methods of analysis, analysis and substantiation of decisions, inflexible and insufficiently coordinated with each other, based on the experience and intuition of the designer.

The design of footwear for various purposes is a traditional field of engineering, in which considerable development experience has been accumulated. Therefore, shoe design involves the use of previous experience, which is concentrated in recommendations for the selection of basic design solutions, descriptions of previously designed models, and typical design techniques. When analyzing analogue models, it is necessary:

– study fashion trends in the development of footwear;

– to conduct a qualitative assessment of analog models - compliance with the specific purpose of the designed model, ergonomic compliance, perfection of the compositional solution.

Obtaining high-quality designs of shoe models largely depends on the quality of the analysis of possible options for solving the design problem, establishing the feasibility of designing a new model.

Many firms are striving to improve the efficiency of their new product development mechanism, realizing that there is a complete relationship between the success of new products and the financial well-being of the enterprise.

The creation and introduction of new products into the market contains significant elements of risk. Research data show that out of 58 serious new product ideas, only four are fully developed, two are being introduced to the market, and only one is successful.

In addition, many new products fail already on the market: 40% for consumer products; 20% - for industrial goods; 18% - for various services, i.e. there is a high degree of market uncertainty.

The search for ideas about new products should be carried out systematically, and not on a case-by-case basis. The main sources of ideas for creating new products are:

1. Fundamental research (aimed at obtaining new knowledge and indirectly leading to the emergence of ideas for new products) and applied (purposefully using scientific methods to develop ideas about new products).
2. Observation of related products at exhibitions and fairs.
3. Reports and proposals of sales agents, sellers, dealers.
4. Trends in the development of new products by competing firms.
5. Supplier information.
6. Expert opinions.
7. Information in patents, catalogs, advertisements, etc.

Revealing the shortcomings of the manufactured products also allows to form new ideas for its improvement.

At the end of the development of a new product and the creation of prototypes, preparations begin for the final stage - production and sales. The most effective method by which you can assess the chances of success of a particular product is the trial (experimental) sale of small batches of a product in a controlled market in real competition. Trial sales are designed to test in practice the demand for a new product for the market and to work out the technique of its marketing. This makes it possible to reduce the risk when organizing commercial production.

The positive results of testing new products on the market are the basis for the beginning of the final stage of the process of implementing the idea into a specific new product - the stage of its production development. A detailed plan for the production of a new product is being developed: sources of supply with materials, components, equipment are being investigated, working drawings are being prepared, and products are being launched into production.

All stages of creating a new product must be carried out in a short time. Shorter development time increases competitiveness, because the cost of a new product must be recouped before it becomes obsolete and loses demand as new competing products enter the market.

Any product, regardless of the degree of its novelty and quality, goes through a certain life cycle. Knowledge of the features of the product life cycle is a prerequisite when working with an assortment.

The concept of the product life cycle can be briefly formulated as follows: any product lives - i.e. stays on the market for a limited time - maybe for many years, or maybe several months or weeks. The volume of its sales and the amount of profit made during the life cycle change, and the nature of the change for different products is similar. Over time, the indicated values first slowly increase, then they grow rapidly, then their growth slows down, their value stays at a certain level and begins to fall, at first slowly, then rapidly.

The period from the appearance of a product on the market until the end of demand for it is called the life cycle of the product. Several stages can be distinguished in it:

1 - introduction of the product to the market;

2 - growth in sales volume and profit;

3 - product maturity;

4 - decline in sales and profit.

The life cycle of a product ends with its withdrawal from production due to the lack of demand for it. The division of the life cycle curve into parts and the allocation of stages is conditional, therefore, in the special literature on marketing there are descriptions of different options, but most often these four are distinguished.

