

# Development of Batik Product Innovation in Bantul Yogyakarta

Mohamad Rizan<sup>1,\*</sup>, Farah Chalida Hanoum<sup>2</sup>, Aji Ahmadi Sasmi<sup>3</sup>, Rizka Zakiah<sup>4</sup>, Hazlina Hassan<sup>5</sup>

<sup>1</sup> Magister Management, Faculty of Economics and Business, Universitas Negeri Jakarta, Indonesia

<sup>2</sup> Magister Management, Faculty of Economics and Business, Universitas Negeri Jakarta, Indonesia

<sup>3</sup> Accounting, Faculty of Economics and Business, Universitas Negeri Jakarta, Indonesia

<sup>4</sup> Business Education, Faculty of Economics and Business, Universitas Negeri Jakarta, Indonesia

<sup>5</sup> Accounting, Faculty of Accountancy, Universiti Teknologi Mara

\* Corresponding Author: [mohamadrizan72@unj.ac.id](mailto:mohamadrizan72@unj.ac.id)

---

## **Abstract.**

*This community service program is a collaborative initiative between the Faculty of Economics and Business, Universitas Negeri Jakarta (FEB UNJ), and Universiti Teknologi MARA (UiTM). The program aims to foster innovation in handmade batik products in the Batik Giriloyo Center, Bantul, Yogyakarta, through a series of training and mentoring activities focused on enhancing production skills, product diversification, and strengthening digital marketing strategies. Batik Giriloyo is known for its authenticity in maintaining traditional hand-drawn batik techniques and motif integrity. However, artisans face several challenges, such as limited motif innovation, reliance on synthetic dyes, lack of systematic motif documentation, and low adoption of digital technologies. The program included eco-printing workshops, training in utilizing batik fabric waste for accessories, and education on business and financial management. The outcomes showed improved technical skills, increased awareness of eco-friendly innovation, and enhanced digital marketing capabilities. Recommendations from the program include motif digitization, support for eco-friendly production tools, digital financial training, and marketing network expansion. This initiative is expected to sustainably improve the competitiveness of Giriloyo's batik MSMEs and strengthen their role in the culture-based creative industry.*

**Keywords:** *Product Innovation; Eco-Print; Product Diversification; Strategic Green Marketing.*

---

## **I. INTRODUCTION**

Merdeka Belajar Kampus Merdeka (MBKM) program launched by the Ministry of Education, Culture, Research, and Technology aims to provide learning experiences outside the classroom through collaboration between universities, industries, and communities. One implementation of this program encourages students to engage directly in the development of local MSMEs, including the handicraft sector such as batik in Bantul, Yogyakarta. Bantul is well known for its strong batik-making tradition and holds great potential for creative product innovation rooted in local wisdom. In the context of preserving intangible cultural heritage, batik holds a significant place in Indonesian society—not only as a traditional textile art, but also as a medium for transmitting cultural values across generations. While often viewed as a craft passed down through practice, this study repositions batik transmission as a deeply educational process embedded in local wisdom. Batik artisans transmit not only technical skills but also local knowledge, beliefs, and cultural

norms. This informal, community-based education highlights batik as a meaningful vehicle for cultural preservation and offers a model for ethnopedagogical approaches to arts education globally (Sugiarto et al., 2025).

According to data from the Ministry of Cooperatives and MSMEs (2023), more than 65% of batik entrepreneurs in Bantul are MSMEs that face various challenges, such as a lack of product innovation, limited access to modern technology, and difficulties in reaching wider markets. Findings from focus group discussions reveal that lack of consumer awareness and regulatory challenges hinder sustainability, while ecological, technological, socio-cultural, and political factors support it. (Gunawan et al., 2022). The main challenge for batik SMEs in Java is competition from the batik printing industry, while SMEs outside Java struggle with limited access to raw materials. Although some batik SMEs have adopted open innovation to improve their business performance, most have not due to limited skills and low stakeholder involvement (Raya et al., 2021). The community services program is needed to offering the strategic opportunity to bridge these gaps through student involvement, bringing technological insights, digital marketing strategies, and ideas.

