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TO THE LEVEL OF TECHNOLOGICAL COMPLEXITY OF THE MODEL ANALYZE THE EFFECT OF COMPLICATING ELEMENTS

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Abstract: This article analyzes the elements of determining the levels of technological complexity and complication at the stage of technical sketching of new models. The procedure for complex evaluation of the production of new models consists of the following stages: development of the terms of reference and sketches of the new model of the kit; quality assessment of production, technology, materials and development of proposals for production and ensuring the required level of quality; forecasting the complexity of the new model and the amount of material costs, as well as determining the cost of technological processing, which is decided to improve the model, without modifying it in production or removing it from the collection.

Keywords: technical sketch, new model, level of technological complexity, complicating elements, technological processing time, technological-design factors, types of sewing equipment used, model cost.

INTRODUCTION

In the context of international competition, meeting the personal needs of people not only in modern clothing, but also to identify the needs that are important to consumers and meet the needs for the production of these products remains a more difficult task. Therefore, it is necessary to develop technological and organizational solutions for the implementation of processes based on new principles. Such processes should be easily managed, requiring minimal investment, production space and energy resources, as well as internal costs. These enterprises should be created on the basis of new principles adapted to market conditions, i.e. constant updating of models and types of clothing, mainly using universal technologies and equipment.

An integral condition for the economic success of the garment industry is the frequent renewal of the range. High quality and minimal design and technological training in the garment industry is assessed by the professionalism of the designer and the level of equipment of his workplace. In market conditions, the quality of models and preparation time for production are of particular importance. Therefore, one of the main tasks of the garment industry today is to develop and research technology that provides flexible production, increase product competitiveness, the ability to quickly change the product range, reduce their cost. One of the main factors in increasing the capacity of light industry enterprises in a market economy and free competition is the production of quality and competitive products for their development.

Nowadays, it is very important for manufacturers to start production of high-efficiency assortments. Fashion variability, in turn, creates the variability of models in the enterprise. At the

stage of technical sketching of the proposed range, it is possible to determine the cost of its technological processing and, consequently, to analyze the cost in advance. These indicators are an important indicator in solving the problem of introducing the projected model into production. Therefore, in order to increase the economic efficiency of enterprises in the garment industry, it is important to develop a comprehensive system for assessing the level of technological complexity of industrial collections. [1,2,3].

MATERIALS AND METHODS

The process of creating a new product involves several stages: the formation and selection of ideas, the development of collection and marketing strategies, the analysis of production and sales opportunities, the development and design of goods, the distribution of garments. The goal of each stage is to decide whether or not it is appropriate to continue the idea. The time from production to release is divided into three periods: technical training and development of new products; production in the conditions of mass production; replacing the product more economically and technically

The degree of complexity of sewing items is determined by the number and properties of the available complicating elements in it. According to the characteristics of the elements of the mask, the sewing parts differ mainly in the degree of complexity of 3 pieces;

I- the level of complexity is constructively simple, but technological processing processes take time.

II- degree of complexity. Models with a moderate degree of complexity, having one or more complicating elements.

III- degree of complexity. The model is complex, the number of complicating elements is many, and the technological processing is a kind of finishing with a high efficiency.[4,5,6].

The degree of complexity of sewing items is largely determined by many factors, such as clothing construction, technological processing processes, finishing properties. Models of women's coats were chosen as the object of the study. The level of complexity of the palto models selected as the base model was analyzed. Initially studied several indicators, such as the silhouette of the coat, the physique, the constructive forms of the details, the number of complicating details (Figure 1).