Consideration of the classical curve of the product life cycle (LCT) is quite common in domestic and foreign methodological literature. The stages of the life cycle are analyzed in detail and a forecast of the stages is proposed based on the experimental data of similar goods and their extrapolation over a short period of time. The classic life cycle curve is the relationship between the volume of sales of a product and the corresponding periods of time, reflected in the classical two-dimensional coordinate system along the x-axis, in which the current time is positively plotted, and the y-axis is the sales volume. In the standard adopted in domestic and foreign literature, the product life cycle curve is divided into a number of intervals characterizing the product (usually there are 5 of them), which are assigned the appropriate names. In most cases they are called "product origin", "market introduction".

The average life cycle of consumer goods is presented in the graph in Figure 11 and in Table 3

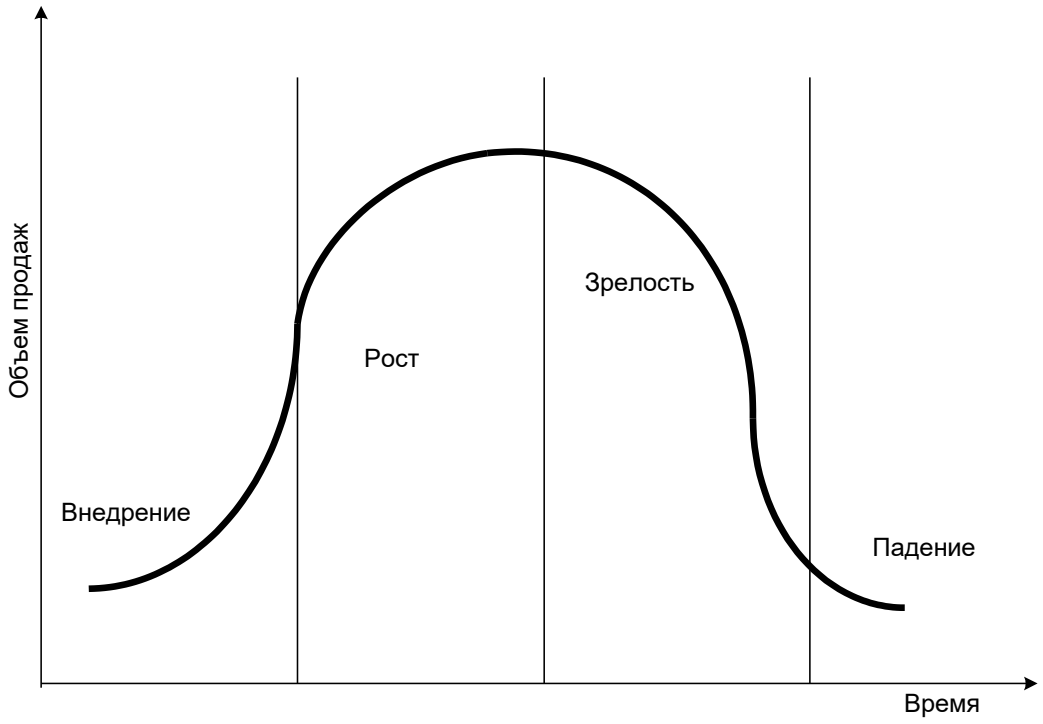

Fig. 11 - Average life cycle product range

T a b l e 3 - Average life cycle of the manufactured product range

Phase	Description of the phase from the point of view of agile development
1. Implementation	From production start to breakeven
2. Height	From the break-even point to the middle of the life cycle

3. Maturity	From the middle of the life cycle to the beginning of the development of a new product range
4. Fall	From the start of production of a new range of products to the end of production of a given range of products

The life cycle of a product in a real situation may not be expressed on the graph of the traditional classical curve, in which the periods of publication of the publication on the market, growth, maturity, saturation and decline are clearly defined. Depending on the specifics of individual goods and the characteristics of demand for them, there are various types of life cycle, differing both in duration and in the form of manifestation of individual phases.

In addition to the classical form of the product life cycle (Fig. 12), the practice of various enterprises gives examples of its specific modifications.