The community services program presents significant potential for contributing to the empowerment of batik MSMEs. Student contributions to this program may include; 1) Product Innovation Development: Through collaboration between students and artisans, new motifs can be created that resonate with modern market preferences, such as minimalist designs or youth-oriented themes. Creativity is the key mechanism through which human resource factors contribute to sustainable innovation outcomes. It helps SMEs to identify which aspects of human capital to prioritize in order to enhance innovation performance and support sustainability goals (Muñoz-Pascual et al., 2021), 2) Digitalization and Online Marketing: Students majoring in information technology or marketing can assist batik MSMEs in building online stores, leveraging social media, and managing digital marketing campaigns. Thus, technological orientation acts as a key moderating factor in determining whether IT use leads to improved innovation outcomes in SMEs (Haug et al., 2023). A case study from Gadjah Mada University (UGM, 2023) showed that one partner MSME experienced a 40% increase in sales after optimizing e-commerce platforms and digital advertising. 3) MSME Capacity Building and Training: This program also includes training for artisans in business management, the use of eco-friendly dyeing technology, and more efficient production techniques. This addresses the limited technical knowledge that often hinders MSMEs from growing. There is a positive link between employee training investments and product innovation capabilities in SMEs. However, this relationship is influenced by several factors: (1) it is weaker in industries with a higher proportion of university-educated employees, (2) it is less effective in larger SMEs compared to smaller ones, and (3) continuous R&D efforts reduce the impact of training on innovation. Its effectiveness varies depending on organizational context and size (Demirkan et al., 2022).

Some key challenges related to this community service initiative include: 1) Limited Infrastructure and Facilities. Not all MSMEs have access to modern tools or facilities that support the implementation of student ideas. This often becomes a barrier to product innovation. 2) Mismatch Between Student Competence and MSME Needs. In some cases, participating students lack the necessary skills to make a tangible impact, reducing the program's overall effectiveness. 3) Lack of Coordination Between Universities and MSMEs. One of the biggest obstacles is the

absence of structured communication between universities and MSMEs. Artisans are often confused about how to integrate student ideas into their business models. Dr. Raden Triyono, a vocational education expert from Sebelas Maret University (UNS), believes that the Merdeka Belajar Kampus Merdeka program holds significant potential for supporting batik MSME development in Bantul. However, he emphasizes that the program's success depends on how well university curricula align with the real needs of MSMEs. In the 2023 discussion forum "University and MSME Collaboration", he recommended assigning experienced field mentors to bridge the gap between student competencies and artisan needs.

A collaborative approach is needed to improve implementation. Recommendations include: 1) Developing Collaborative Models. Engage students, lecturers, and artisans actively in the planning and execution of the program, ensuring a shared understanding of the program's objectives. 2) Enhancing Student Competency Before Field Deployment. Universities should provide additional training, particularly in digital marketing and technology-based product innovation, to better prepare students to support MSMEs. Provision of Funding and Supporting Equipment. 3) Local governments or universities can offer incentives in the form of modern production tools and funding access to help MSMEs adopt student-generated innovations. 4) Program Monitoring and Evaluation. Regular evaluations are necessary to ensure the initiative delivers measurable impacts for both students and MSMEs. 5) Strategic Impact and Local Context. The Merdeka Belajar Kampus Merdeka program's alignment with batik product innovation development in Bantul offers concrete solutions to enhance MSME competitiveness. However, its success depends on stronger synergy between students, universities, and artisans. Through innovation, digitalization, and solid collaboration, Batik Giriloyo can not only survive but also evolve into a globally competitive flagship product



