

INNOVATION IN BAG PRODUCTS USING SCRAP FABRIC AND QUILTING TECHNIQUES

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ABSTRACT

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Received:
28 August 2025

Revised:
20 September 2025

Accepted:
29 September 2025

This study aims to obtain the results of bag product innovation with patchwork using quilting techniques assessed by 5 expert panelists based on product innovation theory (Kotler et al., 2015) including indicators of product quality, product features, and product style and design and based on the theory of design elements (Wilson & Textile Institute (Manchester, 2001) including size, color, texture, and line. The research method used quantitative with pre-experimental design, one-shot case study. The waist bag products made are in the form of 5 designs with different designs and colors. The data collection technique used a mixed questionnaire. The overall product innovation results based on indicators of product quality, product features, product style and design, and application of design elements obtained a score of 85.2 in the very good category. Product innovation theory includes product quality indicators consisting of quality level and quality consistency getting very good scores. Product feature indicators get very good scores. and Product style and design indicators consisting of increasing competitive advantage and form factor get very good scores. The theory of design elements consisting of size indicators, color indicators, texture indicators, and line indicators get very good scores. The product with the highest assessment is obtained by design 3 and the lowest value is obtained by design 1 with a very good category among the five product designs.

Keywords: Product innovation, Patchwork, Quilting, Bag

1. INTRODUCTION

The production of ready-to-wear clothing is increasing rapidly, resulting in excessive consumption by the public. This phenomenon can cause textile and fabric production waste and environmental pollution, including air, water, and soil pollution (Juliyanto & Firmansyah, 2024). Based on data from the National Waste Management Information System in 2023, Indonesia produces 2.8% of its total 32 million tons of waste per year in the form of textile/fabric waste (Ministry of Environment, 2024).

The garment industry produces large quantities of clothing, which can result in a lot of unused fabric scraps from the manufacturing process, known as fabric scraps (Arifa et al., 2022).

Fabric scraps are inorganic production waste that is difficult to decompose, while at the same time being highly concentrated. The garment manufacturing process produces fabric scraps of varying sizes depending on the garment factory (Suryani Hamidah et al., 2016). The processing of production waste is generally carried out by burning, but this produces toxic smoke and gases (Ulfah, 2023). Therefore, processing scrap fabric into valuable products is the best way to prevent the accumulation of scrap fabric.

The accumulation of fabric scraps in the garment industry is reinforced by observations and interviews with five small industries/tailors in Bumi Bahagia Village, Bekasi. The results of the observations and interviews show that the five tailors produce a large amount of fabric scraps, which accumulate. However, the five tailors did not have enough time to process the scrap fabric due to the high number of customer orders. Therefore, the scrap fabric was simply piled up and then disposed of at a public landfill in Bumi Bahagia Village, Bekasi, where the waste was incinerated.

One way to innovate a product is to utilize scrap fabric processed using *fabric manipulation* techniques. In this study, the fabric manipulation technique used to innovate in utilizing scrap fabric into a product is the *quilting* technique. The *quilting* technique was chosen because it is an appropriate technique for making products that utilize scrap fabric. The *quilting* technique is a patchwork craft in which all pieces are sewn together using a stitching technique following a pattern or image on the fabric (Ministry of PANRB article, 2019).

There are two categories of clothing based on items, namely main clothing and accessories. The clothing accessories category includes millineris. Millineris is clothing that serves as a complement to clothing that has a functional value and adds to the impression of beauty (Ameliasari, 2019). In this study, the millineris that became the topic were *waist bags* and *sling bags*.

As reported in an article on *JatimTimes.com*, a *waist bag* is a type of small bag. This bag can be worn around the waist or slung over the shoulder. *Waist bags* are used to store small items and personal belongings, such as *cell phones*, wallets, or other small items. (Izzah, 2019). In addition, *waist bags* are trending in 2024, a trend launched by New York *Fashion Week*, which released the 2024 fashion trend theme, *NYFW Spring/Summer 2024*, which includes a collection of *waist bags* that describe attractive and functional accessories that greatly change one's appearance (Santiago, 2023). *Sling bags* are a type of bag that has almost the same function as *waist bags*, which is to serve as a container for storing small items and personal belongings. However, sling bags have a different size, which is much larger than *waist bags*. The size of *sling bags* has its own appeal, which is simplicity. Sling bags are worn on one shoulder and placed on the opposite side of the body (Andri, 2023).

The market segmentation for *waist bags* and *sling bags* is targeted at adult women aged 20-40 years old who belong to the middle class. Therefore, this research aims to create *waist bags* and *sling bags* that meet the specified criteria.