Effective marketing activity allows achieving high sales and profit growth even at the first stage, and in subsequent stages - maintaining a significant volume of sales (the curve called "boom"). The boom curve (Figure 13) describes a very popular product with stable sales over time. In the case of such a product life cycle curve, the firm produces the product and makes a profit for a long time.

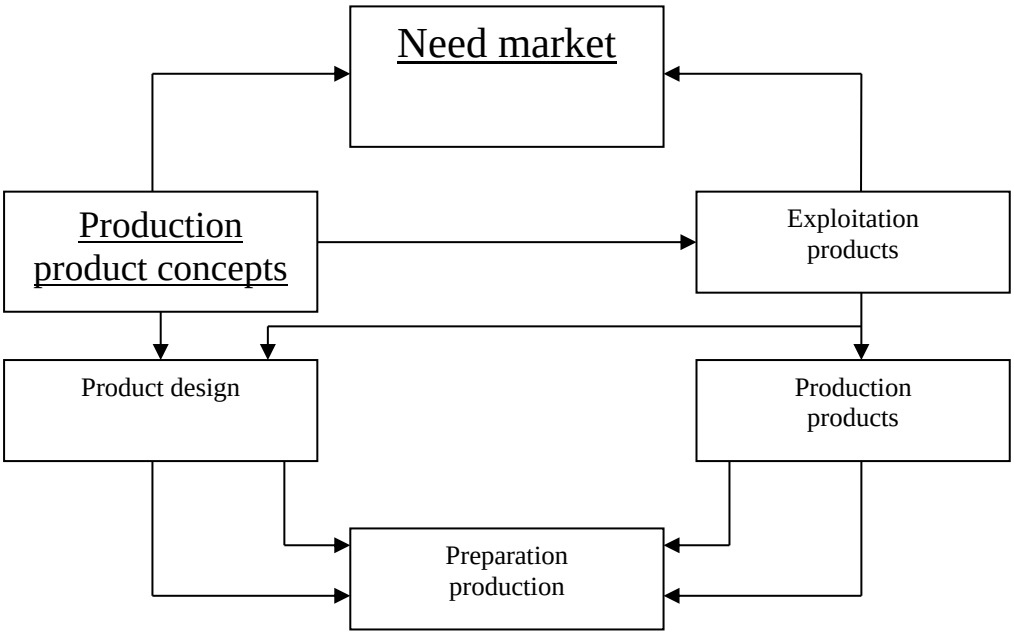

Fig. 12 - Stages in the product life cycle

The life cycle of a publication can be expressed as a “craze” curve, where sales of a publication rise sharply and then plummet.

The entrainment curve (Figure 14) describes a product with a rapid rise and fall in sales. Often a fashionable, popular product has such a curve.

“Continuous craze” implies a rapid increase in product sales, then a rapid decline, but with a residual average level of sales. The continuous entrainment curve (Fig. 15) also describes a popular product, but this product is still preferred by some consumers.

The fashion curve, or seasonal curve, refers to the life cycle of publications experiencing periodic, varying in time, repeated ups and downs in demand, etc. The curve for such a product that sells well for certain periods of time is shown in Figure 16.

The curve of a new start or nostalgia (fig. 17). The demand for this product falls, but after a while it resumes. An example would be the return to women's platform shoes that were popular in the 70s.

The dip curve (fig. 18). It characterizes a product that almost immediately ceases to be in demand from buyers.

The curve of new rises (fig. 19). Such a curve is characteristic of goods whose sales cease to grow, but after a slight improvement and the appearance of additional useful properties, the enterprise manages to increase sales again.

Unsuccessful withdrawal curve (fig. 20). Such a curve is characteristic of products that were poorly planned and carried out to be launched into the market, but with repeated attempts to introduce them, they have received great success.

In the theory of agile enterprise development, interest in the concept of the product life cycle lies in the replacement of goods in a recession phase with new ones.