**Figure.1 Icon of Batik Giriloyo**

The batik production center in Batik Giriloyo, Bantul Regency, especially in Wukirsari Village is one of the most significant batik production hubs in Yogyakarta. This area is known for maintaining classical and traditional batik motifs. Located in the western part of Bantul, Wukirsari has long been recognized as a tourism village and batik craft center. Dozens of batik production houses operate in this region, offering unique Bantul-style motifs. Currently, youth interest in entering the batik industry in Bantul remains low. The long, patience-demanding batik process is one reason for the lack of youth participation. Additionally, product innovation is still limited, so artisans must be creative and innovative to stay competitive. However, many still struggle to create new designs that meet market trends while preserving traditional values. The COVID-19 pandemic also posed additional challenges to batik artisans in Batik Giriloyo, disrupting production and marketing due to activity restrictions and reduced demand. In Wukirsari Village, dozens of active batik production houses still operate, producing hand-drawn batik. Below are several images showcasing the activities and products from the batik production center in Batik Giriloyo:



**Figure.2 Product of Batik Giriloyo**

Based on the situational analysis presented above, this community service activity is titled “Development of Batik Product Innovation in Bantul, Yogyakarta. In this collaborative program, various stakeholders play a crucial role in supporting the development of batik product innovation in Bantul. The appropriate participant groups to be involved in this program include students and lecturers from the Faculty of Economics and Business, batik MSME actors in Bantul, government and supporting organizations, as well as industry partners.

Batik from Bantul, Yogyakarta, holds unique characteristics and high cultural value, yet various challenges continue to hinder its product development. One of the main issues is the lack of innovation in motifs and product applications. Many artisans remain confined to traditional patterns which, although rich in historical value, are less appealing to the modern market—especially to younger generations who tend to prefer products with fresher and more flexible designs. In addition, the adoption of digital technology among batik MSMEs remains relatively low. This makes it difficult for artisans to reach broader markets, particularly through online platforms such as e-commerce. A 2023 survey by the Yogyakarta Department of Industry reported that over 40% of batik MSMEs had not yet utilized digital technology optimally. Limited access to technology and marketing training is a major barrier. Another pressing issue is the use of chemical dyes in batik coloring, which are considered environmentally unfriendly. In addition to having negative environmental impacts, the global market trend now favors products that adopt sustainable concepts. As a result, batik that uses chemical dyes often struggles to compete in international markets that demand eco-friendly products.

Based on the above explanation, these issues can be analyzed into several categories: (1) Production Sector: The main challenge in the production sector is the lack of innovation in batik motifs and techniques. Many artisans are still focused on traditional designs that are less attractive to modern markets, especially to younger consumers who prefer more contemporary styles. Furthermore, the use of chemical dyes in batik production remains high, despite the global trend toward more environmentally friendly products. The sub-issues in the production sector include lack of innovation in batik designs and motifs that align with market trends, suboptimal use of natural dyes that are more environmentally friendly, limited access for artisans to training in production innovation. 2) Business Management Sector. Many batik MSMEs face difficulties in financial recordkeeping and effective business management. This leads to challenges in accessing

capital and growing their businesses. Sub-issues in this sector include lack of understanding of digital-based financial recording systems, difficulty in accessing funding due to the absence of professional financial documentation, lack of support in obtaining product certification to meet export standards. 3) Marketing Sector. In terms of marketing, the low adoption of digital technology remains a significant barrier. Many artisans still rely on conventional sales methods, making it difficult to reach wider markets. Sub-issues in the marketing sector include lack of digital marketing skills, including the use of social media and e-commerce, limited access to effective marketing training, suboptimal branding of Batik Giriloyo as a flagship product. By addressing the challenges in production, business management, and marketing, it is hoped that Batik Giriloyo can become more competitive and sustainably enter the export market.

## II. METHODS

The implementation methods of the community service program include: 1) Program Socialization. This activity is intended to inform participants about the programs to be implemented and the timeline of activities. 2) Education and Training. This activity aims to transfer knowledge and technology. The educational aspect of this community services involves a session on product development, while the training activities include eco-print batik making and the creation of various accessories. 3) Monitoring and Assistance. This stage is aimed at evaluating the implementation of the programs. If any program has not been implemented successfully, the community services team will follow up with an assistance program.