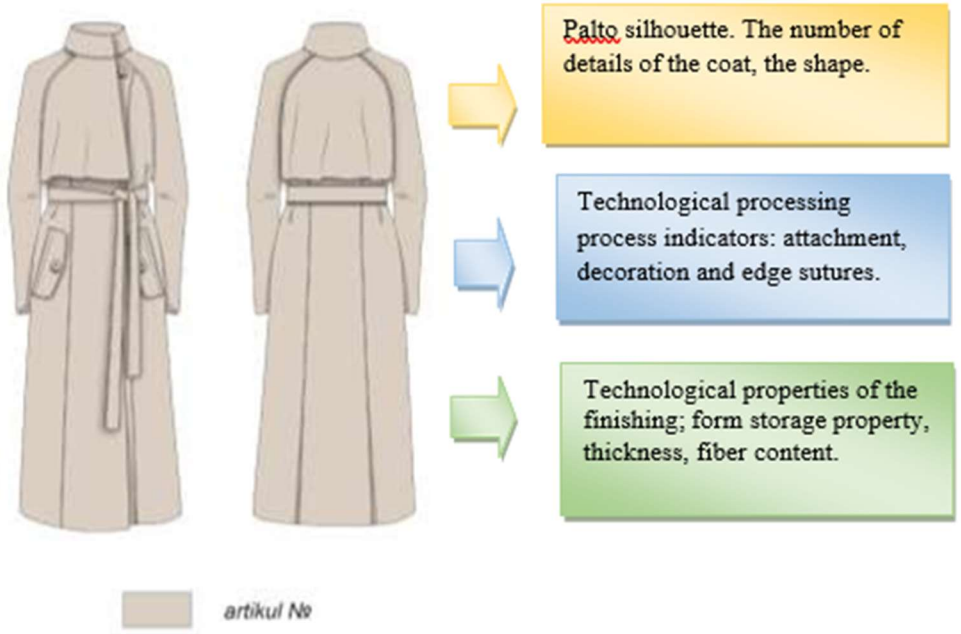

FIGURE 1. Analysis of the degree of complexity of the model.

The technological processing sequence of the sample of the base model was compiled, and one of the main indicators was determined-the ratio of operations in each specialty and the total time spent.(Table 1).

Description of the base model. Women's coat with semi-adjacent silhouette. The front piece is double-breasted, 3 pieces are pinned to the button izm. The front piece is located in the relief rods pocket. The analysis piece is moderately stitched and the relief is stitched. Sleeve transverse, double-crocheted. The collar has an asymmetric complex constructive structure. Finished made of palto belt. The skirt part of the coat is treated as a closed lining.

TABLE 1. Technological sequence of sewing a women's half coat. Fragment.

№	Name of the operation	Equip-ment	Working discharge	Time (sek.)	Tools
1	Connecting the glue fastener to the old piece.	Press	3	60	RPS-E2 EVOLU-TION "Meyer" (Germaniya)
2	Connecting an adhesive.	Press	3	50	
3	Connecting an adhesive clip to a cuff.	Press	3	50	
4	Connecting the adhesive fastener to the neck spine of the back piece.	Press	3	40	
5	Connect the adhesive bracket to the shoulder of the middle piece sleeve.	Press	3	40	
6	Connecting the adhesive	Press	3	40	

	fastener to the shoulder of the sleeve of the side section of the back.				

RESULTS

The results showed that the number of technological processing operations on the selected model accounted for a total of 92 operations. Work on the machine – 36 operations, work on special machines – 4, work on semi – automatic – 2, operations, number of manual operations-21, operations, number of press works-9, operations, number of ironing works-20 operations. The time spent on technological processing is 4162 seconds, that is, 1,16 hours.

As a result of determining the percentage of technological processing operations types ratio to the selected model, the following indicators were determined.(Picture 2).