Fig. 13 - Boom Curve

Fig. 14 - Entrainment curve

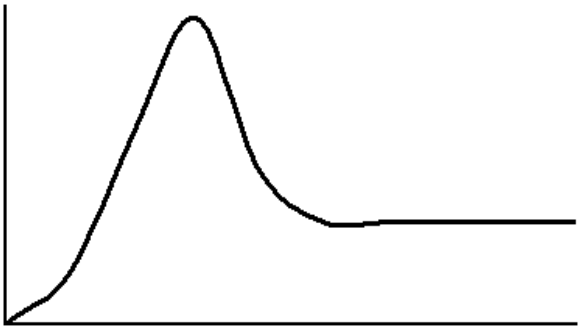

Fig. 15 - Curve long-term passion

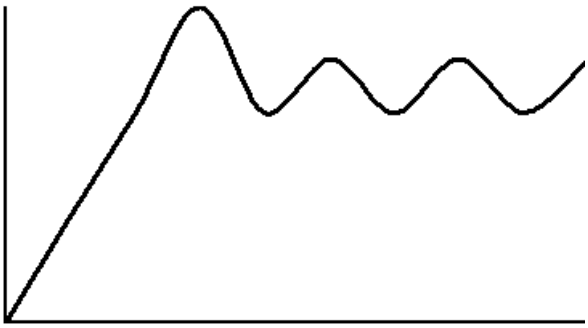

Fig. 16 - Curve seasonality

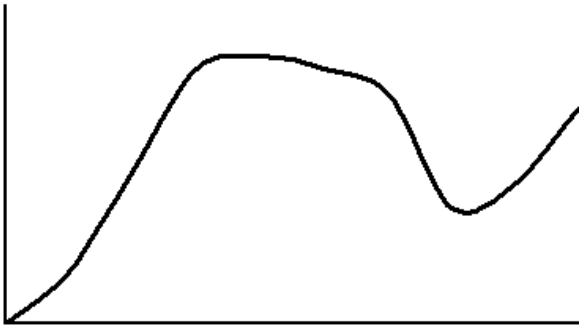

Fig. 17 - New start curve or nostalgia

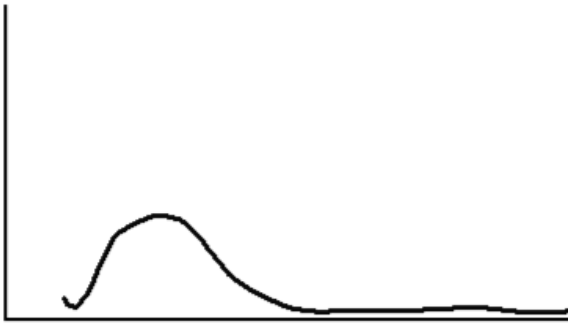

Fig. 18 - Failure Curve

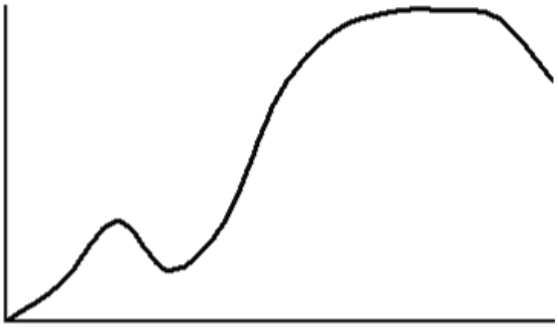

Fig. 19 - Curve of new ups

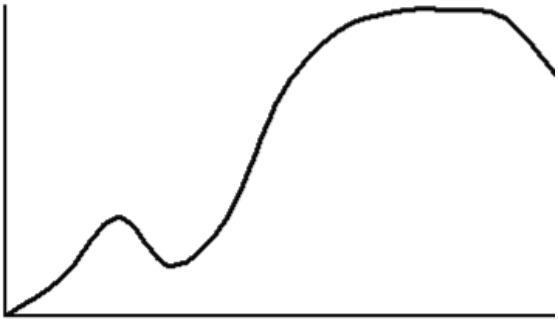

Fig. 20 - Unlucky Curve excretion

All other things being equal, a change in the production time (duration of the product life cycle) will affect the value of the optimal number of shoe models under development. At the same time, the longer the life cycle, the less the number of products needs to be developed by the enterprise and, conversely, the shorter the life cycle, the greater the number of such products.

