

Preserving Local Cultural Heritage Through the Innovation of Three-Dimensional (3D) Batik Motifs

Urip Wahyuningsih^{1*}, Indarti Indarti², Yulistiana Yulistiana³, Ratna Suhartini⁴, Andang Widjaja⁵

^{1*} Universitas Negeri Surabaya, Surabaya, Indonesia

² Universitas Negeri Surabaya, Surabaya, Indonesia

³ Universitas Negeri Surabaya, Surabaya, Indonesia

⁴ Universitas Negeri Surabaya, Surabaya, Indonesia

⁵ Universitas Negeri Surabaya, Surabaya, Indonesia



ABSTRACT

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Batik, as a traditional textile art and a form of Indonesia's intangible cultural heritage, has been officially recognized by UNESCO since 2009. As an expression of national identity and a symbol of cultural heritage, batik embodies aesthetic, philosophical, and historical values that have been passed down through generations. However, in the face of globalization and the rapid growth of the creative industry, batik faces significant challenges, particularly the declining interest among younger generations in the traditional meanings and production processes of batik. To address this issue, an innovative approach is needed to bridge tradition and modernity. This study introduces an innovation in the form of three-dimensional (3D) batik motifs as a strategy for preserving local culture, designed to align with the visual preferences of today's younger generation. The research adopts a descriptive qualitative method combined with a practice-based research approach. Its objective is to formulate a design strategy capable of conveying traditional meanings in a more contextual and relevant visual format that resonates with contemporary audiences. The findings show that 3D batik motif innovation offers new and more interactive visual experiences. These motifs not only preserve cultural values and narratives within each design but also adapt to evolving trends and modern sensibilities. This research is expected to contribute to cultural preservation through design innovation and to reinforce batik's position as an adaptive, relevant, and sustainable cultural heritage in the modern era.

INTRODUCTION

Batik is one of Indonesia's intangible cultural heritages and has been officially recognized by UNESCO since 2009 (Meranggi et al., 2022); (Sugiarto et al., 2023). As a symbol of national identity and cultural expression, batik embodies not only aesthetic value but also rich philosophical and historical meaning. Each batik motif carries a narrative that reflects local customs, belief systems, and the social dynamics of its community (Sandy et al., 2024). However, in the face of modernization and rapid globalization, interest among younger generations in batik has declined – particularly in their appreciation of the processes and deeper meanings behind traditional motifs. As a result, batik has gradually shifted toward becoming a purely commercial product, often detached from the cultural values it was originally meant to convey. Batik, as a form of local cultural heritage, serves as a collective identity that embodies a community's values, history, and philosophy of life. It is not merely a textile product, but also a medium rich in symbolic and spiritual meaning. Each motif is imbued with aesthetic, philosophical, and cultural narratives that have been passed down across generations (Krisnawati et al., 2019; Sugiarto et al., 2023). Yet, in the current era marked by globalization and the advancement of the modern textile industry, batik's role as a cultural artefact faces serious challenges, especially in

terms of its appeal to younger audiences and the relevance of its visual forms in today's design landscape.

Millennials and Gen Z, who are more attracted to modern and innovative visual styles (Kresna, 2024), often perceive traditional batik as outdated, formal, and lacking dynamism. This shift in perception poses a real threat to the sustainability of cultural heritage, as preservation efforts require not only documentation and conservation but also widespread acceptance and active participation from the public. Hence, creative strategies are necessary to revitalize batik and reintroduce it in ways that are accessible and appealing – especially to the younger generation.

One such strategy is through design innovation, particularly the application of three-dimensional (3D) motifs to batik. 3D batik design involves fabric manipulation techniques that produce garments with physical dimensions defined by length, width, and height. According to Chen et al., (2011) dan Perera et al., (2021), 3D textiles must possess substantial thickness formed by layered fabrics or threads. The 3D aesthetic is commonly associated with modern values due to its ability to create more realistic and dynamic visuals (Roberts et al., 2022). Three-dimensional batik is a technique that creates expressive and captivating illusions of depth and form in batik motifs, thereby enhancing the visual and commercial value of the fabric or garment produced.

