DOI: 10.2478/aucts-2025-0015

ACTA UNIVERSITATIS CIBINIENSIS – TECHNICAL SERIES
Vol. 77 2025

COMPARATIVE ANALYSES BETWEEN DIFFERENT CLASSIFICATION OPTIONS, AND BETWEEN THEIR TECHNICAL-ECONOMIC INDICATORS

IRIDON Anca-Mădălina
Faculty of Engineering, "Lucian Blaga" University, Sibiu, Romania,
anca.iridon@ulbsibiu.ro

Abstract: *The content of this paper presents a comparative analysis between different classification options, as well as between their technical-economic indicators, for the men's jacket intended for the 20–29 age group, represented both in tables and graphically.*

Keywords: anthropometry, textile, clothing, design method

1. INTRODUCTION

The present paper is a continuation of research conducted on a sample of 150 men, aged 20–29, with various stages of this research presented in several studies [1]…[7].

For this sample, an anthropometric database was compiled, serving as the basis for subsequent calculations and statistical processing, with the aim of developing a modern method and methodology for the constructive design of men's clothing, specifically for the aforementioned age group, based on scientific criteria.

2. OBJECTIVES AND EXPERIMENTAL RESULTS

Both nationally and worldwide, various versions of the geometric method are used for constructing the flat patterns of garment components. Even within the same product type, these versions differ in the number and meaning of the initial information required for construction, in the specifics of the calculations for sizing the constructive segments, and in their sequence.

The classic men's jacket is an outer garment supported on the shoulders, toward which the experimental research has been directed. In previously published works, several construction methods developed in different countries (Table 1) have been comparatively analyzed, all of them based on the geometric method [1]…[4].

Tabel 1: Constructive variants

Author	Country	Variant number
C.I.C.	Romania	1
Karoly Lajos	Hungary	2
W.Kula	Poland	3
A. Nattkemper	Germany	4
The proposed variant	Romania	5

For variants V1…V4, the calculation formulas used anthropometric data from the standards in force for the 176–96–88 size, while for the proposed variant the values obtained from the regression equations [1]…[3] were used.

Examples of these, related to obtaining the constructive segments required for determining the product's width along the bust line, and extracted from the actual pattern design process [1], are summarized in Table 2 and comparatively illustrated in Figure 1, within the main templates of the men's jacket (front, side panel, back).

DOI: 10.2478/aucts-2025-0015

Tabel 2: Calculation of the constructive segments required for determining the product's width, using different variants

Constr. Segment	Variant 1		Variant 2		Variant 3		Variant 4		Variant 5
	Calc. Relations	Value (cm)	Calc. Relations	Value (cm)	Calc. Relations	Value (cm)	Calc. Relations	Value (cm)	Value (cm)
Back Width	$\frac{ls}{2}$	19,75	$\frac{7}{20}P_b$+6	22,8	$\frac{2}{5}P_b$+2	21,2	$\frac{P_b}{4}$+9,5	21,5	22,49
Armhole Diameter	$\frac{P_b}{4}$+4,5	16,5	$\frac{P_b}{5}$+4,5	14,1	$\frac{P_b}{5}$+9,5	19,1	$\frac{P_b}{4}$+0,5	12,5	13,7
Front Width	$\frac{2}{5}P_b$+1,5	20,7	$\frac{2}{5}P_b$+2,5	21,7	$\frac{2}{5}P_b$+3	22,5	$\frac{P_b}{2}$-3	21	21,71

According to the sequence of constructive design stages, after obtaining the patterns (Figure 1) and the templates of the components of the aforementioned product [1], [4], the next step involved creating simple marker layouts for the variants under study (Fig. 1…5)