The assessment of the phases of the life cycle allows you to plan the cyclicality of their turnover, the timeliness of replacement of products and the development of analogues, thereby reducing the degree of risk and, ultimately, allowing the flexibility of the enterprise's development.

The experience of leading foreign firms shows that the economic efficiency of their activities is largely determined by innovation activity, i.e. creation and implementation of new products that provide profit on average 28% higher than traditional ones. According to the definition given by F. Kotler, new products include products that have undergone any changes in form, content or packaging that may be important for the consumer and serve as the basis for the formation of his preferred attitude towards the products of this company. When introducing new products, firms try to find the optimal solution that meets both the market requirements and the available equipment and technology capabilities.

Thus, the study and consideration of the stages of the life cycle of products allows you to appropriately optimize the structure of the product range.

Conclusion

The quality is "written by nature" to be at all times in the epicenter of scientific and amateurish reflections. The problem of ensuring the quality of activities is not just universal, relevant, it is strategic.

The domestic light industry is going through hard times, and the consumer is offered products of dubious quality that have entered our markets by counterfeit and other illegal means, that is, they have no guarantees for buyers to exercise their rights to protect themselves from unscrupulous manufacturers and suppliers.

To reanimate the role and importance of a quality-oriented strategy, since only in this case business leaders will subjectively and objectively have to improve their production using nanotechnology, innovative processes and digital production so that competitive and import-substituting materials and products fully satisfy the needs of domestic consumers. At the same time, our statement is substantiated that the consumption of domestic materials and products is regulated by the market. In this case, market requirements should shape the role of the state and consumers in production in the formation of sustainable demand for domestic materials and products, namely:

maintain a range of goods, regulating it by federal, regional and municipal orders;

stimulate price stability; increase consumer ability and gradually improve their quality. The implementation of these tasks will create the basis for the consumer to realize the need to pay for the advantages of high-quality materials and products, and the manufacturer to realize that improving the quality of materials and products cannot be associated only with rising prices, but also due to technical innovations in digital production, aimed on the use of new technological and engineering solutions.

Today, and even more so tomorrow, it is important to implement one of the defining principles of production efficiency - the manufacturer produces exactly what is needed not only for domestic, but also for foreign consumers.

It is equally important to understand the role and significance of quality activities, that is, how much the leaders have penetrated into the essence of things, learned to manage things, change their properties (assortment), form, forcing them to serve a person without significant damage to nature, for the good and in the name of man.

Both political leaders and the government have recently begun to talk about the need for a competent industrial policy. However, if we carefully consider the normative, methodological documents on the structural restructuring of industry, then the thought arises whether we are not treading here on the same rake that all the years of reforms have come upon.

What is the essence of economic reforms and the significance of industrial policy in them, which are theoretically substantiated and practically tested by a number of developed countries?

This is the fight against inflation, strengthening the national monetary unit and financial stabilization. This is a change in the forms of ownership in various spheres of the economy through the process of privatization. This is a restructuring of the economy under the conditions of market relations.

Moreover, all these fundamental processes of economic reform must be based on structural adjustment. Both financial stabilization and privatization must be subordinate to the structural adjustment process, since it is structural restructuring that determines the final result of reforms and the effectiveness of adaptation of various forms of production to civilized market relations.

The end result should also be the basis for the restructuring of the economy. And these are products, services - their competitiveness in the domestic and world markets.

What happened in the Russian reforms? All three basic processes (financial stabilization, privatization and restructuring) went on their own, without interconnection. Therefore, the methods used by the government and the Central Bank to combat inflation

and other economic indicators often ran counter to the tasks of structural adjustment.

