



## RECONCEPTION OF WOMEN'S BLOUSE BASED ON FUNCTIONAL ANALYSIS

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**Abstract:** *In order to achieve quality products from a qualitative and economic point of view, it is necessary to redesign the current products, insisting on both the techniques and the performing machines, as well as on their functional optimization. At present, there are numerous optimization methods, which differ in particular, by the way of the succession of the steps in the admissible field, but lead to a common end. The paper aims to optimize a garment product using value analysis. The authors selected 20 functions for the analyzed product. From the study, it was found that consumers give preference to the features of the products, the ease of dressing-undressing, easy maintenance, psychosensory comfort, etc., and the manufacturer of the technological and economic ones. Based on the results obtained, a collection of proposal models was developed. The proposed models are close to the basic model, due to the combination of consumer requirements and production requirements. Due to the great diversity of the types of clothing products, it is necessary to know the functions imposed by the destination and the specific operating conditions. Knowing all the functions of the clothing products will allow us to make optimal decisions regarding the launch of the products in the manufacture that correspond to the consumers' requirements. Identifying the needs and wants of the beneficiaries, knowing the potential of the producers will allow the elaboration of a collection of models that will meet at a high level the ever increasing demands of the consumers.*

**Key words:** *consumer requirements, technological operations costs, material costs, collection, functions.*

### 1. INTRODUCTION

Clothing is a means of covering, beautifying and protecting the human body from external factors with which it comes in direct contact. It is also a way of expressing the personality of each carrier, even if the choice of one or another product is limited by its destination, assortment or by a certain function of it [1].

The design of new products and the optimization of the existing ones occupy an important place in the textile manufacturers' concerns. In order to achieve quality products from a qualitative and economic point of view, it is necessary to redesign the current products, insisting on both the techniques and the performing machines, as well as on their functional optimization. At present, there are numerous optimization methods, which differ in particular, by the way of the succession of the steps in the admissible field, but lead to a common end. Among the most important methods used to optimize products, we can mention: the method of associations garlands, analogy, brainstorming, empathy, evocation, idea map, synthesis, analysis and value engineering. The paper aims to optimize a garment product using value analysis.



## 2. FUNCTIONS OF CLOTHING PRODUCTS

The function of a product represents the property, the property, the elemental characteristic of it, which arising from the user's need, directly or indirectly confers utility and implicit value on the object. Each object usually has several functions. These can be classified according to several criteria, namely [2, 3]: according to the possibilities of measuring the technical dimensions; after contributing to the use value; how the user perceives it; after the moment of the study; according to the importance for the object, etc.

Speaking about the functions of each assortment of clothing, they fall into two broad categories [4, 5]: utilitarian and informational-aesthetic. The given functions are divided, as a result of the very different destination that the garment products have, in elementary functions that reflect a well-defined property of the respective product.

Analyzing the specialized literature, the authors identified several functions, which could be grouped in [6-8]: aesthetics; gnoseologic; ergonomic; comfort; reliability; maintainability; protection; medicines etc. The number of functions in a product varies depending on the destination. Some functions are missing in some products, while in other clothing items they are present. By establishing the correct number of functions and giving due importance to them, the manufacturer will obtain: reductions in production costs, simplification of manufacturing processes, products that meet the needs of consumers, etc.

## 3. FUNCTIONAL OPTIMIZATION OF THE WOMEN'S BLOUSE

In order to carry out the case study, a blouse for women was manufactured at the company "Portavita" L.T.D., Chisinau city. The authors selected 20 functions for the analyzed product contained in table 1 [6-8].

*Table 1: Women's blouse product functions*

The notation done	Function name	The notation done	Function name
F1	The novelty of the model	F11	Ventilation capacity
F2	Matching the model with the lifestyle and clothing of the wearer	F12	Psychosensory comfort
F3	The appearance of the product	F13	The degree of body coverage
F4	Aesthetics of technological processing	F14	Fixing the product on the body
F5	Advertising function	F15	Resistance to mechanical stresses
F6	Carrier of information	F16	Resistance to surface wear
F7	Dimensional correspondence	F17	Stability of shapes and dimensions
F8	Ease in dress-undress	F18	Resistance to the action of biological factors
F9	Moisture absorption	F19	Easy maintenance
F10	Humidity transfer	F20	Reconditioning capacity

In order to establish the relative importance of women's blouse functions, an opinion poll was conducted among 10 consumers aged 20-30 years, women.