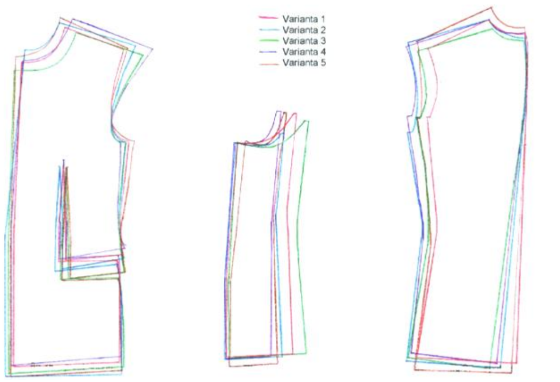

Figure 1: Comparative graphical representation of the main templates for a men's jacket (front, side panel, back of men's jacket)

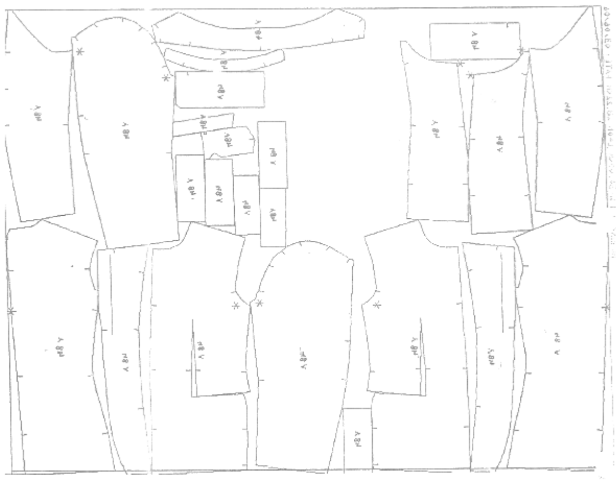

Figure 2: Simple layout for men's jacket – variant 1

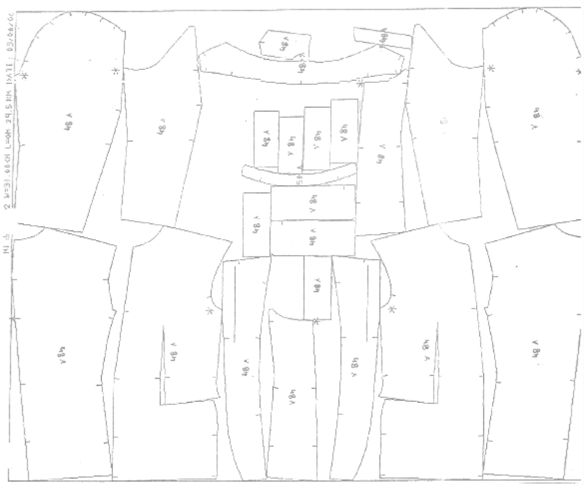

Figure 3: Simple layout for men's jacket – variant 2

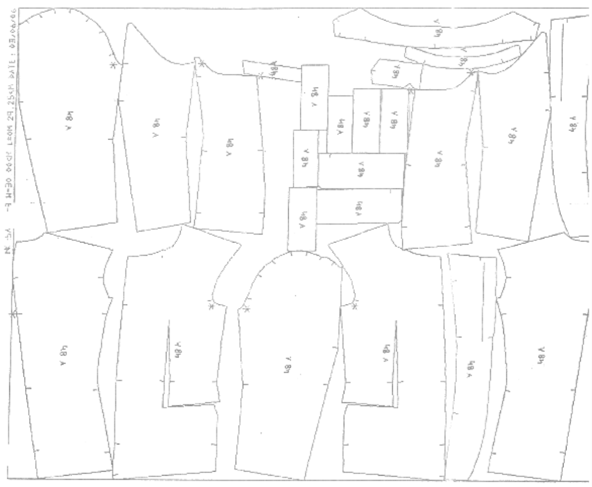

Figure 4: Simple layout for men's jacket – variant 3

DOI: 10.2478/aucts-2025-0015
ACTA UNIVERSITATIS CIBINIENSIS – TECHNICAL SERIES
Vol. 77 2025

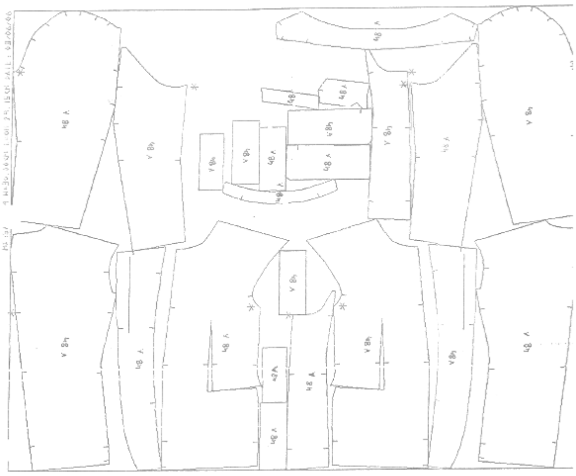
Figure 5: Simple layout for men's jacket – variant 4

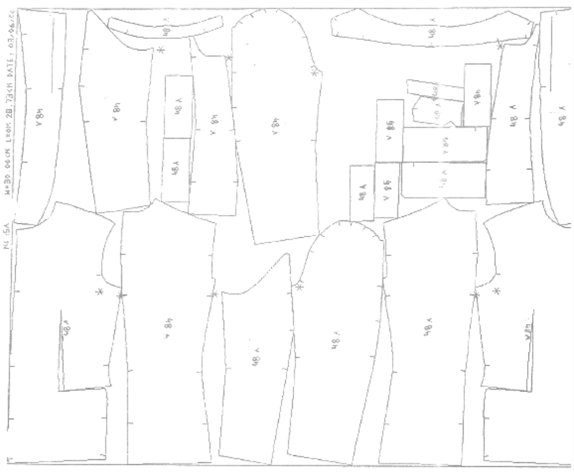
Figure 6: Simple layout for men's jacket – variant 5

Comparing the proposed constructive solution with the construction variants existing in the specialized literature requires a technical-economic analysis, carried out by determining certain constructive and economic parameters of the layout operation, such as: the layout area, the template area, the fabric utilization indices, and the specific consumption resulting from the generated layouts.

The values obtained from the automated layouts are presented both in tables (Table 3) and graphically (fig. 6…9).

Tabel 3: Technical-economic indicators of the layout

No. / Crt.	Analyzed variant	Specific consumption, Cs (m)	Layout width, l (m)	Layout area, $S_{înc}$ (m)	Utilization index, I_u (%)	Loss index, I_p (%)
1.	V_1	1,4110	1,50	2,11650	74,77	25,23
2.	V_2	1,4755	1,50	2,21325	75,67	24,33
3.	V_3	1,4625	1,50	2,19375	74,70	25,30
4.	V_4	1,4575	1,50	2,18625	73,75	26,25
5.	V_5	1,4365	1,50	2,15475	76,15	23,85