The stages in this program include: 1) Preparation Phase: The community services proposing team will conduct various preparations, including coordinating online with UiTM as a partner institution. Conducting needs analysis with UiTM coordinators and assessing the qualifications of student participants. 2) Identifying and recruiting batik artisans in Bantul. 3) Implementation Phase. The community service activities will be held in April 2025, targeting 20 batik artisan groups in Bantul, or a maximum of 100 4) Evaluation Phase: The evaluation—conducted as part of the collaboration between the Faculty of Economics, UNJ, and UiTM for Yogyakarta MSMEs—aims to measure success in encouraging innovation in batik products.

The main Target of the program: 1) This community service activity aims to drive the transformation of batik MSMEs in Bantul, Yogyakarta, to become more innovative, competitive, and ready to face modern market challenges. Through collaboration between the Faculty of Economics UNJ and UiTM, the program seeks to create a meaningful and sustainable impact on local batik artisans. 2) Batik Artisans as the Primary Target. The main beneficiaries are local batik artisans, especially MSME players who are the backbone of the regional batik industry. They are expected to enhance their skills and innovate to meet modern market demands. 3) Local Communities and MSME Groups In addition to individual artisans, MSME groups and batik communities are also key targets. The program aims to build a collaborative ecosystem where artisans share knowledge, resources, and markets—fostering sustainable innovation even after the program ends. 4) Youth and Batik Industry Regeneration. Youth—either from artisan families or the broader Bantul community—are another target group. The program introduces batik as a culturally rich yet modern lifestyle product, encouraging youth engagement and ensuring future regeneration of batik artisans. 5) Business Actors and Stakeholders. Business players in marketing, distribution, or batik enterprise management are also targeted. The program aims to build collaborations between

artisans and stakeholders—such as investors, e-commerce platform owners, and local governments—so batik MSMEs can access broader markets locally and internationally. 6) Educational Institutions as Strategic Partners. Students and lecturers involved in the program are also beneficiaries. It provides them with field experience, helps understand community needs, and allows contributions through knowledge and technology. This encourages synergy between academia and society, offering applicable solutions.

### III. RESULT AND DISCUSSION

The community empowerment program conducted in Wukirsari Village, specifically focusing on Batik Giriloyo artisans, revealed unique and valuable insights into the characteristics and production processes of their batik products. The following discussion outlines the key findings related to product development and marketing, with a focus on preserving the cultural heritage while addressing potential areas for innovation.

1. **Authenticity and Technique:** The ethnocentrism, product authenticity, and self-image congruence significantly influence positive attitudes among youth toward Batik as a cultural product, with product authenticity being the most dominant factor (Rofianto et al., 2021). Batik Giriloyo is renowned for its commitment to producing exclusively batik tulis (hand-drawn batik), deliberately avoiding the use of batik cap (stamped batik) in order to maintain the authenticity and identity of its heritage craft. This strict adherence to traditional techniques serves not only as a mark of cultural pride but also as a unique selling point in both local and international markets, particularly among connoisseurs and collectors who value originality and craftsmanship. The ethnocentrism, product authenticity, and self-image congruence significantly influence positive attitudes among youth toward Batik as a cultural product, with product authenticity being the most dominant factor (Rofianto et al., 2021).



**Figure 1. Authenticity and Technique**

In conclusion, the strong emphasis on product authenticity—as exemplified by Batik Giriloyo’s dedication to traditional hand-drawn techniques—plays a pivotal role in shaping positive attitudes among youth toward batik, reinforcing cultural pride while enhancing its appeal in niche markets that value originality, heritage, and craftsmanship.

2. **Motif Design and Cultural Meaning:** The batik design training model improves product quality and designer income through four integrated stages: problem analysis, program planning, facility preparation, and training implementation, all supported by competent facilitators and contextual understanding. When aligned with adult learning principles and local conditions, the training

enhances skills and design quality, leading to increased production and earnings (Mulyanto et al., 2020).



**Figure 2. Product Motifs of Batik Giriloyo**

Motifs used in Batik Giriloyo adhere to traditional pakem (established patterns), ensuring the preservation of symbolic and philosophical values embedded in each design. Although consumers are allowed to request custom motifs, the artisans remain grounded in traditional frameworks. Interviews with artisans revealed that Batik Giriloyo possesses a repository of more than 200 unique motifs, each with distinct meanings. However, a notable limitation identified during the community service was the lack of systematic documentation and archival records regarding these motifs. This gap presents an opportunity for future collaboration in motif cataloging and digital archiving to strengthen cultural preservation and facilitate educational or promotional use.