The innovation of 3D batik motifs offers a more interactive and contemporary visual experience while maintaining the cultural essence embedded within the motifs. This approach not only strengthens the aesthetic dimensions of batik but also opens new avenues for design exploration across textile products, fashion, and culturally inspired art installations. Consequently, 3D batik has the potential to serve as an effective medium for bridging tradition and modernity.

By leveraging local cultural potential and integrating it with three-dimensional design elements, this initiative aims to diversify batik design while supporting its incorporation into Indonesia's creative industry ecosystem (Pandanwangi et al., 2023). The development of 3D batik motifs is not intended to replace traditional batik but rather to serve as an adaptive strategy in response to changing times. This visual transformation aligns with a more inclusive and relevant cultural preservation effort. Through this approach, batik can transcend its historical role to become part of modern lifestyles – maintaining both artistic and cultural value. Additionally, this innovation expands the market potential of batik across creative industries at both local and global levels. Therefore, this study focuses on the preservation of local cultural heritage through the innovation of 3D batik motifs as a creative response to contemporary challenges. Its primary objective is to formulate a design strategy that upholds traditional cultural values while enhancing visual appeal in a more communicative and engaging form.

RESEARCH METHOD

This study employed a descriptive qualitative method combined with a Practice-Based Research (PBR) approach. The descriptive qualitative approach was used to explain the process of cultural preservation through design innovation. Meanwhile, the practice-based research approach was applied to explore creative and innovative processes in the

design of 3D batik motifs, focusing on the aesthetic, cultural, and philosophical dimensions of batik visualization.

Practice-Based Research (PBR) is a research methodology in which creative practice itself becomes the central component of knowledge creation. In this approach, creative works – such as paintings, films, novels, performances, designs, or other artistic forms – are not merely treated as final outcomes but as integral parts of a research process that generates new insights and understanding (Skains, 2024).

The stages of this research include:

1. Exploration Stage
2. Design Stage
3. Realization Stage
4. Validation Stage

The resulting 3D batik motif designs were subjected to qualitative analysis through validation by two expert validators: one batik expert and one fashion designer. Subsequently, a user response test was conducted to gather feedback from the public, consumers, and the market using a structured questionnaire

RESULTS AND DISCUSSION

1. Exploration stage

This stage involved the investigation of themes and topics relevant to issues in the field, which were then developed into creative ideas and rationalized through literature review, theoretical frameworks, and reference to existing works (Hendriyana, 2021). Activities in this stage included conceptual exploration through the development of a mood board, which served as a visual reference and inspiration aligned with the intended theme.

The core idea was derived from the traditional Kawung batik motif, a classic Yogyakarta pattern composed of circular shapes resembling the kawung fruit (a type of palm or sugar palm), arranged geometrically. The Kawung motif is traditionally associated with values of purity, clarity, and spiritual perfection. It also symbolizes detachment from worldly desires and self-restraint (Wahida et al., 2020). This motif was then integrated with visual elements of Indonesian flora, particularly floral patterns, using the slashing technique.

Figure 1. Mood board
Theme: Modern Traditional & Nature



This exploration was grounded in both cultural and natural richness. The mood board integrated images of Kawung batik and traditional dancers alongside Indonesia's floral biodiversity. Together, these elements formed a visual synergy that inspires a modern design aesthetic, while still preserving traditional and natural values

2. Design stage: 3D batik motif design process

This stage involved translating ideas from the exploration phase into two-dimensional visual designs while considering design elements and principles relevant to creative production. Design refers to the organization of lines, shapes, colors, and figures arranged to enhance aesthetic and symbolic value. The development of the 3D batik motif began with a series of structured sketches and design criteria.

Figure 2. 3D Batik Motif Design (Source: Personal Collection)



The creation of three-dimensional (3D) batik motifs can be achieved through several textile techniques, including the appliqué technique (attaching cut pieces of fabric onto the surface of a base fabric), quilting technique (joining multiple layers of fabric), and incrusting (embedding or inserting fabric pieces into the base material). In Design 1, the 3D batik motif is combined with plain, colored fabric on the sleeves and the back bodice. In contrast, Design 2 incorporates 3D batik motifs using the slashing technique, applied to the left front panel of the outerwear design. The slashing technique involves stitching together multiple layers of fabric, then partially cutting the top layers (without cutting through the bottom layer). The slashed areas are then brushed or frayed to create a textured, fringed effect that enhances the aesthetic appeal of the garment.