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Consumers applied the direct ordering process, so each function is assigned a rating of between 1 and 20, depending on the importance or value of each. For each of the 20 functions, the notes given by the user were summed vertically, obtaining a total, an average for each function and a weight of them. As a result, it was possible to make an order of the importance of the functions, from which it was found that the most important function is considered F3 - the aspect of the product with the minimum weight (1,99%), followed by F8 - the ease in dress-undress (3,61%).

In order for a product to meet the high demands of consumers, it is necessary to consume certain resources. Of the resources consumed for the realization of a product we mention [2, 3]: intellectual resources, physical resources, material resources, financial resources, energy resources.

The following is how to allocate financial resources by technological functions and operations (tab. 2). The distribution of the cost of the product and its components by functions requires a logical reasoning, an analysis of the characteristics of the materials, parts and operations that make up the product. Often, a landmark or operation contributes to one or more functions. Therefore, in order to determine the cost of a function, which is sometimes determined by a part of a landmark or operation, we must deepen the analysis beyond the limit of the accounting records.

*Table 2: Economic dimensioning of functions*

Function:	Name of technological operations:				Total, lei	Share, kj
	Stitching	Processing	Finishing	packing		
F1	-	2	-	-	2	0,9
F2	16	1,5	-	-	17,5	7,5
F3	33,5	-	-	-	33,5	14,33
F4	20	-	-	-	20	8,6
F5	14,7	1,2	-	-	15,9	6,8
F6	27,5	2,3	-	-	29,8	12,75
F7	17	-	3,9	-	20,9	8,9
F8	25	-	-	-	25	10,7
F9	-	-	2	-	2	0,9
F10	-	-	2,5	-	2,5	1,1
F11	-	-	3,5	-	3,5	1,5
F12	-	-	-	0,8	0,8	0,34
F13	13,5	-	-	-	13,5	5,8
F14	23	-	-	-	23	9,8
F15	-	-	1,5	-	1,5	0,6
F16	-	-	-	0,5	0,5	0,21
F17	3,58	-	0,87	-	4,45	1,9
F18	-	-	-	0,341	0,341	0,15
F19	-	-	4,5	-	4,5	1,92
F20	9	0,821	2,8	-	12,62	5,4
<b>Cost of materials, lei</b>	198	6,5	21	1,5	227	97
<b>The cost of the work, lei</b>	4,780	1,321	0,571	0,141	6,813	3
<b>The total cost, lei</b>	202,78	7,821	21,571	1,641	233,813	100



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Both the costs by groups of technological operations, as well as those of the purchase of raw materials, auxiliary materials and maneuver were taken from the technical documentation of the product concerned and distributed to the functions depending on their importance. Then the weight of each cost in the total cost of the product was calculated, the results being listed in table 2.

Systematic analysis of functions allows the identification of oversized, well dimensioned and economically undersized functions. This analysis is performed by comparing two categories of weights (tab. 3): the weight in the use value ( $p_j$ ) and the weight in the production cost ( $k_j$ ). Based on the data in table 3, the cost chart was drawn up (fig. 1).