**3. Product Sizing and Customization:** Batik Giriloyo products are available in a wide range of sizes including XS, S, M, L, and customizable options, catering to various consumer preferences. The rising number of overweight and obese individuals in Indonesia has led to increasing demand for plus-size clothing.



**Figure 3. Product Sizing and Customization**

This study developed a mobile-based e-business platform prototype that integrates the plus-size and custom market, connecting sellers, buyers, tailors, and other stakeholders to meet plus-size needs and enhance economic activities in this market segment (Maryani et al., 2020). The processes for a (new) customized product need to be controlled to ensure specific quality, speed, and price requirements are met (Harper & Pal, 2022). In addition to ready-to-wear clothing, fabric is also sold by the sheet, offering flexibility for buyers who prefer to tailor their own batik garments. This

diversity in sizing and form demonstrates the artisans' responsiveness to market needs while maintaining traditional production standards.

**4. Material and Quality Control:** Five key processes prioritized for digitalization are design for quality, compliance, incoming and outgoing goods control, statistical process control, and complaint management. A holistic adoption of digital quality practices across the value chain is essential for SMEs to remain competitive in the global market (Dutta et al., 2021).



**Figure 4. Material and Quality Control**

The quality of Batik Giriloyo is upheld through the use of premium materials, primarily cotton and silk. Cotton remains the most widely used fabric due to its ease of processing and comfort for the wearer. The artisans employ high-quality malam (batik wax) and have developed experiential expertise in determining the ideal wax consistency for drawing batik patterns. While no standardized measurement for wax usage exists, the knowledge is embedded in the artisans' practical skills and transmitted informally through generations.

**5. Dyeing Process and Techniques:** Batik Giriloyo utilizes both natural and synthetic dyes. However, synthetic dyes are more commonly used due to their ease of application and efficiency in the production process. The dyeing process remains conventional, employing traditional tools and methods. Washing and drying are also conducted using basic equipment such as buckets and household washing machines, with fabrics air-dried under the sun. Despite the simplicity of the tools used, the artisans manage to maintain high standards of color quality and motif detail. Conventional dyeing processes in the textile industry have significant environmental impacts due to high water usage, toxic chemicals, emissions, and energy consumption (Lara et al., 2022). The textile industry is a major environmental polluter, with vast water usage and significant dye waste, as 10–15% of dyes are released into the environment during coloration. Synthetic dyes, used to stay competitive, increase the volume and persistence of toxic wastewater, which harms ecosystems and human health (Karpova et al., 2021).



**Figure 5. Dyeing Process and Techniques**

In light of the environmental challenges posed by conventional dyeing practices, including those involving synthetic dyes, it is crucial for batik artisans—such as those in Batik Giriloyo—to gradually explore more sustainable alternatives. While current methods effectively preserve the artistic and cultural value of batik, future innovations in eco-friendly dyeing techniques could help reduce environmental impact without compromising quality. Supporting the transition toward greener practices will not only protect ecosystems but also strengthen the long-term sustainability of the batik industry.

**6. Production Time and Artisan Collaboration:** The production of one piece of hand-drawn batik fabric typically takes up to one month. This process often involves multiple artisans, each contributing according to their expertise in specific motifs or design elements. Upon completion, each product is labeled with a code on the hang tag to identify the artisan group responsible for its creation. This system not only honors the work of each artisan but also facilitates equitable profit-sharing based on the product's sale—a practice that ensures fair compensation and encourages collective responsibility.

Collaboration is a key driver of innovation in SMEs, with the type of partner and geographical proximity influencing innovation outcomes. These findings in latest study show that valuable insights for policymakers, researchers, and SME leaders aiming to enhance innovation through strategic collaboration (Audretsch et al., 2023).