Machine works =35*100/92=38,34% Special machine =5*100/92=5,43% Semi-automatic =2*100/92=2,17% Hand works =21*100/92=22,82% Ironing works =20*100/92=21,74% Press works =9*100/92=9,78%

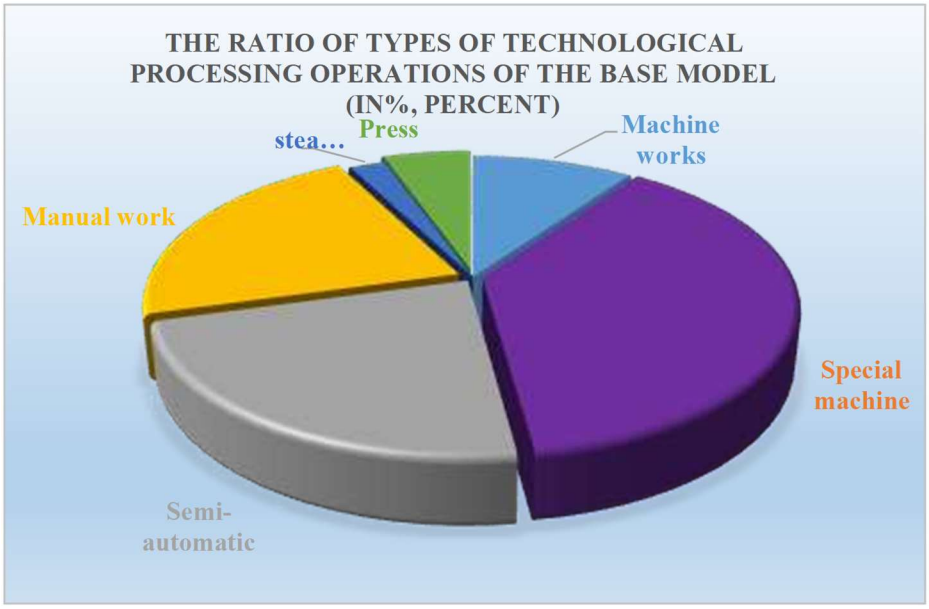

FIGURE 2. The base model is the ratio of the types of technological operations (in percent).

Analysis of the ratio of types of technological operations of the selected base model. This showed that the model corresponds to the II-level of complexity. As a result of the presence of several complicating elements in the model, the spending time of technological operations was 4162 seconds, that is, 1 hour 16 minutes. Technological operations of different complexity lead to an increase in the time spent on technological processing of the model and, as a result, an increase in its value. The technological processing value of the workpiece is largely directly related to its degree of complexity.

In small enterprises and workshops, the cost of technological processing of clothes with a high level of complexity is determined by the minimum cost of processing of items in level of technological complexity and the number of complicating elements.

TIBQ = (Sproduct+ SME + KME) xKt., Where:

TIBQ - the cost of technological processing of the product (sum.)

Sproduct - the cost of processing items in the minimum level of technological complexity. SME is the processing value of a single ME complex element.

Number of KME – ME (in units). Kequ. - equalizing coefficient.

Analysis of the elements that affect the level of complexity shows that in addition to the number of elements that complicate, their placement in clothing, ie symmetrical or asymmetrical placement, has a significant effect on the MD of the product. The abundance of complex elements leads to an increase in the efficiency of the product.

In the course of the research, the total number of details of the selected basic models of women's coats and the number and ratio of complicating elements were studied. Based on the results, the models were divided into 3 different levels of complexity based on the number of complicating elements. In dividing the models into levels of complexity, special attention was paid not only to the number of complicating elements, but also to their constructive forms, asymmetrical details. The reason is that asymmetrical details require high skills from specialists in technological processes, ie the creation of clothing design, design of technological processes. Modern coat models often use different combinations of materials. Such models greatly complicate the sewing process.

The selected base model used 3 different types of combined materials. The coat has intricate elements designed in the form of asymmetry. The front of the coat is double-edged and has 12 buttons. Return collar. New: Transfer. 1-valve cut-out pocket, 1-valve cover pocket. On the left side of the coat, on the sleeve, there is a lining of the 3rd type of fabric.

The waist of the coat is decorated with belt holders and belts.

3 different types of fabrics were used in the combined method in the coat. Type 1 fabric - checkered floral drapery fabric.

Type 2 fabric - light gray raincoat fabrics. Type 3 fabric is a dark gray plaid fabric.