3. Realization Stage

This stage focused on the detailed realization of the design model and included a feasibility evaluation of the prototype. The process began by preparing floral motifs, which were reinforced with a tricot fabric layer as the stabilizing base. Tricot was chosen for its combination of flexibility and structural integrity. The floral motifs were then embroidered along their outer edges using border stitching techniques to clearly define the contours and enhance their three-dimensional appearance.

Next, the Kawung motif was treated differently to enhance its dimensional quality. It was padded with foam to create volume and visual depth. The foam was neatly sewn in place to maintain its shape, and the motif was outlined using either contrasting or matching thread, depending on the design objective. This approach produced a raised, tactile effect that enriched the fabric's texture and visual dynamics.

Once each motif was prepared, the floral elements were carefully cut using sharp fabric scissors to follow the pre-established pattern. These elements were then arranged systematically based on a predetermined composition. Proper arrangement was essential to ensure aesthetic harmony in the final piece.

To intensify the sense of depth, certain sections of the Kawung motif, especially the center or recessed areas – were partially cut to produce a concave effect. This was executed with precision to avoid compromising the structural integrity of the material, resulting in enhanced visual contrast and dimensionality.

The final step involved manually attaching the arranged floral motifs onto the primary garment surface using hand stitching. This method allowed for greater precision and control in motif placement, giving each piece a personalized and refined finish. The process required not only technical skill but also meticulous attention to detail to achieve symmetrical and harmonious results.

By employing techniques such as appliqué, quilting, incrustation, or a combination of these methods, the process yields a final result that is not only aesthetically pleasing but also rich in textural depth and artistic value, in the form of a three-dimensional (3D) motif. This approach aligns with the principles of contemporary textile art, which emphasize material and technical exploration to produce innovative and artistically significant works.

Figure 3. Application Process (Source: Personal Collection)



Figure 4. 3D Batik Motif Product (Outer) (Source: Personal Collection)



4. Validation stage

Expert Validation

Qualitative feedback from experts evaluating the 3D batik motif product, presented in the form of an outer garment, revealed several key conclusions: From an aesthetic and design perspective, the choice of colors and patterns was deemed appropriate and in line with contemporary trends and user preferences. The use of neutral tones such as black, white, and beige enhanced versatility, while specific motifs (e.g., geometric or floral) added a distinctive visual character. Design details such as collars, buttons, zippers, and pockets were well-positioned to support both visual appeal and functionality.