As for the process of restructuring, the government's position is expressed by the following statement: "the market will put everything in its place by itself." With such a position towards structural restructuring, it is not surprising that at that time there was no place for the words quality, competitiveness, import substitution in the national economic policy.

This is, unfortunately, the reality of the reforms carried out today. In this connection, I would like to refer to the well-known world experience.

A world-renowned quality specialist E. Deming, who at one time was a scientific advisor to the Japanese government and led Japan out of the economic crisis, in his book "Out of the Crisis" says: "... the management of paper money, and not a long-term digital strategy production - the way into the abyss. "

About whether the state needs to pursue industrial policy, one can quote the statement of the outstanding economist of the past, Adam Smith, who 200 years ago laid the foundations for the scientific analysis of the market economy. About the role of the state, he said: "... only it can, in the interests of the nation, limit the greed of monopolists, the adventurism of bankers and the selfishness of merchants." It's like today about us and our situation in the economy.

What are the results of economic activity today, what are the achievements in this area? Growth of gold and foreign exchange reserves, decrease in inflation, budget surplus and other financial and economic achievements. Is this the end result of public administration? And not the quantity and quality of goods and services sold in the domestic and foreign markets, and not the population's ability to pay to purchase these goods and services? And, ultimately, not the quality of life of the country's population ???

Therefore, it is quite natural that today the task is posed for all levels of the executive and legislative authorities - to improve the quality of life of Russian citizens.

Let's carry out an enlarged factor analysis of the quality of life problem. The quality of life of citizens depends on the quality of consumed goods and services in the full range - from birth to ritual services, as well as on the ability to pay of citizens, which allows them to purchase quality goods and services. These two factors (quality and solvency) depend on the state of the country's economy, which in turn depends on the efficiency of enterprises in various sectors of the economy, including light industry. The efficiency of enterprises' work depends on the state of management, on the level of application of modern management methods.

The existing world practice of widespread use of modern methods is based on standardization and certification. Standardization allows you to generalize best practices, formalize them in an accessible and understandable form and make them the property of everyone who wants to apply these best practices. Certification allows you to assess the level of implementation of the requirements of standards in practice and give an appropriate guarantee for the consumer. Currently, no more effective mechanism has been invented for the dissemination of advanced experience in solving various problems, and in the world there are corresponding international structures for standardization and certification.

An analysis of the current international standards, which are aimed at improving the level of enterprise management, shows the following areas of their action:

– quality management systems (a series of international standards ISO 9000 and industry supplements);

– environmental management systems (series of international standards ISO 14000);

– occupational safety and health systems (OHSAS 18001);

– social responsibility system (SA 8000).

The structure of the problem "quality of life" and a set of international standards aimed at solving it.

At the same time, international standards for quality management have the most significant and global character. The use of modern methods in them makes it possible to solve not only the problem of improving quality, but also the problem of economy and the problem of productivity. That is, today the concept of "quality management" is being transformed into the concept of "quality management".

Thus, solving the problem of increasing the efficiency and competitiveness of the economy, and ultimately the quality of life, is impossible without the implementation of a well-thought-out and competent industrial policy, in which innovations based on digital production and quality should become the priority areas of the state's economic policy.