In order to express the level of complexity in the research work, the complexity coefficient Kcom. was introduced. To determine this coefficient, the model sketch determines the total number of details made from the base fabric and the number of complicating elements, their ratio is calculated.

Kcom. = Complicating elements/ total number of details (formula 1) Complexity coefficient. = 0.5 ÷ 0.65, this model is included in I-LTC.

Complexity coefficient. Complexity coefficient. = 0.65 ÷ 0.8, this model is included in II-LTC. (3-Diagram). Complexity coefficient between 0.8 ÷ 0.95, this model is included in III-LTC.

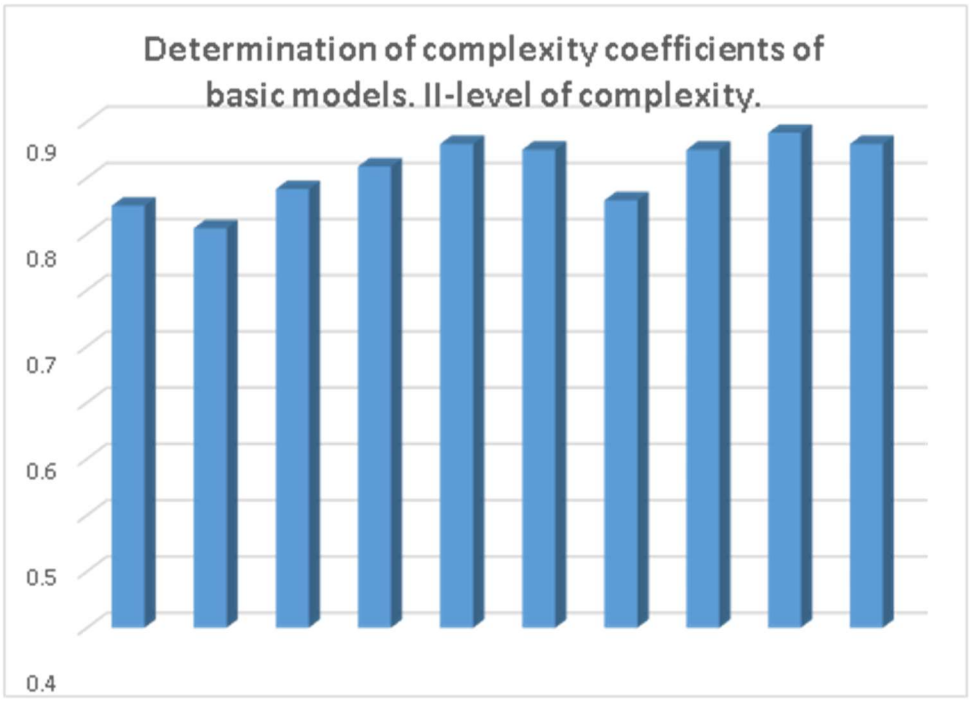

FIGURE 3. Basic models of II-level of

combination of design solutions and fabrics.

CONCLUSIONS

The results of the research formed a sequence of visual analysis of new models. Initially, the model sketch identifies the number and design features of the complicating elements: collar shape, sleeve type, pocket types and placement, belts, presence of asymmetrical details,

In the garment industry, women's outerwear is one of the most versatile products. The cost of the finished product is mainly determined by the cost of processing and material costs. Cost-effectiveness is a key indicator in the introduction of models into production. The minimum level of efficiency in the introduction of new models in industrial collections in the enterprise environment is 20%. The cost of processing in the cost of the finished product can be up to 30-40%, depending on the level of complexity of the product. Therefore, evaluating the effectiveness of the models during the sketch design period reduces the economic risk associated with the production of new collections by the enterprise.

A distinctive feature of the creation of industrial clothing collections is the variety, short rotation and frequent change of models. The basis of the activity of sewing enterprises is the constant design of new clothing models, which occurs due to competition in the product market. The time factor often plays a decisive role in the production of fashion clothing. The success of a sewing business or design studio depends on a new product development program, an expansion of product types.

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