

Decoding Denim

A Visual Perception Study on Liking, Quality, and Sustainability of 464 Pairs of Jeans



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BACKGROUND

It is unclear which visual features drive product perception in textile design

Denim is widely used, culturally familiar, and mass-produced, making it a suitable subject for specific, but scalable insights

Research question: Which visual denim design features impact product liking, quality and sustainability perception?

METHOD

We selected all frontal photo stills (n = 464) from a Kaggle Jeans database (Kusawa, 2022)

BACKEND Metadata Creation

Categorization of denim jeans according to 27 visual design features (e.g., silhouette, color, presence and placement of disruptors) See Figure 1

FRONTEND Consumer Survey

Participants (n=286) rate products according to liking, quality and sustainability on a 9-point Likert scale

Powered by Otree (Chen et al., 2016)

RESULTS

Decisive elements for liking: presence/absence of special components, silhouette, color spread and color intensity

Decisive elements for quality & sustainability: degree of distressing, absence/ presence of special components, color spread, and jeans silhouette

Figure 1
Simplified categorization adapted from Logan et al. (2025)

Sustainability Decision tree
based on random forest analysis

Highest liking, quality, and sustainability scores

Lowest liking, quality, and sustainability scores

CONCLUSION & OUTLOOK

A comprehensive **metadata catalogue capturing 27 dimension** of visual design features was compiled for **464 products**, providing a robust basis for future research on visual perception in textile design

Survey results indicate that **traditional jeans are most preferred** and are perceived as having the highest quality and sustainability, whereas highly decorated designs and surface treatments are evaluated less favorably

Random forest analysis identified the most influential features as the **presence or absence of special design elements, silhouette, color intensity (particularly red and blue intensity), color spread, and the degree of product distressing**

These findings highlight the need for targeted **attention to these specific design features in denim development and evaluation**

Sources

Chen, D.L., Schonger, M., Wickens, C., 2016. oTree - An open-source platform for laboratory, online and field experiments. Journal of Behavioral and Experimental Finance, vol 9: 88-97

Logan, H. M., Rossi, V., Hansen, K. K., Søndergaard, M. Z., & Damgaard, A. (2025). Assessing the circularity potential of textile flows for future markets in Denmark: A study of textile anatomy. Sustainable Production and Consumption, 59, 127–142.

Kusawa, S. (2022). Jeans Dataset. Kaggle. <https://www.kaggle.com/datasets/sunnykusawa/jeans-dataset?resource=download> [Last accessed: 29 January 2026]