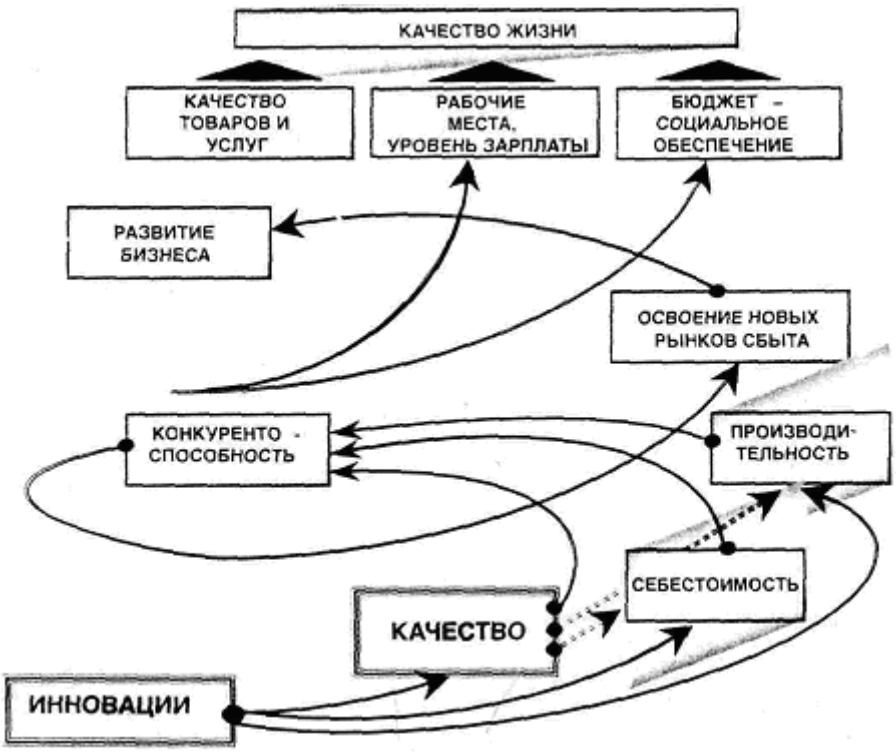

Fig. 21 - Innovation and quality - the path to high living standards

The problems of improving the quality and competitiveness of materials and products at the present stage of development of the Russian economy are becoming increasingly important. As the experience of advanced countries that at one time emerged from such crises (the United States in the 30s, Japan, Germany in the postwar period, and later South Korea and some other countries) shows, in all cases, the basis of industrial policy and recovery economy, a strategy was put in place to improve the quality and competitiveness of products, which would be able to conquer both domestic and foreign sales markets. All the other components of the reform - economic, financial, credit, administrative - were subordinated to this main goal.

The developed software for the formation of the technological process for the production of import-substituted products and the determination of specific reduced costs, which are the sum of current costs (prime cost) and capital investments, commensurate with the standard efficiency factor, taking into account the production program, makes it possible to calculate the static parameters of the technological process of production of import-substituted products when various forms of organization of production.The developed software for calculating cash flows from the operating activities of light industry enterprises based on assessing the degree of implementation and dynamics of production and sales of products, determining the influence of factors on the change in the value of these indicators, identifying on-farm reserves and developing measures for their development, which are aimed at accelerating turnover production and reduction of losses, which guarantees light industry enterprises to obtain stable TPE and prevents them from bankruptcy.

Models of product sales within a month at 100%, 80%, 50% are proposed. Calculations indicate that with 100% of the sale of shoes, compensation is provided for the costs not only for the production and sale of shoes, but also a net profit of 1,900.54 thousand rubles remains, which indicates the effective operation of the enterprise, as well as the correct marketing assortment. enterprise policy. Also, profit is obtained from the sale of 80% of men's, women's and children's shoes. If less than 50% of footwear is sold from the production volume, the enterprise will incur losses. To solve this problem, the conditions for the sale of shoes in a specified period of time and the volume of sales of at least 50% are necessary.

Based on the current situation in the economy of our country, in our opinion, no less significant problem in the development of the regional consumer market is the lack of a full-fledged regulatory framework that ensures the functioning of the mechanism of state regulation of the consumer market in the regions. Based on this, it is the state and regional intervention that should correct the situation on the market of domestic products of light industry enterprises in the regions, and thus there will be an opportunity for the development of production of competitive and import-substituting products.