**Figure 6. Production Time and Artisan Collaboration**

The collaborative production process in Batik Giriloyo—where multiple artisans contribute their expertise and are recognized through coded labeling and equitable profit-sharing—reflects a sustainable and inclusive model of craftsmanship. This approach not only preserves cultural heritage but also aligns with broader findings that collaboration is a powerful driver of innovation in SMEs. Strengthening such collaborative systems can enhance both creative output and business

resilience, offering valuable lessons for policymakers and SME stakeholders committed to fostering innovation through strategic partnerships.

**7. Marketing and Economic Strategies:** Batik Giriloyo products are marketed both through local galleries in the Batik Giriloyo area and online platforms. Each artisan receives earnings based on the sale of their products. Interestingly, a number of artisans have adopted a barter system, exchanging their finished batik products for raw materials. This strategy helps address the issue of limited working capital and ensures continued production, highlighting the resourcefulness of the artisans in sustaining their craft amidst financial constraints. During the pandemic, many Indonesian batik SMEs adopted online marketing, but its implementation remains suboptimal—evident from sales declines of up to 50%. Using SWOT and AHP analysis, the study identified that the most effective strategy for improving competitiveness is the Strengths-Opportunities (SO) strategy, which focuses on leveraging internal strengths and external opportunities. Specifically, SMEs should maximize digital marketing, enhance product content quality, and develop innovative business models to expand their market reach and increase profitability (Suhartini et al., 2021)(Mansur et al., 2023).



**Figure 7. Showroom Batik Giriloyo**

Consumers' choices regarding batik products are shaped by four main components of the marketing mix: product, price, promotion, and distribution channels. Through conjoint analysis and SEM, the study validated that a marketing strategy focused on market orientation and aligned with these elements is both practical and impactful in boosting consumer interest. The findings offer a strategic basis for optimizing batik marketing in line with consumer expectations (Ekonomi, 2023). In facing financial limitations and shifting market dynamics, Batik Giriloyo artisans demonstrate adaptability through innovative strategies like barter systems and market-oriented digital marketing—grounded in the strengths-opportunities approach and aligned with consumer-driven marketing mix elements—to sustain production and enhance competitiveness.

To overcome the challenges faced by batik artisans in Bantul, innovation is the key. The proposed solutions in this program cover various aspects, ranging from production and business management to digital marketing.

1. **Production Innovation through Eco-Print Technique.** One of the main solutions is the introduction of the eco-print technique—a fabric dyeing method that utilizes natural materials such as leaves, flowers, and bark. Eco-print not only produces unique and aesthetically pleasing patterns but is also more environmentally friendly, responding to global market demands for sustainable products. Green Innovation (GI) play significant roles in enhancing Sustainable Firm Performance (SFP) among eco-print MSMEs in Yogyakarta and Central Java (Isfianadewi

et al., 2025). The Eco-Print Fabric training significantly enhanced the participants' individual skills, particularly in fabricating Eco-Print textiles (Satria et al., 2024). This innovation addresses market needs for products that are both visually appealing and environmentally responsible. Implementation of this solution includes: a) Training artisans in eco-print techniques to produce more varied and eco-friendly batik motifs. b) Providing tools and materials that support an efficient eco-print production process. c) Educating artisans on the benefits of natural dyes and their positive environmental impact, as well as their contribution to product competitiveness in international markets.