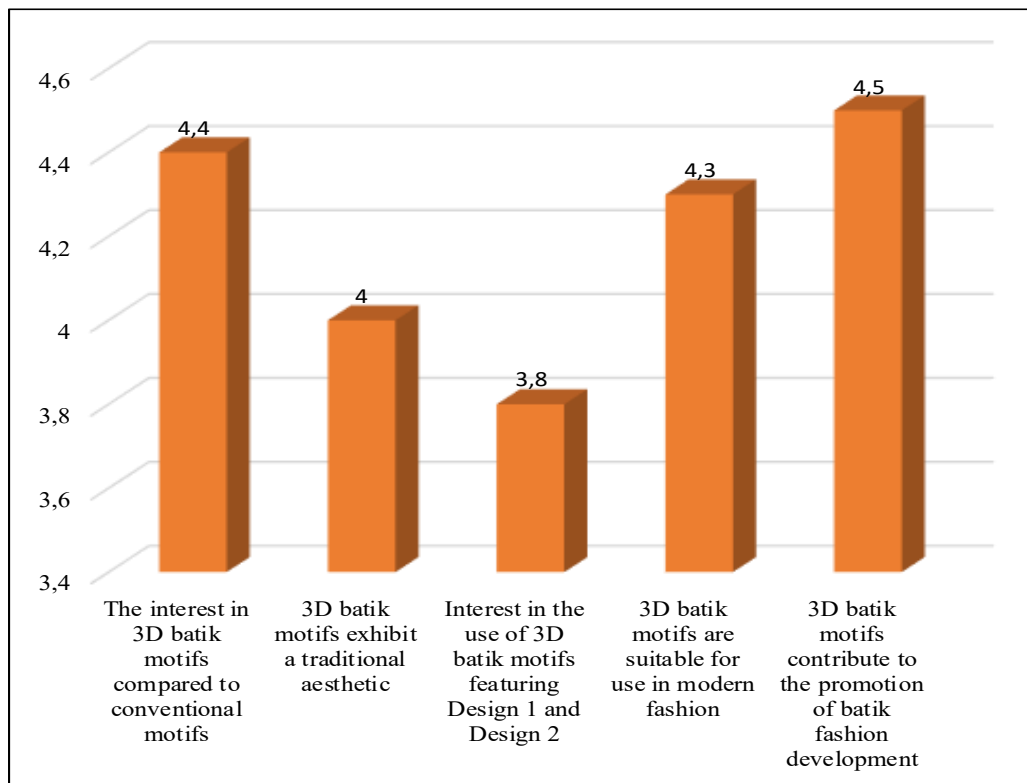
In the evaluation of 3D batik motifs within the garment design and silhouette, it was concluded that the presence of structured elements, such as those found in a blazer, effectively highlights the 3D motifs. The absence of overly tight cuts ensures that the dimensional elements are not distorted. These 3D features are strategically placed on areas such as the shoulders, collar, sleeves, or back, contributing to a visually balanced composition. The color combinations used in the 3D motifs harmonize well with the base color of the outer garment. Soft gradients and well-considered contrasts are applied in accordance with aesthetic needs. In particular, gradient coloring is used to create the illusion of volume, especially within the floral motifs.

It can thus be concluded that the 3D batik fashion product successfully blends traditional aesthetics with a sense of modern innovation, offering a unique visual and textural experience without compromising comfort or functionality.

Respondent feedback evaluation

To assess the response to the 3D batik motif products, a visual evaluation was conducted through a product questionnaire based on Design 1 and Design 2. The questionnaire was distributed to 50 respondents, consisting of 20 fashion students, 15 members of the general public, and 15 creative industry practitioners.

Fig. 5. Diagram of Respondents' Evaluation Results (Likert Scale 1-5)



The results of the respondent evaluation, as shown in the diagram above, indicate that approximately 84% of respondents (4.4) consider the 3D batik motifs to be visually more appealing compared to conventional traditional motifs. Meanwhile, 76% of respondents (4.0) stated that the motifs still retain a “batik essence” despite their more modern appearance. Additionally, 68% of respondents (3.8) expressed that the 3D batik motifs encourage them to be more interested in wearing batik in their daily lives. Furthermore, 82% of respondents (4.3) assessed that the 3D batik motifs are quite relevant when applied in the context of contemporary fashion, both in formal and casual attire. Moreover, 90% of respondents (4.5) believe that the 3D batik motifs serve as a highly effective medium for cultural education and promotion. The modern visual elements are considered capable of bridging the younger generation with their cultural heritage.

These results indicate that 3D batik motif innovation serves as an effective medium for bridging cultural preservation and contemporary visual appeal. This approach has proven capable of enhancing the visual attractiveness of batik while maintaining its traditional cultural values. By adapting classical batik elements into new visual formats, batik becomes increasingly relevant for younger generations raised in a visually digital era.

This innovation requires an approach that respects the authentic meaning of batik motifs rooted in local cultural heritage. Preservation involves more than maintaining the physical form; it also encompasses conveying the values embedded within. Collaboration among designers, cultural experts, and artisans is a key factor in ensuring that innovation remains aligned with its cultural roots. Beyond its role in preservation, 3D batik also holds great potential as a high-value creative economic product. These motifs can be applied to various media, including fashion, interior textiles, and digital platforms. In

this way, 3D batik innovation opens new opportunities for elevating local cultural heritage to the global stage through design and modernity.