The implementation of the planned measures will lead to covering the deficit for all types of

products, will ensure an increase in labor mobility in the Southern Federal District and the North Caucasus Federal District and reduce negative processes in the labor market, as well as a stable balance of interests of consumers, employers and municipal, regional and federal branches of government. For the successful implementation of all of the above measures, the interest of the regional authorities in the development of production of competitive and import-substituting products, reduction in prices for components and energy costs and benefits for the transportation of products produced by enterprises in the regions of the Southern Federal District and the North Caucasus Federal District is most necessary.

Therefore, only a stake on innovation, quality, and competitiveness of products and services should be the basis of the industrial policy pursued at all levels yesterday, today, and even more so tomorrow.

About the economic effect of work results is limiting, which consists in increasing labor productivity, the level of mechanization of production, lowering the indicators of work in progress and the cost of digital production. An accessible tool for digital production technologists is proposed to rationalize the design of technological processes, which allows an enterprise to form a competitive assortment and predict the maximum income from the production of import-substituting products.

An assortment policy has been developed for the formation of competitive products, taking into account factors affecting consumer demand: compliance with the main fashion trends, taking into account the economic, social and climatic characteristics of the regions of the Southern Federal District and the North Caucasus Federal District, the production of which using modern innovative technological processes, as well as to meet the demand of an elite consumer, with the use of manual labor create the basis for satisfying the demand for footwear for buyers in these regions.

Innovative technological processes have been developed for the production of import-substituting products using modern technological equipment with advanced nanotechnologies, which form the basis for reducing the costs of import-substituting products and ensuring their competitiveness with the products of leading foreign companies, with the possibility of a wide-range production of products not only by type, but also by sex and age. groups, which guarantees her demand in full.

The layouts of technological equipment are proposed, on the basis of which it is possible to form a technological process for the production of import-substituting products with an optimal volume of output, taking into account the production area and the form of organization of digital production.

Software has been developed for calculating cash flows from the operating activities of light industry enterprises based on assessing the degree of implementation and dynamics of production and sales of products, determining the influence of factors on the change in the value of these indicators, identifying on-farm reserves and developing measures for their development, which are aimed at accelerating turnover production and reduction of losses, which guarantees enterprises to obtain stable TEP and prevents them from bankruptcy.

Software has been developed for the formation of the technological process of digital production and the determination of the cost of production of import-substituting products. A computer simulation model has been implemented that describes the dynamics of the process of manufacturing import-substituting products. The proposed methodology and software implemented on this basis can reduce the duration of technological preparation of production and increase, due to the rationalization of the technological process, the specific consumer effect of import-substituted products.

Comprehensive indicators of the effectiveness of innovative technological processes for the manufacture of footwear, similar to other types of import-substituting products, have been calculated. Taking into account the production program, promising options for technology and equipment have been formed, the most effective has been selected; the possibilities of streamlining the flow are revealed, allowing to exclude "bottlenecks", to minimize equipment downtime, which is one of the conditions for the design of innovative technological processes. The reliability of the calculations for assessing the efficiency of technological processes by methods of target programming for various technological and organizational solutions is confirmed by calculations of indicators of economic efficiency: cost, profit and profitability and other indicators.

The proposed methodology allows to reduce the duration of technological preparation of digital production and to reduce the time of expert work while maintaining the required depth and validity of engineering conclusions. The economic effect of the research is expressed in the intellectualization of the technologist's labor with a reduction in time spent on developing the range of manufactured import-substituting products and assessing the efficiency of technological processes in comparison with a typical economic calculation of the total cost of manufacturing such products.

The analysis of the influence of the forms of organization of digital production and manufacturing technology on the cost of import-substituting products is carried out using the example of the technological process of manufacturing children's, women's and men's shoes, taking into account the shift program. Theoretical dependencies have been obtained to assess the influence of the factor "organization of production" on individual calculation items as a whole

and other technical and economic indicators in order to prevent enterprises from bankruptcy.

Thus, all this together will provide light industry enterprises in the regions of the Southern Federal District and the North Caucasus Federal District with a stable position both in the domestic and in the markets of the near and far abroad. All that is needed is the goodwill and interest of all participants in this process.

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