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Analysis of Comfort Levels of Men's Pants Patterns Size L Soekarno, Balai Latihan Kerja, and Citra Tailor Systems

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ABSTRACT - This study aims to analyze the methods of making patterns for men's trousers and the comfort level of men's trousers patterns in size L created using the Soekarno system, the Balai Latihan Kerja system, and the Citra Tailor system. This research is descriptive with a quantitative approach. Data collection was done using expert panel assessment sheets. The research results are as follows: 1) Significant differences among the three pattern systems lie in the creation of the back pattern, specifically in the waistline and thigh lines, which determine the comfort of the hip circumference. 2) The comfort level of men's trousers patterns in size L using the Soekarno system, in terms of static comfort level, shows overall results falling into the comfortable category. Similarly, the results for kinetic comfort level fall into the comfortable category overall. 3) The comfort level of men's trousers patterns in size L using the Balai Latihan Kerja system, in terms of static comfort level, shows overall results falling into the less comfortable category. Similarly, the results for kinetic comfort level fall into the less comfortable category overall. 4) The comfort level of men's trousers patterns in size L using the Citra Tailor system, in terms of static comfort level, shows overall results falling into the less comfortable category. Similarly, the results for kinetic comfort level fall into the less comfortable category overall. This research is expected to be used as a reference for further researchers.

Keywords: Comfort, patterns, Soekarno system, Balai Latihan Kerja system, Citra Tailor system.

INTRODUCTION

Trousers are lower-body garments extending from the waist or hips to the desired length and are designed with separate tubular sections for each leg. In clothing construction literature, distinctions are sometimes made between terms such as *slacks* and *pantaloons*, with *slacks* often referring to women's trousers and *pantaloons* to men's trousers (Ernawati & Nelmira, 2008). Regardless of terminology, trousers remain one of the most essential garment forms in both men's and women's fashion, requiring precision in design and construction to achieve proper fit, comfort, and aesthetic quality. Previous studies have shown that garment performance is closely related to body dimensions, ease allowance, and construction accuracy (PARKER et al., 2017; Yang & Baytar, 2024).

Pattern making is a fundamental competency in garment construction because the quality of a finished garment is highly dependent on the accuracy of its pattern. A well-developed pattern contributes to comfort, visual appeal, and functional value, whereas an inaccurate pattern may result in poor fit and reduced garment quality (Ernawati & Nelmira, 2008). For this reason, pattern drafting serves as a critical stage in the clothing production process and requires both technical understanding and practical accuracy. Recent studies have also emphasized that pattern development plays a central role in achieving satisfactory fit because garment patterns must translate body measurements into wearable forms while maintaining comfort and mobility (Kim & Choi, 2023; Oh & Kim, 2026).

In the field of dressmaking, a pattern is generally understood as a template made from paper or fabric that functions as a guide for cutting garment materials. Porrie Muliawan and Tamimi, as cited in Ernawati & Nelmira (2008), describe a pattern as a representation of the body shape used to facilitate garment construction. Similarly, Nafisah & Kusumarwardani (2021) define a pattern as a replica of the wearer's body form developed from specific body measurements and used to minimize cutting errors during production. This basic pattern serves as the foundation for further garment development; without it, the construction process becomes less systematic and more prone to error. Contemporary apparel research likewise views pattern making as a process of converting anthropometric information into garment forms that can ensure fit suitability, appearance satisfaction, and movement comfort (Kim & Choi, 2023).

The quality of a clothing pattern is influenced by several factors, particularly the precision of body measurements and the suitability of the drafting system applied (Bye et al., 2006). Various pattern-making systems have been developed, such as those proposed by M. H. Wancik, Soekarno, Porrie Muliawan, So-en, and Edi Budiharjo, each with its own formula, procedure, and level of complexity. These differences indicate that pattern drafting is not a uniform practice; rather, each system may produce different construction outcomes depending on the garment type and the user's body proportions. Consequently, careful calculation and methodological consistency are essential, as inaccuracies in pattern drafting may affect garment shape, balance, and fit. This argument is in line with previous findings that body measurements, pattern parameters, and ease distribution are key determinants of garment fit and wearer satisfaction (Abtew et al., 2021; Thomassey & Bruniaux, 2013).