*Table 3: Systematic analysis of functions*

Function	$p_j$	$k_j$	$p_j^2$	$k_j \cdot p_j$	$a \cdot p_j$	$k_j - a \cdot p_j$	$(k_j - a \cdot p_j)^2$
F1	4,48	0,9	20,0704	4,032	3,98944	-3,0894	9,54463951
F2	5,14	7,5	26,4196	38,55	4,57717	2,92283	8,54293521
F3	1,99	14,33	3,9601	28,5167	1,7721	12,5579	157,700978
F4	4,63	8,6	21,4369	39,818	4,12302	4,47699	20,0433947
F5	5,52	6,8	30,4704	37,536	4,91556	1,88444	3,55111411
F6	6,45	12,65	41,6025	81,5925	5,74373	6,90628	47,6966344
F7	4,67	8,9	21,8089	41,563	4,15864	4,74137	22,4805421
F8	3,61	10,7	13,0321	38,627	3,21471	7,4853	56,0296412
F9	5,98	0,9	35,7604	5,382	5,32519	-4,4252	19,5823065
F10	5,86	1,1	34,3396	6,446	5,21833	-4,1183	16,960642
F11	5,43	1,5	29,4849	8,145	4,83542	-3,3354	11,1249932
F12	3,99	0,34	15,9201	1,3566	3,5531	-3,2131	10,3239795
F13	5,52	5,8	30,4704	32,016	4,91556	0,88444	0,78223411
F14	4,46	9,8	19,8916	43,708	3,97163	5,82837	33,9698969
F15	5,98	0,6	35,7604	3,588	5,32519	-4,7252	22,3274205
F16	4,81	0,21	23,1361	1,0101	4,28331	-4,0733	16,5918136
F17	6,32	1,9	39,9424	12,008	5,62796	-3,728	13,8976858
F18	5,56	0,15	30,9136	0,834	4,95118	-4,8012	23,0513294
F19	3,82	1,92	14,5924	7,3344	3,40171	-1,4817	2,19546452
F20	5,35	5,4	28,6225	28,89	4,76418	0,63583	0,40427343
<b>Total</b>	<b>100</b>	<b>100</b>	<b>517,635</b>	<b>460,953</b>	<b>-</b>	<b>-</b>	<b>496,8019</b>

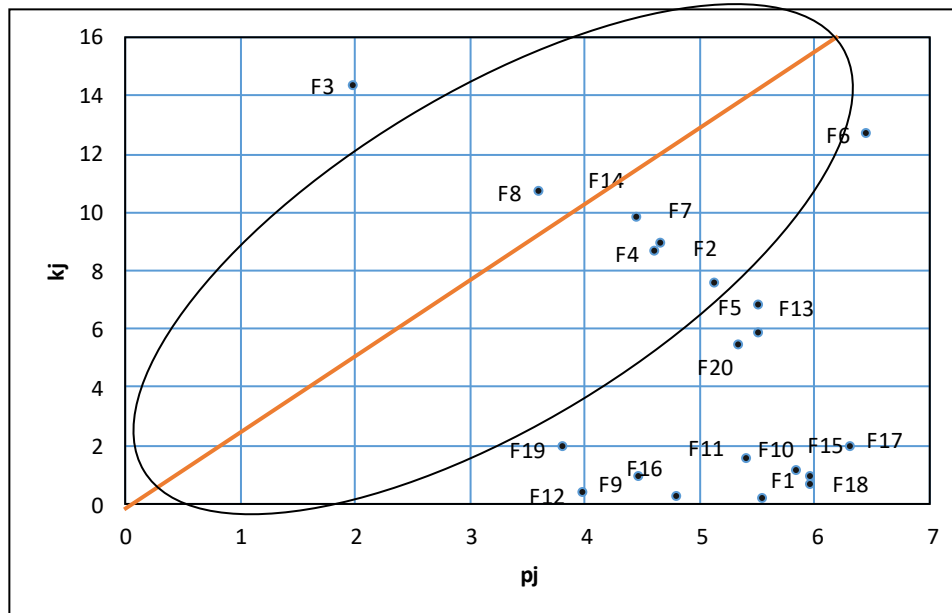
The cost chart allows us to consider:

- function F3 as an oversized one;
- the functions F2, F4, F6, F7, F8, F14 are economically well dimensioned;
- functions F1, F5, F9, F10, F11, F12, F13, F15, F16, F17, F18, F19, F20 - economically oversized.

Figure 1 shows concrete solutions for the redesign activity, namely: for economically oversized functions, a reduction of costs is required, and for undersized functions an increase of economic dimensions is possible. The economic oversizing is generated by the special importance given by the manufacturer to the product's appearance.