2. **Batik Product Diversification.** To expand market reach, product diversification is a strategic step. Batik is not only suitable for formal clothing but can also be developed into everyday items such as masks, bags, wallets, shoes, and home decor. Diversification strategy options proposed in this research can help owners and managers of micro, small and medium enterprises to expand the diversity of their markets and products (Wahyuningsih et al., 2023) (Widjajanti et al., 2023). Actions to be taken include: a) Product innovation training to help artisans utilize leftover batik fabric for derivative products. b) Providing product samples and production training to create batik-based accessories such as bracelets, necklaces, and wall decorations. c) Developing batik product variants using easily sourced natural materials to enhance product value.
3. **Training in Business and Financial Management.** Artisans also need to be empowered through technology and digital marketing training. With support from students, practitioners, or local communities, batik MSMEs can learn to use social media, create online shops, and optimize e-commerce platforms to reach national and international markets. The training helps them adapt to changing consumer behavior increasingly shifting toward digital platforms. Employee training, control environment, information and communication and risk assessment have a significant and positive effect on financial management of SMEs (Oyelakin & Abdullahi, 2022) (Zada et al., 2021). Additionally, local governments and supporting organizations should facilitate access to modern tools and technologies, such as eco-friendly dyeing equipment or batik printing machines. Incentives like natural material subsidies and accessible financing programs are also needed to encourage artisans to adopt new techniques and develop new products. Many batik MSMEs in Bantul still struggle with proper financial recordkeeping and systematic business management. To address this, the following solutions are offered: a) Digital financial recording training to help MSMEs better manage their finances. b) Education on effective business management, including access to funding. c) Assistance in the product certification process to improve competitiveness in international markets.
4. **Strengthening Digital Marketing.** The limited use of digital technology in marketing is a major challenge for batik MSMEs. In order to increase MSME performance, MSMEs must also benefit from digital marketing, which tries to market through digital media to reach target consumers swiftly and precisely (Tresnasari & Zulganef, 2023). Adoption of digital marketing makes it easier for MSME players to provide information and interact directly with consumers, expand the market, increase awareness, and cost of the market of the product decreases significantly for MSME players during the Covid-19 pandemic (Andiana et al., 2021). Thus, the solutions provided include: a) Digital marketing training through social media and e-commerce platforms. b) Developing branding strategies to make Batik Giriloyo more appealing in global

markets. c) Expanding marketing networks by involving travel agencies and participating in trade exhibitions.

5. Technology Facilitation and Incentives Support. Local governments and supporting organizations play a role in providing access to modern equipment and technologies, such as: a) Batik printing machines and eco-friendly dyeing tools. b) Subsidy programs for natural raw materials to support eco-print production. c) Affordable financing schemes to support artisans in product innovation. Based on the above explanation, it can be concluded that the proposed solutions involve the development of product innovations using eco-printing techniques and training in marketing communication for artisan groups, who generally still rely on conventional methods such as trade fair participation, collaboration with travel agencies, and direct marketing to tourists visiting the Batik Village in Bantul, Yogyakarta. By integrating technological innovation can improve competitive advantage in traditional businesses like the batik MSMEs (Widjajanti & Jumbri, 2025). Strengthening technology facilitation and incentive support through collaborative efforts from local governments and support institutions can significantly enhance the innovation capacity and market competitiveness of batik MSMEs, enabling a sustainable transition from conventional practices to eco-friendly, technology-driven production and marketing strategies.

In terms of product quality, the artisan groups have demonstrated the ability to produce high-quality batik. However, they have not yet developed derivative products by utilizing batik fabric remnants—such as batik-based accessories. Moreover, there is still untapped potential for product innovation using easily sourced natural materials (e.g., various types of leaves, fruit peels, and specific tree bark) to create new types of batik products beyond traditional hand-drawn, stamped, or combination batik. Such product development has not been carried out due to limited knowledge and skills in derivative product development. The need for product diversification aims to offer alternative product options beyond traditional batik, thereby giving consumers more choices and increasing their purchase interest.

#### **IV. CONCLUSION**

The Batik Giriloyo artisan community demonstrates a strong commitment to preserving traditional hand-drawn batik techniques while gradually adapting to market demands through product diversification, customization, and digital marketing. Nonetheless, several challenges remain, particularly in terms of motif documentation, financial sustainability, and efficiency in production and marketing processes. This community service initiative not only provided a platform for knowledge exchange but also identified potential areas for future collaboration, especially in enhancing product innovation, digital branding, and institutional support to preserve and promote Batik Giriloyo as a heritage-based creative industry. Based on the discussion regarding the characteristics of Batik Giriloyo's production and marketing, several strategic recommendations can be proposed to enhance the competitiveness and sustainability of the batik industry in this region.