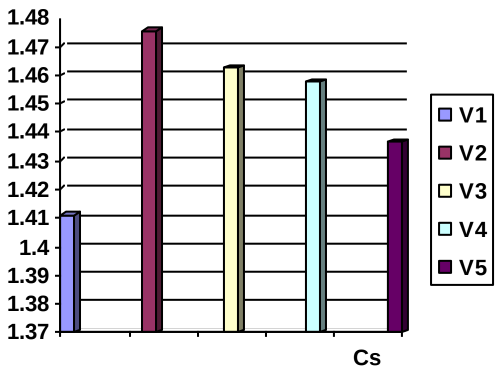

Figure 6: Values of specific consumption

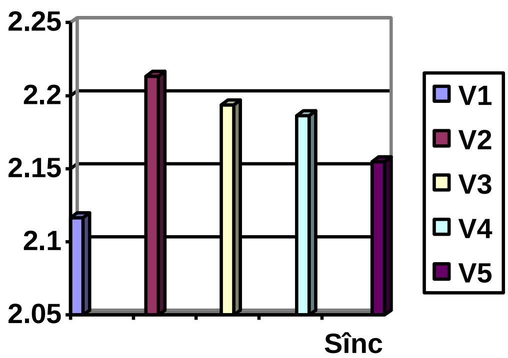

Figure 7: Values of the layout area

DOI: 10.2478/aucts-2025-0015
ACTA UNIVERSITATIS CIBINIENSIS – TECHNICAL SERIES
Vol. 77 2025

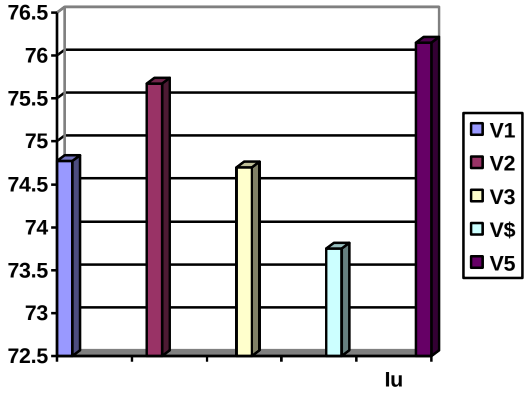

Figure 8: Values of the fabric utilization index

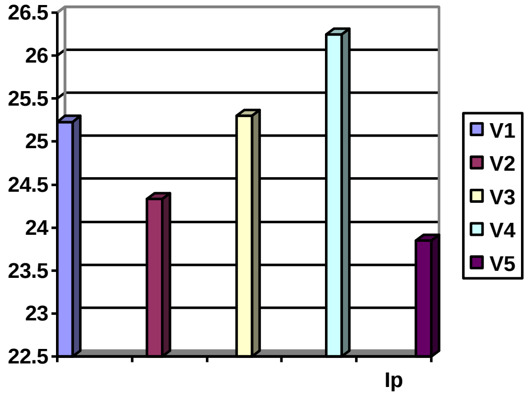

Figure 9: Values of the fabric loss index

3. CONCLUSIONS

From the analysis of the data presented in Table 3 and in the graphs in Figures 6…9, the following conclusions can be drawn:

- The layout carried out for variant V5 shows an improvement in the possibilities for arranging the templates, providing an optimal solution from this perspective, which can be reflected in an increased layout utilization index and a decreased specific consumption, thus reducing manufacturing costs.
- All studied variants have relatively similar specific consumptions; however, considering that for variants V1…V4 the product length is a constant value taken from the N.I.D., while for the proposed variant the product length is a dimension obtained according to body height, this can be considered an advantage, as it allows providing wearers with products corresponding in length to their height.
- Although the proposed variant ranks second in terms of the obtained specific consumption, it can be considered the most advantageous for the wearer.

4. REFERENCES

1. Iridon, A.-M., *Contributions regarding the use of anthropometric research results in the scientific-criteria-based design of men's clothing, age group 20–29*, PhD thesis, Iași, (2003).
2. Iridon, A., *Interdependence relations between primary and secondary anthropometric measurements with the same orientation*, Romanian Textile and Leather Review, no. 2, Iaşi, (2001).
3. Iridon, A., *Size categories and comparative analyses with the data recorded in the standards in force*, Romanian Textile and Leather Review, Iaşi, Supplement (2004).
4. Iridon, A., *Comparative analysis of different construction methods for toiles for clothing articles*, Acta Univertsitatis Cibiniensis, vol. LVIII, Tehnical Series, Sibiu, (2009).
5. Iridon, A., *Algorithm for the unidimensional statistcical processing of the main anthropometric parameters that characterise the outer body shape for men*, Annals of the University of Oradea, Fascicle of Textiles, Leatherwork, vol.XIII, nr.1, ISSN 1843813X, pag.92-97, (2012).
6. Iridon, A., *Bidimensional statistical processing of the main anthropometric parameters for men in view of the distribution on sizes and waist lenghts*, Annals of the University of Oradea, Fascicle of Textiles, Leatherwork, vol.XIII, nr.2, ISSN 1843813X, pag.87-91, (2012).
7. Iridon, A.-M., *Analysis of the Main Statistical Parameters Characterizing Anthropometric Sizes*, Acta Univertsitatis Cibiniensis, vol. 76 ISSUE 1, Tehnical Series, Sibiu, ISSN 2668-6449, pag.40-45, DOI: https://doi.org/10.2478/aucts-2024-0006 (2024).