The researcher chose scrap fabric as the material for creating *waist bags* and *sling bags* because scrap fabric can be defined as irregular pieces of fabric in various colors. The researcher applied the colors to be used according to Louis Prang's color wheel, namely monochromatic

combinations, analogous combinations, and complementary combinations. The scrap fabric from small industries/tailors in Bumi Bahagia Village, Bekasi, has characteristics such as brocade, satin, cotton, *drill*, rayon, spunbond, and others. The scrap fabric selected is fabric that has strong and thick material quality, such as cotton, spunbond, and other thick materials. In addition, the author uses a medium in the form of *PVC mica plastic* as the outer coating material for the product. *PVC mica plastic* has a strong thickness and smooth texture.

This research will recycle industrial clothing fabric scraps and use *quilting* techniques to add high artistic value because *waist bags* and *sling bags* can be made in more diverse shapes and produce products with good product innovation. The techniques and materials used in the manufacture of *waist bags* and *sling bags* are applied to achieve product suitability for the concept that the researcher wants to convey. The style applied to the waist bag products is *arty off beat*, which refers to the 2024/2025 *Trend Forecasting* with the theme Fusion and the sub-theme *Symbiotic*, where the *arty off beat* style provides inspiration in visualizing ideas very freely, more boldly, and with many applying colors. Experts in their fields or panelists will evaluate the innovation of the *waist bag* and *sling bag* products made from scrap fabric using *quilting* techniques based on product innovation indicators and design elements. Product innovation indicators are based on product quality, product features, and product style and design. Design elements are based on size, color, texture, and lines.

2. METHOD

The research method used in this study is a *pre-experimental* method with a quantitative approach. The experimental research method is intended to examine cause-and-effect relationships with the aim of assessing the effect of a treatment or action (Jayantika, 2018). The pre-experimental design used is a *one-shot case study*. The *one-shot case study* method is a study in which a treatment (independent variable) is given and the results (dependent) are then observed (Sugiyono, 2019).

This study will provide treatment to *waist bags* and *sling bags*, which are made by reusing and recycling fabric scraps using *quilting* techniques. The results will be assessed by a panel of experts, whose data will be calculated statistically and observed.

3. RESULTS AND DISCUSSION

The research objects consisted of five bag designs that utilized recycled fabric scraps with various color motifs and *waist bag* and *sling bag* models, which would serve as a medium for applying *quilting* techniques in accordance with the concept.

Source of Inspiration



Figure 1. Mosaic

The products created by the author were inspired by mosaics that apply abstract colors. The mosaic inspiration source is in harmony with the products created by the author. The products created have various colors resembling the colors of mosaic pieces. In addition, the cut materials are then arranged to produce a material made from scrap fabric pieces and then coated with *PVC* plastic so that it has a shiny texture similar to the shiny texture of mosaic pieces.

Style

In this study, the style used is *arty off beat*. The *arty off beat* element, which refers to *the 2024/2025 Trend Forecasting*, was chosen because it aligns with the characteristics of the *waist bag* accessory, which visualizes ideas that are very free, bold, and colorful.

Trend

The *trend* used refers to *Trend Forecasting 2024/2025* with the theme *Fusion* and the sub-theme *Symbiotic*, which means that the concepts in this theme create new and interesting findings and benefits. The sub-theme of this trend refers to concepts that visualize bold and surprising ideas.

Look

In this study, the *look* used is *the Chic Look*. This *look* depicts someone who looks *stylish* and fashionable. However, they are not bound by any particular *trend* and are free to develop their own style. This *look* was chosen because it suits *waist bags* and *sling bags*, which can be freely styled while remaining *stylish* and fashionable.

Market Board

The *market board* is a board containing *the target market lifestyle* and is followed by an explanation based on *geography*, *demography*, and *psychography* (Izza, 2022). This product design targets adult women aged 20-40 years old who belong to the middle class. Women ranging from students to office workers with an income of IDR 5,000,000 – IDR 10,000,000/month who have a personality that always appears fashionable and trendy.



Figure 2. *Market Board*

Design

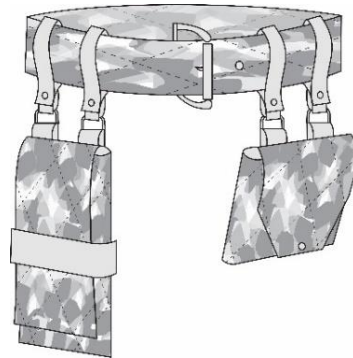


Figure 3. Design 1 *Waist Bag*



Figure 4. Design 2 *Sling Bag*



Figure 5. Design 3 *Sling Bag*



Figure 6. Design 4 *Sling Bag*

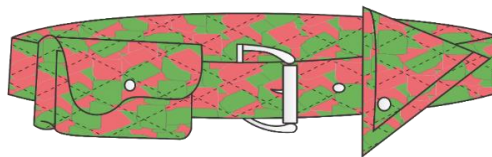


Figure 7. Design 5 *Waist Bag*

Color

The *waist bags* and *sling bags* created in this study use scrap fabric as the material. Scrap fabric can be defined as irregular pieces of fabric in various colors. The researchers innovated by creating *waist bags* and *sling bags* using scrap fabric and applying colors according to Louis Prang's color wheel.

1. Monochromatic Combination



Figure 8. Monochromatic Combination



Figure 9. Monochromatic Combination

2. Analogous Combinations



Figure 10. Analogous Combination



Figure 11. Analogous Combination

3. Complementary Combination



Figure 12. Complementary Combination

Moodboard



Figure 13. Moodboard

Results

The results of *the waist bag* and *sling bag* product innovation using scrap fabric with the *quilting* technique were made into 5 products. The manufacture of these products used the quilting technique, which means there are three layers of material consisting of an outer layer, the author used a *PVC plastic mica* medium as the outer coating material for the

product, and the middle layer used scrap fabric pieces as the material for making *the waist bag* and *sling bag*.

The products created are *waist bags* and *sling bags* inspired by mosaics that apply abstract colors. In the manufacture of these products, the style used is *arty off beat*. The *arty off-beat* element refers to *Trend Forecasting 2024/2025* with the theme *Fusion* and sub-theme *Symbiotic*, which means a concept that visualizes the complementary characteristics of waist bags with very free, bolder, and colorful ideas. The market segmentation for waist bags is targeted at adult women aged 20-40 years old who belong to the middle class.

Data was obtained through a mixed questionnaire or survey using research instruments administered to 5 expert panelists selected based on their respective backgrounds and areas of expertise. The 5 expert panelists in this study are as follows:

1. Yeni Mulyani H, A.Md., works as a Sustainable Product Craftsman with the brand "Bank Sampah My Darling".
2. Muhammad Fahmi, S.Sn., is a Lecturer in the Fashion Design Program at the Faculty of Art and Design, IKJ.
3. Dra. Mudjiati, M.Pd., a Lecturer in the Fine Arts Education Program at UNJ.
4. Desny Zacharias Rahardjo, a Craftsman and Owner of the Handmade Bag Brand 'IniWiNie'.
5. Retno Andri Pramudyarini, S.Sn., M.Pd., is a Lecturer in the Fashion Product Design Program at the Faculty of Art and Design (FSRD) of the Jakarta Institute of the Arts (IKJ).

Design 1



Figure 14. Design 1 *waist bag* with scrap fabric using *quilting* technique

The Design 1 *waist bag* model is a waist bag with a monochromatic color combination. *The waist bag* model uses a *strap bag* measuring 125 x 3.5 cm, resembling a *belt* that can be worn around the waist or shoulder, with a *ring belt* as a *strap* fastener. There are two hanging elements made of additional material, namely plain gray fabric, and the bag features a square ring accessory. Element 1 measures 14 x 18 cm and is rectangular in shape with a plain fabric cover. Element 2 measures 17 x 10 cm and is shaped like a small pouch/wallet with a *snap button* closure.

Design 2



Figure 15. Design 2 *sling bag* with patchwork fabric using the *quilting* technique

The *sling bag* model in design 2 uses a monochromatic color combination. This *sling bag* has a layered design with different sizes and can be worn on the shoulder. The strap bag uses plain fabric measuring 75 x 2 cm. There are two rectangular elements measuring , with variations in plain fabric and fabric scraps. Element 1 measures 16 x 11 cm and is a bag accessory in the form of a square ring to connect to the strap on the side of the bag. Element 2 measures 21 x 14 cm and is a bag accessory in the form of a D-ring and a strap that is locked using a bag knob to connect element 2. Both elements use a bag accessory in the form of a bag magnet as a lock on the bag.

Design 3



Figure 16. Design 3 *sling bag* with scrap fabric using the *quilting* technique

Sling bag model with analogous color combination. *Sling bag* design 3 features a hanging bag model with a hook ring accessory that can be worn on the shoulder. There is a *belt* variation with a length of 84 cm and bag accessories in the form of round rings and bag knobs. *Sling bag* design 3 uses gold-colored rings throughout, to match the color of *the sling bag*. This *sling bag* element measures 19 x 13 cm with additional decoration from the bag knob on the side of the bag and uses a round bag magnet as a lock on the bag.