First, there is an urgent need to digitize and document the existing batik motifs. With more than 200 known motifs, comprehensive records that include the names, meanings, and historical background of each motif should be developed. This effort not only preserves cultural heritage but also provides rich educational content that can strengthen promotional strategies. Such

documentation initiatives could involve collaborations with educational institutions or cultural agencies. Second, product innovation must be encouraged through the development of derivative batik products. Artisans should be trained to repurpose leftover batik fabric (perca) into high-value accessories such as bags, jewelry, or home décor. This not only minimizes waste but also diversifies the product range to better meet market demands. Third, the use of eco-friendly production methods must be intensified. Although natural dyes and eco-printing techniques are already known, further training and access to tools and materials are necessary to promote environmental sustainability. Support from local governments in the form of subsidies for natural dyes or environmentally friendly equipment would significantly aid this transition. Fourth, improving business and financial management is crucial. Artisans and small businesses should be equipped with digital bookkeeping skills and guided in effective business operations. This will help them access capital, manage resources efficiently, and prepare for certification processes needed for international markets. Fifth, digital marketing strategies must be optimized. Artisans should receive training in social media marketing, e-commerce management, and branding. Strengthening partnerships with tourism stakeholders such as travel agents and village tourism operators can also help promote Batik Giriloyo to a wider audience. Sixth, the current revenue-sharing system using coded hang tags should be further developed. This identification system can be integrated into a more comprehensive tracking mechanism to ensure transparent distribution of profits and recognize each artisan's contribution. Finally, strengthening institutional capacity and ensuring artisan regeneration are essential. Batik training programs for younger generations—either through vocational schools, universities, or creative communities—are needed to secure the continuity and creative evolution of Batik Giriloyo in the future.

## V. ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to all individuals and institutions who supported and contributed to the successful implementation of this community empowerment program. Special thanks are extended to the community of Wukirsari Village, particularly the artisans of Batik Giriloyo, for their warm welcome, cooperation, and active participation throughout the community services activities. This community service program was financially supported by Universitas Negeri Jakarta. The authors declare that there is no conflict of interest related to financial, commercial, legal, or professional relationships with any organization or individual involved in this activity.

## REFERENCES

- Andiana, B. D. L., Hurriati, L., & Fathurrahman, F. (2021). Adoption of Digital Marketing in Strengthening Micro, Small and Medium Enterprises in Mataram City during The Covid 19 Pandemic. *Proceedings of the 2nd Annual Conference on Education and Social Science (ACCESS 2020)*, 556(Access 2020), 554–557. <https://doi.org/10.2991/assehr.k.210525.148>
- Audretsch, D. B., Belitski, M., Caiazza, R., & Phan, P. (2023). Collaboration strategies and SME innovation performance. *Journal of Business Research*, 164(May), 114018. <https://doi.org/10.1016/j.jbusres.2023.114018>
- Demirkan, I., Srinivasan, R., & Nand, A. (2022). Innovation in SMEs: the role of employee training in German SMEs. *Journal of Small Business and Enterprise Development*, 29(3), 421–440.

<https://doi.org/10.1108/JSBED-07-2020-0246>

- Dutta, G., Kumar, R., Sindhvani, R., & Singh, R. K. (2021). Digitalization priorities of quality control processes for SMEs: a conceptual study in perspective of Industry 4.0 adoption. *Journal of Intelligent Manufacturing*, 32(6), 1679–1698. <https://doi.org/10.1007/s10845-021-01783-2>
- Ekonomi, J. I. (2023). *Marketing Strategy of Fabric Batik Entrepreneurs in*. 14(02).
- Gunawan, A. A., Bloemer, J., van Riel, A. C. R., & Essers, C. (2022). Institutional Barriers and Facilitators of Sustainability for Indonesian Batik SMEs: A Policy Agenda. *Sustainability (Switzerland)*, 14(14), 1–25. <https://doi.org/10.3390/su14148772>
- Harper, S., & Pal, R. (2022). Small-series supply network configuration priorities and challenges in the EU textile and apparel industry. *Journal of Fashion Marketing and Management*, 28(4), 709–737. <https://doi.org/10.1108/JFMM-07-2021-0173>
- Haug, A., Aadsbøll Wickstrøm, K., