ABSTRAK

OPTIMALISASI PROSES PEWARNAAN PADA PRODUKSI *HAIR EXTENSION BLONDE* 613 DENGAN METODE *TAGUCHI*
(Studi Kasus: UMKM *Hair Extension* Purbalingga)

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UMKM *Hair Extension* di Purbalingga menghadapi masalah ketidakkonsistenan warna pada produksi *hair extension Blonde* 613. Proses pewarnaan masih dilakukan secara manual, sehingga hasil warna sering berbeda antar *batch* dan berdampak pada kualitas serta daya saing produk. Penelitian ini bertujuan memperbaiki proses pewarnaan dengan menentukan kombinasi parameter optimal menggunakan metode *Taguchi* agar hasil warna lebih seragam dan sesuai target kualitas. Desain eksperimen yang digunakan adalah *orthogonal array Taguchi* L4(2^3) dengan tiga faktor utama, yaitu takaran bahan**,** suhu air**,** dan waktu perendaman**.** Analisis menggunakan *Signal-to-Noise Ratio* (S/N *Ratio*) dan *ANOVA* menunjukkan bahwa takaran bahan merupakan faktor paling berpengaruh terhadap kualitas warna, diikuti oleh suhu air dan waktu perendaman. Kombinasi optimal menghasilkan rata-rata warna 5,05 yang mendekati target 5 (*Nominal is the Best*). Hasil penelitian membuktikan bahwa metode *Taguchi* efektif dalam meningkatkan konsistensi warna pada proses produksi *hair extension Blonde* 613 serta membantu UMKM meningkatkan efisiensi dan kualitas produknya.

Kata kunci: Metode *Taguchi*, Optimalisasi Kualitas, Ekstensi Rambut, Proses Pewarnaan, Blonde 613.

ABSTRACT

OPTIMALIZATION OF THE DYEING PROCESS IN THE PRODUCTION OF BLONDE 613 HAIR EXTENSIONS USING THE TAGUCHI METHOD (CASE STUDY: UMKM HAIR EXTENSION PURBALINGGA)

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The Hair Extension SME in Purbalingga faces inconsistency in color quality during the production of Blonde 613 hair extensions. The dyeing process is still performed manually, causing color variations between batches that affect product quality and competitiveness in the market. This study aims to improve the dyeing process by determining the optimal combination of parameters using the Taguchi method to achieve consistent color results that meet quality standards. The experimental design applied the Taguchi orthogonal array L4(2^3) with three main factors: chemical dosage, water temperature, and soaking time. Analysis using the Signal-to-Noise Ratio (S/N Ratio) and *ANOVA* revealed that chemical dosage had the most significant effect on color quality, followed by water temperature and soaking time. The optimal parameter setting produced an average color value of 5.05, which is very close to the target value of 5 (Nominal is the Best). The results demonstrate that the Taguchi method is effective in improving color consistency in the Blonde 613 hair extension production process and can help SMEs enhance process efficiency and product quality.

***Keywords**:* Taguchi Method, Quality Optimization, Hair Extension, Dyeing Process, Blonde 613.