Design 4



Figure 17. Design 4 *sling bag* with patchwork fabric using the *quilting* technique

The Design 4 sling bag is a waist bag with analogous color combinations. This bag model can be worn on the shoulder and has an asymmetrical appearance. The strap bag is 85 cm long and uses a square ring bag accessory as a connection to the bag. This sling bag measures 21 x 14 cm with a variety of plain fabric decorations and a bag accessory using a snap button as a fastener.

Design 5



Figure 18. Design 5 *waist bag* with patchwork fabric using the *quilting* technique

The *waist bag* model in design 5 is a *waist bag* with a complementary color combination. This *waist bag* model uses a 105 cm long *strap bag* resembling a *belt* that can be worn around the waist or shoulder using a *belt ring* accessory as a strap lock. There are two elements in this *waist bag* model. Element 1 is a triangle measuring 14 x 14 cm and uses a snap button as a fastener on the bag. Element 2 is a small box-shaped wallet measuring 14 x 10 cm and uses a snap button as a fastener on the bag.

Discussion

Product innovation in bags made from scrap fabric using the *quilting* technique in product innovation theory (Kotler et al., 2015) includes product quality indicators, product features, product style and design, and design elements theory (Wilson & Textile Institute (Manchester, 2001) includes size, color, texture, and lines. The following are the results of

the assessment of Product Innovation and design elements in *waist bags* and *sling bags* made from scrap fabric using *quilting* techniques:

Table 1. Results of Product Innovation and Design Elements

	Results	Category
Product Innovation	87	Very Good
Design Elements	83.4	Very Good
Average	170.4	
Result Score	85.2	Very Good

Source: 2024 Research Data

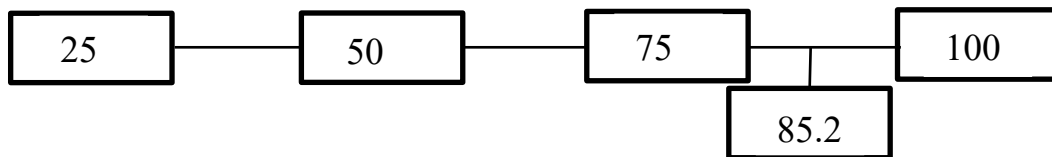


Figure 1. Product Innovation Outcome Interval and Design Elements

Based on the results of the table and calculations above, it can be concluded that overall, the assessment of product innovation for bags made from scrap fabric using the *quilting* technique, using the product innovation theory and design elements theory listed in the table, received a very good result with a final overall score of 85.2.

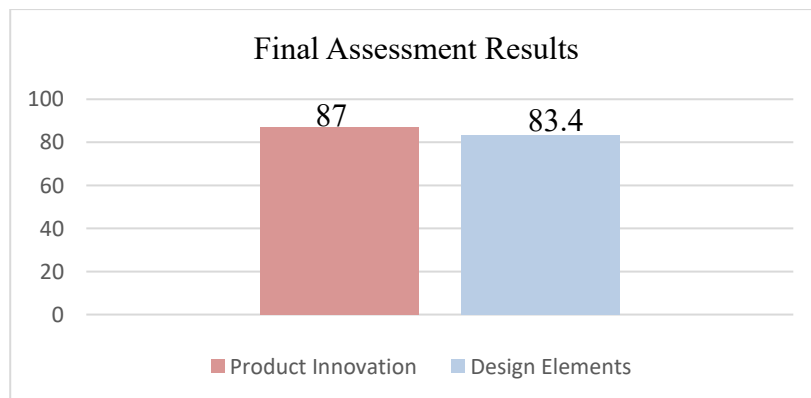


Figure 19. Final Research Results Diagram

Source: Research Data 2024

The diagram shows the overall assessment results based on product innovation theory and design elements. Product innovation theory received the highest score of 87 with a very good result. Design elements theory received the lowest score of 83.4 with a very good result.