Among the available systems, the Soekarno trouser pattern is widely used in trouser construction. One of its distinguishing characteristics is that the front pattern is drafted first and subsequently used as the basis for developing the back pattern. In addition, the trouser length in this system is measured from the waist to the ankle. These procedural characteristics make the Soekarno system distinct from other drafting methods and suggest the need for closer examination of its practical application, particularly in skills training contexts where pattern accuracy directly affects learning outcomes and product quality. More broadly, previous research has shown that detailed pattern parameters can improve body conformity and functional fit in garments (Kim & Choi, 2023; Monobe et al., 2017).

Vocational training institutions play an important role in equipping learners with practical competencies in garment construction. In Indonesia, the *Balai Latihan Kerja* (BLK), or Work Training Center, provides skill-based training in various fields, including fashion design. BLK programs are open to participants from diverse educational and professional backgrounds, making them an important site for examining how technical garment-construction skills are taught and practiced in non-formal education settings. This study focuses on BLK Singosari in Malang, Indonesia, as one of the institutions offering fashion-related training.

In addition to formal and non-formal training institutions, tailoring businesses also contribute significantly to the transmission of practical knowledge in garment construction. One example is Citra Tailor, a menswear tailoring business in Malang established in 1981 by Mr. Anto, a self-taught tailor with extensive professional experience. Although he did not receive formal education in fashion design, he developed his expertise through hands-on work in the garment industry and independent observation of commercial trouser products from established brands. His learning process reflects an experiential approach to skill development, in which practical analysis, repeated experimentation, and direct engagement with finished garments contribute to the mastery of tailoring techniques. This context provides a relevant empirical setting for understanding how trouser pattern-making knowledge, particularly the Soekarno system, is interpreted and applied in practice.

METHOD

This study adopted a quantitative approach based on the positivist paradigm, in which data are collected systematically and analyzed statistically to examine the research hypothesis (Sugiyono, 2013). Specifically, the study combined descriptive and experimental elements. The descriptive component was used to document the drafting process of men's trouser patterns developed using the Soekarno, Balai Latihan Kerja (BLK), and Citra Tailor systems. The experimental component was used to compare the comfort level of the trousers produced from each of these pattern-making systems.

Three men's trouser patterns in size L were drafted according to the respective procedures of the Soekarno, BLK, and Citra Tailor systems and then constructed into finished garments with the same design specifications. The resulting trousers were worn alternately by a model who matched the required body measurements. This procedure was carried out to evaluate and compare the comfort level of each trouser pattern system and to determine which system produced the most comfortable fit.

To maintain consistency across treatments, all trousers were produced using the same design, and only the pattern-making system was varied. This standardization was necessary to ensure that any differences in comfort were associated with the pattern construction method rather than with other garment design factors. The trouser design used in this study is shown in **FIGURE 1**.

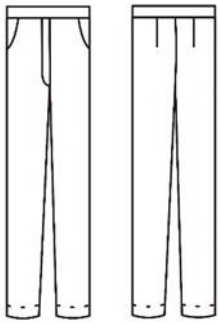

FIGURE 1. Trouser design used in the study.

RESULTS AND DISCUSSION

Comparison of Trouser Pattern Construction Procedures

The findings show that the three trouser pattern systems examined in this study differed in terms of drafting procedure, construction logic, and complexity. The Soekarno system was found to have the most detailed and relatively more complex drafting process. In this system, the front pattern is drafted first and subsequently used as the basis for constructing the back pattern. Several measurement adjustments are applied during the drafting process, including modifications to the waistline, thigh, knee, and lower leg positions. These detailed procedures require greater precision and repeated reference to the drafting guide, indicating that the Soekarno system is technically more demanding than the other two systems.

By contrast, the Balai Latihan Kerja (BLK) system was found to have a simpler and more practical construction procedure. The formulas used to determine hip height, thigh width, knee width, and lower leg width are more straightforward, making the drafting process easier to follow. Likewise, the Citra Tailor system showed a distinctive practical tailoring approach, with its own adjustments to the front and back patterns. Compared with the Soekarno system, both the BLK and Citra Tailor systems appeared less complicated in their drafting stages. However, the simplicity of procedure did not necessarily lead to better comfort outcomes in the finished garment.

These findings suggest that the complexity of a pattern system may be associated with the degree of precision in garment fit. The Soekarno system, although more demanding in terms of drafting procedure, appears to offer more refined proportional adjustments, which may contribute to better static and kinetic comfort in the final trousers. This indicates that drafting accuracy is not merely a technical matter but also a determinant of garment comfort and wearability.

Static Comfort of the Soekarno Pattern System

The static comfort assessment showed that the Soekarno pattern system produced the highest level of comfort among the three systems. Based on expert panelists' evaluations, 90.48% of observations were categorized as comfortable and only 9.52% as somewhat comfortable or uncomfortable, indicating that the trousers produced by this system fit well when worn in a stationary condition. This result suggests that the pattern proportions generated by the Soekarno system were more appropriate to the model's body measurements.

TABLE 1 provides a more detailed view of the static comfort performance of the Soekarno system. Nearly all assessed components, including the waist circumference, hip circumference, thigh circumference, crotch circumference, knee circumference, and hem circumference, were rated comfortable by all panelists. Only the pant

leg width showed slight variation, with one panelist rating it comfortable and two panelists rating it somewhat comfortable. Even so, the overall result remained strongly positive. This indicates that the Soekarno system was able to achieve good dimensional balance across most critical trouser components.

TABLE 1. Static comfort assessment of the Soekarno pattern system.

No.	Criteria	Comfortable	Somewhat Comfortable	Uncomfortable	Total
1	Waist circumference	3	0	0	3
2	Hip circumference	3	0	0	3
3	Thigh circumference	3	0	0	3
4	Crotch circumference	3	0	0	3
5	Knee circumference	3	0	0	3
6	Pant leg width	1	2	0	3
7	Hem circumference	3	0	0	3
	F	19	2	0	
	N				21
	%	90.48	9.52	0.00	

FIGURE 2 presents the percentage distribution of static comfort for the Soekarno system, clearly showing the dominance of the comfortable category. This figure confirms that the Soekarno pattern produced the best static fitting quality, with minimal indications of discomfort.

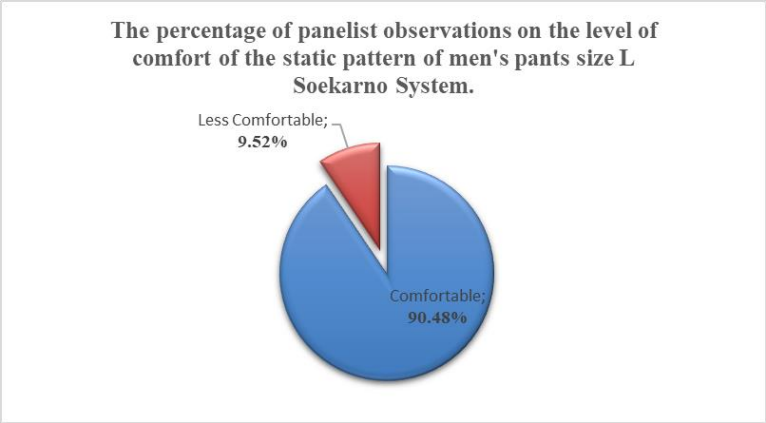

FIGURE 2. Percentage of static comfort level of the Soekarno pattern system.

Kinetic Comfort of the Soekarno Pattern System

The kinetic comfort assessment also showed that the Soekarno system performed very well. The findings indicate that 91.67% of the observations were categorized as comfortable and 8.33% as uncomfortable, meaning that the trousers remained comfortable even when the wearer was engaged in movement or activity. This result is important because kinetic comfort reflects not only fit but also mobility and functional ease during wear.

The high kinetic comfort result implies that the Soekarno system provides sufficient ease allowance in key movement areas, particularly around the crotch, thigh, and knee. In garment construction, these parts are especially important because they directly affect the wearer's ability to sit, bend, walk, and move freely. The consistently high rating obtained by the Soekarno system suggests that its pattern proportions support both anatomical fit and movement comfort.

FIGURE 3 shows the percentage distribution of kinetic comfort for the Soekarno system. The figure confirms that this system produced the most favorable movement comfort among the three pattern systems examined. **FIGURE 4** then combines the static and kinetic results, illustrating the overall consistency of the Soekarno system in delivering a comfortable garment.

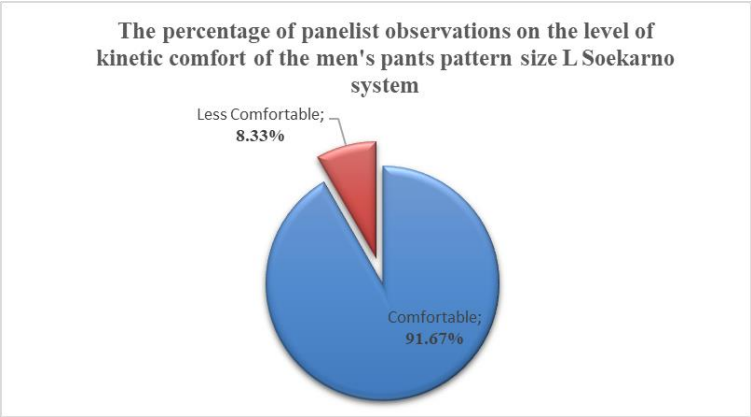

FIGURE 3. Percentage of kinetic comfort level of the Soekarno pattern system.

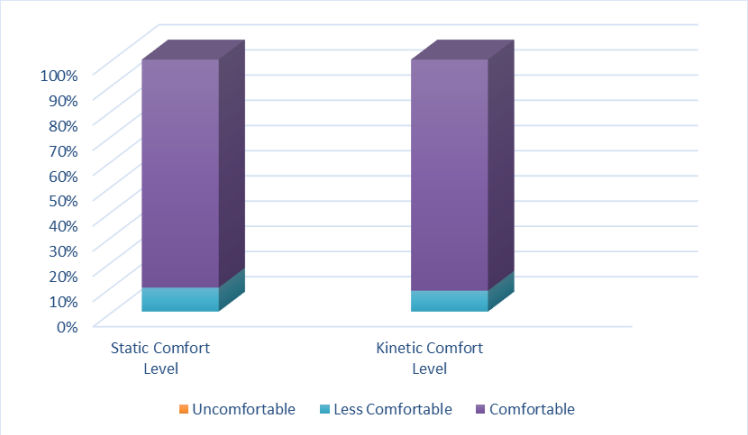

FIGURE 4. Percentage of static and kinetic comfort levels of the Soekarno pattern system.

Static Comfort of the Balai Latihan Kerja Pattern System

The static comfort result for the BLK pattern system was considerably lower than that of the Soekarno system. Based on the panelists' evaluations, 38.10% of the observations were categorized as comfortable, 33.33% as somewhat comfortable, and 28.57% as uncomfortable. Overall, this distribution indicates that the BLK system fell into the somewhat uncomfortable category for static comfort.

As shown in **TABLE 2**, the static comfort weaknesses of the BLK system were particularly evident in the hip circumference, crotch circumference, knee circumference, and pant leg width. Although the waist circumference was rated comfortable by all panelists, the hip circumference received two uncomfortable ratings, and the crotch area received three somewhat comfortable ratings. This pattern indicates that the overall proportions of the garment were not fully balanced across the body, especially in areas that are critical to fit and comfort.

TABLE 2. Static comfort assessment of the Balai Latihan Kerja pattern system.

No.	Criteria	Comfortable	Somewhat Comfortable	Uncomfortable	Total
1	Waist circumference	3	0	0	3
2	Hip circumference	0	1	2	3
3	Thigh circumference	2	1	0	3
4	Crotch circumference	0	3	0	3
5	Knee circumference	0	2	1	3
6	Pant leg width	1	0	2	3
7	Hem circumference	2	0	1	3
	F	**8**	**7**	**6**	
	N				**21**
	%	**38.10**	**33.33**	**28.57**	

These findings suggest that the simpler drafting procedure of the BLK system may not provide sufficient precision for producing optimal body conformity in men's trousers size L. Static discomfort in the hip, crotch, and lower leg areas may indicate limitations in how the system distributes ease and accommodates body contours. **FIGURE 5** illustrates the percentage distribution of static comfort for the BLK system and highlights the relatively low proportion of comfortable ratings.

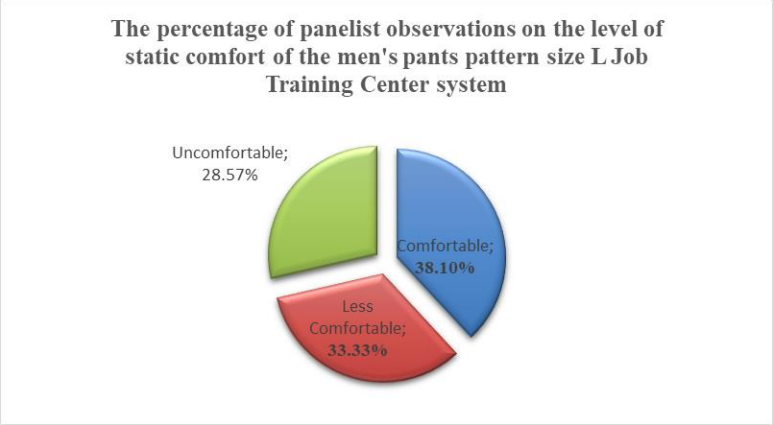

FIGURE 5. Percentage of static comfort level of the Balai Latihan Kerja pattern system.

Kinetic Comfort of the Balai Latihan Kerja Pattern System

The kinetic comfort findings for the BLK system also indicate that this pattern system was less effective than the Soekarno system. The panelists' evaluations showed that 33.33% of observations were categorized as comfortable, 50.00% as somewhat comfortable, and 16.67% as uncomfortable. These results place the BLK system in the somewhat uncomfortable category for kinetic comfort.

The dominance of the somewhat comfortable category suggests that although the trousers could still be worn during movement, they did not provide adequate ease or freedom in certain body areas. The original observations indicated that the thigh and seat areas created pressure and reduced comfort during activity. This is an important finding because a trouser pattern that performs moderately in static wear but poorly during movement may not be suitable for functional use.

FIGURE 6 presents the percentage distribution of kinetic comfort for the BLK system, while **FIGURE 7** compares the static and kinetic comfort results within the same pattern system. Together, these figures show that the BLK system consistently performed below the Soekarno system in both dimensions of comfort.

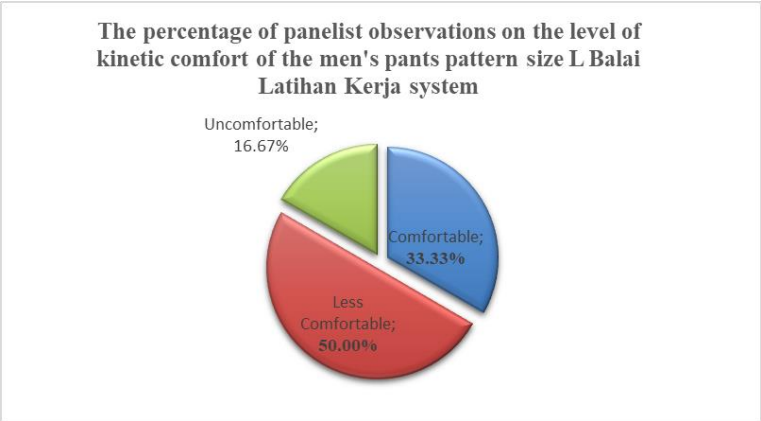

FIGURE 6. Percentage of kinetic comfort level of the Balai Latihan Kerja pattern system.

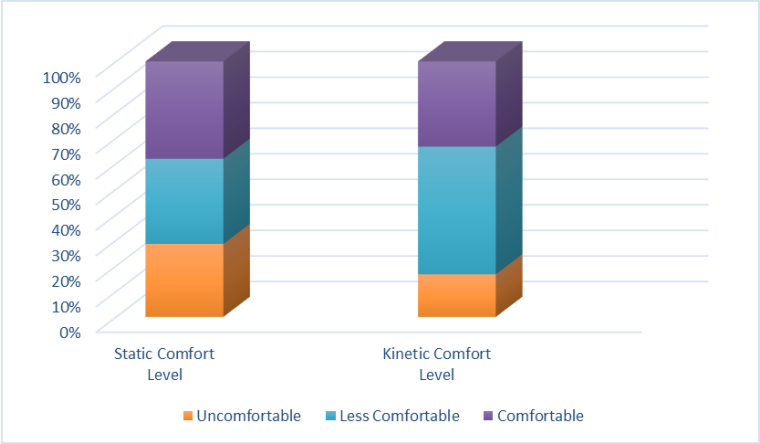

FIGURE 7. Percentage of static and kinetic comfort levels of the Balai Latihan Kerja pattern system.

Static Comfort of the Citra Tailor Pattern System

The static comfort result for the Citra Tailor system was better than that of the BLK system but still lower than that of the Soekarno system. The findings show that 57.14% of observations were categorized as comfortable, 28.57% as somewhat comfortable, and 14.29% as uncomfortable. Although the comfortable category had the highest proportion, the overall result was still classified as somewhat uncomfortable.

TABLE 3 shows that the strongest performance of the Citra Tailor system appeared in the hem circumference, which was rated comfortable by all panelists. The waist circumference and thigh circumference also received relatively favorable ratings. However, the hip circumference, crotch circumference, and knee circumference showed mixed responses, indicating that the fit was not consistently optimal across all garment components. These results suggest that while the Citra Tailor system may provide acceptable fitting in some areas, it still requires improvement in key structural zones related to comfort.

TABLE 3. Static comfort assessment of the Citra Tailor pattern system.

No.	Criteria	Comfortable	Somewhat Comfortable	Uncomfortable	Total
1	Waist circumference	2	1	0	3
2	Hip circumference	1	1	1	3
3	Thigh circumference	2	1	0	3
4	Crotch circumference	1	2	0	3
5	Knee circumference	1	1	1	3
6	Pant leg width	2	0	1	3
7	Hem circumference	3	0	0	3
	F	**12**	**6**	**3**	
	N				**21**
	%	**57.14**	**28.57**	**14.29**	

FIGURE 8 displays the percentage distribution of static comfort for the Citra Tailor system. Compared with the BLK system, the proportion of comfortable ratings is higher, but it remains noticeably lower than the static comfort achieved by the Soekarno system.

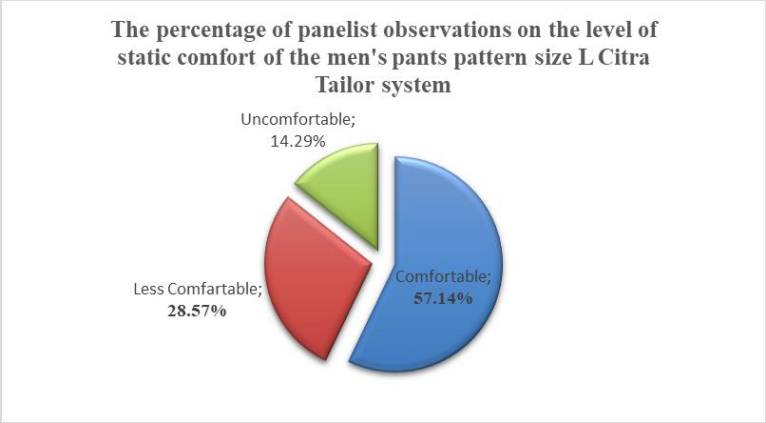

FIGURE 8. Percentage of static comfort level of the Citra Tailor pattern system.

Kinetic Comfort of the Citra Tailor Pattern System

The kinetic comfort assessment showed that the Citra Tailor system performed less favorably during movement than in static wear. The data indicate that 16.67% of observations were categorized as comfortable, 50.00% as somewhat comfortable, and 33.33% as uncomfortable. Thus, the overall kinetic comfort of the Citra Tailor system fell into the somewhat uncomfortable category.

This decline from static to kinetic performance suggests that the pattern system may provide an acceptable appearance when the wearer is standing still but fails to accommodate body movement adequately. The panelists specifically noted discomfort in the seat, waist, and thigh areas. The seat area pressed against the crotch, the waistline pressed against the abdomen, and the thigh area felt too tight. These findings indicate insufficient ease distribution in areas that are essential for movement, which in turn reduced the functional comfort of the trousers.

FIGURE 9 presents the percentage distribution of kinetic comfort for the Citra Tailor system, while **FIGURE 10** compares its static and kinetic comfort levels. The contrast between these two dimensions indicates that the Citra Tailor system was less stable than the Soekarno system in maintaining comfort across different wearing conditions.

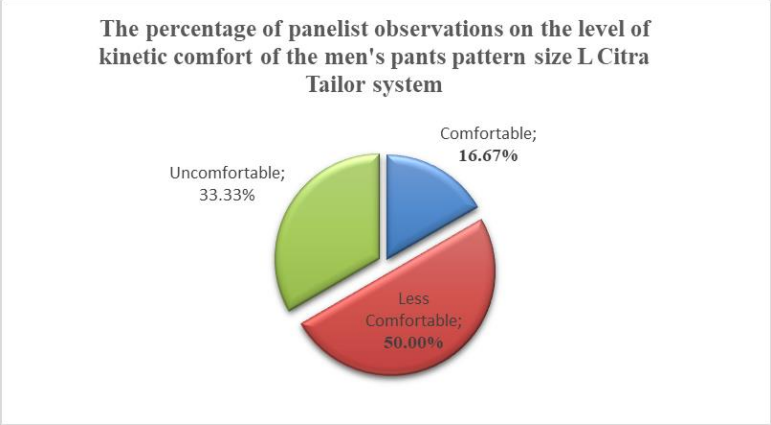

FIGURE 9. Percentage of kinetic comfort level of the Citra Tailor pattern system.

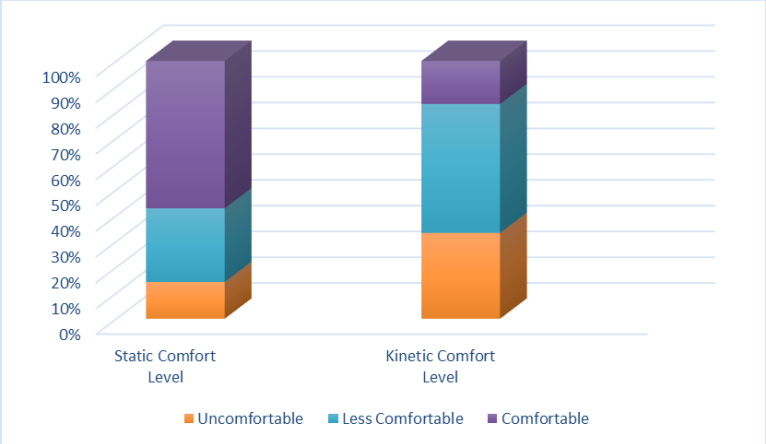

FIGURE 10. Percentage of static and kinetic comfort levels of the Citra Tailor pattern system.

Comparative Discussion of the Three Pattern Systems

When the three pattern systems are compared, the Soekarno system clearly demonstrated the best overall performance in both static and kinetic comfort. Its static comfort reached 90.48%, and its kinetic comfort reached 91.67%, both of which were categorized as comfortable. In contrast, the BLK system showed lower performance, with only 38.10% of static assessments and 33.33% of kinetic assessments falling into the comfortable category. The Citra Tailor system performed moderately in static comfort at 57.14%, but its kinetic comfort dropped substantially to 16.67% in the comfortable category. These results indicate that the Soekarno system provided the most balanced and functional fit among the three pattern systems evaluated in this study.

The superiority of the Soekarno system may be associated with its more detailed drafting process. Compared with the BLK and Citra Tailor systems, the Soekarno method requires more specific proportional adjustments in critical garment areas such as the waist, hip, crotch, thigh, knee, and lower leg. This finding is consistent with the broader apparel literature, which shows that garment fit and comfort are strongly influenced by the amount and distribution of ease allowance, body dimensions, and the precision of pattern parameters. Abtew et al. (2021), for example, emphasize that garment design parameters, wearer morphology, posture, and ease allowance are interrelated factors that directly affect garment fit and wearer satisfaction. Likewise, Dik et al. (2023) argue that body measurements, garment sizes, and ease allowance are necessary factors for achieving satisfactory garment fit.

The present findings also align with studies showing that fit evaluation should not be limited to visual appearance in a static posture. Yang & Baytar (2024) found that fit models identify garment problems not only while standing but also while moving through different postures, and that comments related to comfort, fit, and tactile sensation are

essential in apparel evaluation. This supports the distinction used in the current study between static comfort and kinetic comfort. In the same direction, Geršak (2014) explains that wearing comfort depends heavily on ease allowance adopted for body motion and that clothing design must account for movement-related body changes to avoid mobility restriction. Therefore, the stronger performance of the Soekarno system in both static and kinetic conditions suggests that its drafting structure may provide a more appropriate balance between body conformity and movement allowance.

The weaker results of the BLK and Citra Tailor systems, especially in kinetic comfort, may indicate that their proportional calculations did not distribute ease effectively in the areas most involved in movement. This interpretation is supported by prior research showing that posture and motion alter body dimensions and surface shape, meaning that a garment that appears acceptable in one posture may not remain comfortable in another. Yu & Kim (2023) demonstrated that body shape and size change noticeably between standing and sitting postures, and that these changes are important for pattern design and fit evaluation. In practical terms, this means that trousers must accommodate not only static dimensions but also dynamic changes in the hip, crotch, thigh, and knee regions.

In addition, previous work on easing and pattern construction suggests that pattern quality is not determined simply by procedural simplicity. Lee et al. (2023) note that easing plays a crucial role in garment fit and quality, yet in practice it is often determined by conventional knowledge rather than scientific analysis. Their study also highlights that many recent apparel studies have attempted to define comfortable fit more quantitatively by analyzing the spatial relationship between the garment and the body. This perspective helps explain why the simpler drafting procedures observed in the BLK and Citra Tailor systems did not automatically produce better comfort outcomes. In this study, the more complex Soekarno system appears to have yielded better fit because its detailed construction logic may have allowed more accurate shaping and ease distribution.

Overall, the findings reinforce the view that pattern-making precision plays a decisive role in garment comfort. A pattern system that is more complex at the drafting stage may ultimately provide better wearing performance because it accommodates body proportions and movement more accurately. The present study therefore supports previous research emphasizing that garment fit is a multidimensional issue shaped by body measurements, posture, movement, and ease allocation rather than by simplified drafting alone. Based on both static and kinetic assessments, the Soekarno pattern system was demonstrated to be the most effective of the three systems for producing comfortable men's trousers in size L.

CONCLUSION

Based on the results of the study, it can be concluded that the three pattern-making systems produced different levels of comfort in men's trousers size L. The Soekarno pattern system demonstrated the highest level of both static and kinetic comfort and was categorized as comfortable in both assessments. This indicates that the pattern proportions generated by the Soekarno system were more accurate and better suited to the wearer's body shape, resulting in greater comfort both at rest and during movement.

In contrast, the Balai Latihan Kerja (BLK) system was categorized as somewhat uncomfortable in both static and kinetic evaluations. The results indicate that several parts of the trousers, particularly the thigh and seat areas, did not provide optimal comfort. Similarly, the Citra Tailor system was also categorized as somewhat uncomfortable. Although it showed better static comfort than the BLK system, its kinetic comfort remained relatively low, especially in the waist, seat, and thigh areas.

Therefore, among the three pattern-making systems analyzed in this study, the Soekarno system can be considered the most comfortable pattern-making system for constructing men's trousers in size L. Based on this finding, it is recommended that the Soekarno system be considered as a reference in learning, training, and practical garment construction, particularly for men's trouser pattern drafting. Future studies are also suggested to examine other pattern-making systems, different garment sizes, and a larger number of wearers in order to generate more comprehensive findings and strengthen the generalizability of the results.

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