This oversize can be viewed in two forms. The first is that the appearance of the product can be a decisive criterion that determines the consumer to purchase the product and therefore the

expenses for carrying out this function are justified. And second, if the company does not have the financial resources to carry them out, then the manufacturing unit will have to resize these functions.



*Fig. 1: Systematic analysis of the functions for the analyzed product*

Of the economically undersized functions only the F12 (psychosensory comfort) and F19 (light maintenance) functions are of importance to consumers, being ranked 4 and 3 in the order of their importance. In order to resize these functions it is proposed to renounce the functions that consumers do not consider important (eg F9, F10, F15 and F18) and their financial resources to be allocated to functions F12 and F19.

From the study, it was found that consumers give preference to the features of the products, the ease of dressing-undressing, easy maintenance, psychosensory comfort, etc., and the manufacturer of the technological and economic ones.

Based on the obtained results, the collection of proposal models was elaborated, presented in figure 2. The proposed models are close to the basic model, due to the combination of consumer requirements and production requirements.

#### 4. CONCLUSIONS

Due to the great diversity of the types of clothing products, it is necessary to know the functions imposed by the destination and the specific operating conditions. Knowing all the functions of the clothing products will allow us to make optimal decisions regarding the launch of the products in the manufacture that correspond to the consumers' requirements.

Identifying the needs and wants of the beneficiaries, knowing the potential of the producers will allow the elaboration of a collection of models that will meet at a high level the ever increasing demands of the consumers.

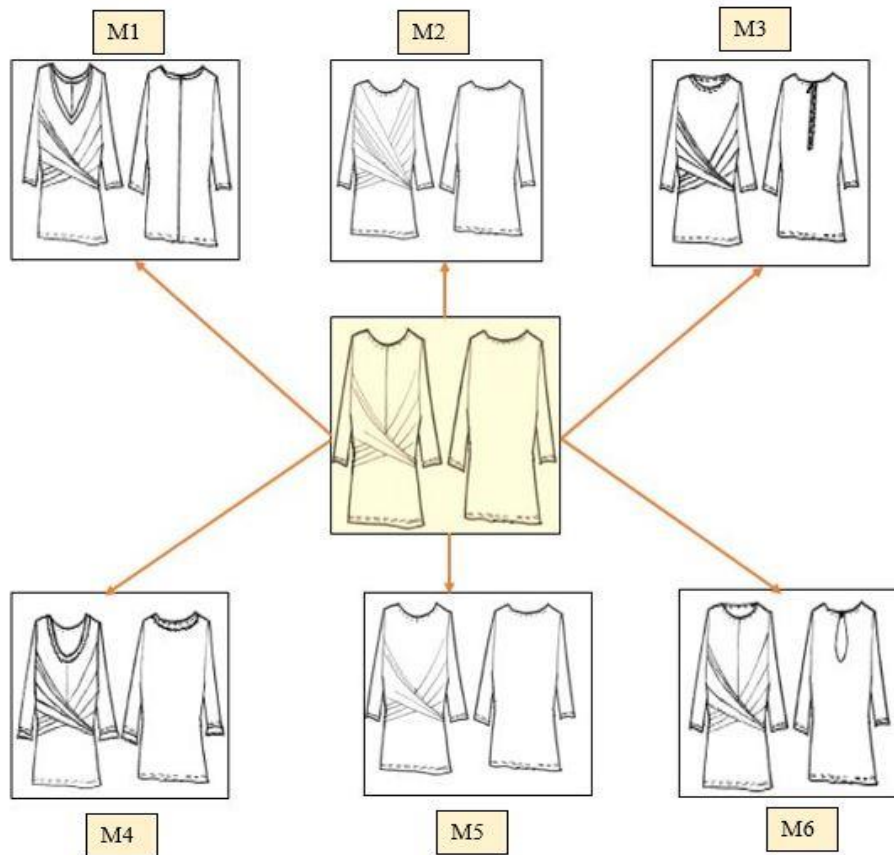


Fig. 2: Colecția de modele propunere

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