Table 2. Final Assessment Results

No		Design 1	Design 2	Design 3	Design 4	Design 5
1	Product Innovation	137	139	140	140	140
2	Design Elements	151	150	153	151	150

Total Score	288	289	293	291	290
Total Overall	1451				

Source: 2024 Research Data

Total design criterion score (if each design receives the highest score)

$$= 5 \times 17 \times 4 = 340$$

Number of panelists = 5

Number of instrument items = 17

Highest score = 4

Design-based score = (Total score per design) / (Total design criterion scores) x 100%

$$\text{Design 1} = 288/340 \times 100\% = 84.7\%$$

$$\text{Design 2} = 289/340 \times 100\% = 85\%$$

$$\text{Design 3} = 293/340 \times 100\% = 86\%$$

$$\text{Design 4} = 291/340 \times 100\% = 85.6\%$$

$$\text{Design 5} = 290/340 \times 100\% = 85.3\%$$

Product innovation diagram for bags made from scrap fabric using quilting techniques, with the research subjects being 5 waist bags and sling bags:

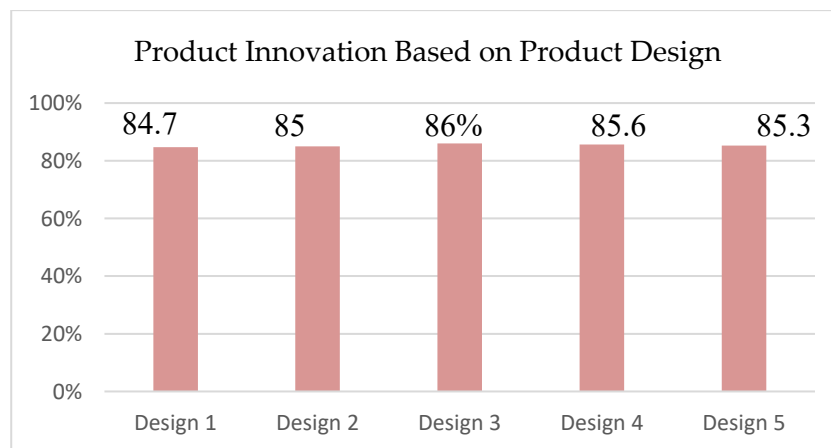


Figure 20. Product Innovation Diagram based on Product Design

Source: 2024 research data

Based on the assessment results of five bags made from scrap fabric using the *quilting* technique, the highest score in product innovation theory was obtained by design 3, which also scored highest in product quality, product features, product style and design, and design elements including size, color, texture, and lines. Design 3 received the highest score overall with a score of 86%, which is classified as excellent. This is because Design 3 scored higher than the other four designs in terms of product quality indicators, product feature indicators, product style and design indicators, and design elements, which were assessed as being in line with the application of product innovation theory and design elements. The materials, shapes, techniques, and sizes used were rated as excellent and gave the waist bag and sling bag products their own unique characteristics. Meanwhile, Design 1 received the lowest score across all aspects with a score of 84.7%, indicating that Design 1 was deemed less appropriate in its application of product innovation theory and design elements.

4. CONCLUSION

This study focuses on product innovation of bags made from patchwork fabric using *quilting* techniques, which includes product quality indicators, product features, and product style and design and design elements. From the results of data collection on product innovation of bags made from patchwork fabric using *quilting* techniques, it was found that the products in this study fall into the " " category, which is very good. It is hoped that the innovation of bags made from scrap fabric using *quilting* techniques will be further explored in terms of technique, shape, color, and product material to create a more varied appearance.

The product feature indicator received the highest score, with a very good result category. This shows that the features found in the created products have been well implemented in this study. According to the panelists, the waist bag and sling bag products already have attractive and diverse designs, but their appearance is still not neat enough and requires testing in creating the product. However, overall, they have produced good results.

The product quality indicator received the second highest score after the product feature indicator, with an excellent result category. This shows that the product quality indicator, which includes the quality level and consistency of the fabric bag products using the quilting technique, has been well applied in this study. According to the panelists, the quality level and consistency are good, but the finishing is still stiff due to the use of *PVC* plastic, so the use of materials needs to be considered.

The product style and design indicator received the third highest score in the excellent category. This shows that the product style and design indicator, which includes improving competitive advantage and form factors, has been well implemented in this study. According to the panelists, the *waist bag* and *sling bag* products have less than ideal shapes, but overall the products have good shapes.

The design elements theory received the lowest score, but still falls into the excellent category. This shows that the design elements indicators, which include size, color, texture, and lines, implemented in *the waist bag* and *sling bag* with patchwork fabric using the *quilting* technique, have been well applied. According to the panelists, the waist bag and sling bag with patchwork fabric using the *quilting* technique are good.

Based on the results of the study of the five bag designs made from patchwork fabric using the *quilting* technique, design 3 received the highest score. Design 3 is the bag design that best meets product innovation in terms of product quality, product features, product style and design, and the application of design elements compared to other bag designs. Meanwhile, design 1 received the lowest score of the five bag designs.

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