CONCLUSION

The innovative design of 3D batik motifs, developed through an exploratory approach encompassing visual design, technical realization, and empirical validation, demonstrates significant results aesthetically, technically, and culturally. The creative process, which integrates the kawung batik motif as a representation of traditional values with natural elements such as flowers and fabric manipulation techniques like appliqué, quilting, and incrusting, has successfully produced a textured visual artwork featuring artistic 3D visualization. Expert validation concluded that the 3D batik fashion product successfully integrates traditional aesthetics with modern innovation, offering a distinctive visual and tactile experience without compromising comfort or functionality. Feedback from respondents also supported this, indicating that the 3D batik motif is visually appealing (84%), retains the essence of traditional batik (76%), and has the potential to increase public interest in wearing batik (68%). Moreover, 90% of respondents regarded this innovation as an effective means of reintroducing local culture within a modern context. These findings suggest that the development of 3D batik motifs not only enriches artistic exploration but also presents promising opportunities for cultural preservation and the expansion of creative industries rooted in local heritage.

REFERENCES

- Chen, X., Taylor, L., & Tsai, L. (2011). An overview on fabrication of three-dimensional woven textile preforms for composites. *Textile Research Journal*, 81(9), 932–944. <https://doi.org/10.1177/0040517510392471>
- Hendriyana, H. (2021). *Metodologi Penelitian Penciptaan Karya : Practice-led Research dan Practice-based Research : Seni Rupa, Kriya dan Desain Edisi Revisi* (2nd ed.). Andi Offset.
- Kresna, S. (2024). Visualisasi Modern sebagai Strategi dalam Pengenalan Budaya di Era Globalisasi kepada Gen Z Putu Gede Surya Kresna Dharma Yoga. *Segara Widya : Jurnal Penelitian Seni*, 12(2), 135–141.
- Krisnawati, E., Sunarni, N., Indrayani, L. M., Sofyan, A. N., & Nur, T. (2019). Identity Exhibition in Batik Motifs of Ebeg and Pataruman. *SAGE Open*, 9(2). <https://doi.org/10.1177/2158244019846686>
- Meranggi, D. G. T., Yudistira, N., & Sari, Y. A. (2022). Batik Classification Using Convolutional Neural Network with Data Improvements. *International Journal on Informatics Visualization*, 6(1), 6–11. <https://doi.org/10.30630/joiv.6.1.716>
- Pandanwangi, A., Himatul Alya, S., Budiman, I., Mochtar Apin, A., & Eka Darmayanti, T. (2023). Art illuminations in 18th–19th centuries manuscripts from Ngayogyakarta Hadiningrat Palace as a creative industry development. *Cogent Arts and Humanities*, 10(2). <https://doi.org/10.1080/23311983.2023.2277070>
- Perera, Y. S., Muwanwella, R. M. H. W., Fernando, P. R., Fernando, S. K., & Jayawardana,

- T. S. S. (2021). Evolution of 3D weaving and 3D woven fabric structures. In *Fashion and Textiles* (Vol. 8, Issue 1). Springer Singapore. <https://doi.org/10.1186/s40691-020-00240-7>
- Roberts, J. C., Butcher, P. W. S., & Ritsos, P. D. (2022). One View Is Not Enough: Review of and Encouragement for Multiple and Alternative Representations in 3D and Immersive Visualisation. *Computers*, 11(2). <https://doi.org/10.3390/computers11020020>
- Sandy, R., Veerawat, S., & Eakachat, J. (2024). Designing Dua Negeri (Two Countries) Batik Influenced by Indonesia and Thailand Shared Culture to Enrich the Batik Repertoire in Both Countries. *The Journal of Cloth and Culture*, 22(2), 481-506. <https://doi.org/10.1080/14759756.2023.2267339>
- Skains, R. L. (2024). *Designing and Conducting Practice-Based Research Projects*. Intellect.
- Sugiarto, E., Husain, A. H. bin, Syarif, M. I., Nashiroh, P. K., & Febriani, M. (2023). Between Aesthetics and Function: Transformations and Use of Batik Motifs in Urban Interiors in Indonesia. *ISVS E-Journal*, 10(7), 122-136.
- Wahida, A., Handayani, E. S., & Supriyadi, S. (2020). The Philosophical Values of Kawung Batik Motif in Contemporary Batik Painting. *Mudra Jurnal Seni Budaya*, 35(1), 76-82. <https://doi.org/10.31091/mudra.v35i1.1001>