UPCYCLING BATIK SCRAPS INTO SANDAL UPPERS, HEELS, AND STRAPS FOR SUSTAINABLE FASHION MSMES

Maya Dewi Dyah MAHARANI[1], Linda NOVIANA[2]
[1,2]Sahid University, Jakarta, Indonesia
***Email corresponding author*: maya@usahid.ac.id**

ABSTRACT

Batik fashion MSMEs in Depok generate 10–20% batik scrap waste during each production cycle. For Batik fashion MSMEs, effective management of fabric scrap waste not only reduces environmental impact but can also enhance product value, as consumers are increasingly attentive to sustainability. Upcycling is transforming batik fabric scraps into shoe uppers, heels and straps generates higher added value than standard recycling. This approach can help MSMEs increase their revenue while simultaneously reducing the amount of waste discarded. The process of making the upper, heel dan straps component from batik scraps consists of four steps: (1) assembling batik fabric scraps into a sheet (patchwork technique); (2) adding a reinforcing layer (interlining/non-woven) to the back to make the fabric sturdier; (3) laminating or coating the fabric before cutting to enhance durability; and (4) cutting and stitching or gluing the material to form the sandal uppers, heels, and straps. Skill improvement before the activity was measured using pre- and post-tests based on six indicators, each scored on a scale of 1 to 4. The skills of the 25 participants improved significantly by 50 percentage points after participating in the community service activity.

Keywords: Batik Fashion, Enhance Product Value, Environmental Impact, Scrap Waste

1. INTRODUCTION

There are 300 industry players and micro-enterprises operating in the fashion and handicraft sectors (according to a survey by the Head of Dekranasda Depok as of September 2026), while the total number of micro and small industries in Depok City stands at 15,180 units (based on data from Statistics Indonesia/BPS, 2025). Of this total, 20 units are batik fashion MSMEs that generate batik fabric scraps—amounting to 10–20% of material per production cycle. Beyond fabric scraps, the batik fashion industry also causes significant environmental pollution through the discharge of untreated wastewater containing synthetic dyes, heavy metals, and organic pollutants. However, research into a sustainable waste management model—integrating cleaner production and circular economy principles to mitigate environmental impact—demonstrated the ability to reduce key pollutant levels: COD by 83.7%, BOD by 88.2%, TSS by 88.0%, and Pb by 90.6%. The model also showed a high level of social acceptance, with 85% of artisans successfully adopting more environmentally friendly practices (Indah Fajarini et al., 2026).

In line with the points, managing fabric scrap waste offers a way for batik fashion MSMEs in Depok to adopt more eco-friendly practices while simultaneously enhancing product value—particularly given the growing consumer concern for sustainability. One technology that supports this approach is upcycling, a practice widely adopted by MSMEs in South Korea. Upcycling is a technique that transforms batik fabric scraps into products with higher added value than those resulting from standard recycling. Products created through upcycling include shirts, accessories, shoes, and sandals, as well as items incorporating embroidery techniques (Budhi Adhiani Christina, 2022; Wuri Handayani, 2022, Wedia Hastuti1 and Irma Maria Dulame, 2025, Titi Rahayu Prasetiani, *et. al.* 2019). The upcycling method agreed upon by the Universitas Sahid team and the Depok City Government for the target group of batik fashion artisans involves transforming batik fabric scraps into sandal uppers, heels, and straps. This approach helps MSMEs increase their income while simultaneously reducing waste. The process of manufacturing these sandal components—uppers, heels, and straps—from batik scraps consists of four stages: (1) joining batik scraps into a single sheet (patchwork technique); (2) applying a reinforcing layer (interlining/non-woven) to the back to increase the fabric's sturdiness; (3) laminating or coating the fabric before cutting to enhance durability; and (4) cutting and either sewing or gluing the material to form the sandal uppers, heels, and straps.

2. METHOD

This activity was conducted by the Community Service Program Team in July 2026, involving 25 batik fashion MSMEs under the Department of Trade and Industry (DISDAGIN) of the Depok City Government. The activity employed a qualitative approach (Nurrisaa et al., 2025). A qualitative approach emphasizes gaining a deeper understanding of an issue, rather than merely viewing it superficially. The qualitative approach is descriptive in nature, tends to employ analysis, and is better suited to revealing processes of meaning-making. It is a method of in-depth data processing that utilizes data derived from observations, interviews, and literature reviews. Qualitative data analysis techniques involve summarizing, categorizing, and interpreting the results of interviews and observations to address questions regarding what, why, and how. Data analyzed using this method take the form of text or narratives (Sekaran & Bougie, 2016).



Figure 1. Community service activity with the fashion batik group at the Depok City Department of Trade and Industry in July 2026.

The analysis proceeded with a pre-test, which was compared against a post-test to evaluate the success of the activity among the 25 participants. The pre-test measured the participants' knowledge and skills prior to the intervention, while the post-test assessed their capabilities following the intervention—specifically, the hands-on guidance provided for implementing upcycling technology.

3. RESULTS AND DISCUSSION

Skill improvement resulting from the activity was measured using pre- and post-tests based on six indicators, each rated on a scale of 1 to 4. The skills of the 25 participants improved significantly by 50 percentage points after completing the community service activity (Figure 2).



Figure 2. Hands-on mentoring session on upcycling techniques for batik fashion MSMEs.

The six indicators comprise: (1) Upcycling technology and processes; (2) Design and product innovation; (3) Resource and environmental efficiency; (4) Economic viability; (5) Human resource competence; and (6) Market access and competitiveness.



Figure 3. Participants attending a presentation on upcycling technology and practicing the creation of shoes and sandals from batik fabric scraps.

The average result for the initial test was 2.15, while the final test result was 3.58, representing an increase of +1.43. A detailed breakdown of the six indicators shows the following results:

1) Upcycling technology and processes increased from 2.00 to 3.50;
2) Design and product innovation increased from 2.50 to 4.00;;
3) Resource and environmental efficiency increased from 1.80 to 3.80;;
4) Economic viability increased from 2.20 to 3.40;
5) Human resource competence increased from 2.40 to 3.60;;
6) Market access and competitiveness increased from 2.00 to 3.20;.

4. CONCLUSION

An increase in the utilization of batik fabric scraps was observed among the 25 participants. Skills related to upcycling technology and shoe and sandal design innovation also improved. However, economic viability and market access still require further intervention.

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