

DRAWBACKS IN CURRENT APPROACHES IN DEVELOPING ANTHROPOMETRIC SIZE CHARTS

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The Ready to-wear garment industry requires perfect pre- developed body size charts which represent their customer segment in order to become a success. With the introduction of online shopping, the importance of correct body size charts has increased. It is reported that 50% of women cannot find a good fit in apparel. In addition, fit problems are the reason for 50% of catalogue returns. Especially, women are displeased with the fit of the lower-body garments. These fit problems are due to the issues in existing size charts which are developed using different data analysis methods. Hence, the objective of this research is to explore the shortcomings of the widely used existing approaches which have been used to develop size charts.

The literature shows different approaches from simple statistical approaches to data mining techniques used for the development of body size charts. Anthropometric data of Sri Lankan females' lower body has been collected and data analysis has been carried out using SPSS version 16 software. Thirteen anthropometric variables were collected from a statistically adequate sample of 1068 females aged between 20-40 years. These data were used for developing size charts for female lower body using different approaches found in literature in view of finding shortcomings of the approaches. First, a statistical approach was used to develop the size chart which uses mean, standard deviation, range and drop value (hip girth – waist girth) of the data. Secondly, K-means clustering algorithm with factor analysis (this is the most widely used approach in past studies) was used.

According to anatomy, the human body, especially the female body, differs greatly from person to person. For example, there are five major female pelvic shapes. Hence, the statistical approach which divides the measurement ranges considering the constant size interval, generates poor size charts which do not represent the majority of the population. In the second approach, factor analysis resulted three factors namely girth factor, length factor and height factor, representing thirteen variables, and the sample has been clustered based on the factor scores using the K-means algorithm. This analysis clearly showed that there are three different clusters. However, the plot of key lower-body measurements, namely waist-girth and hip-girth, showed that these measurements are overlapped among the clusters, making the factors identified meaningless and useless for developing size charts. Hence, an advanced approach has to be used to generate body size charts which represent the majority of the population.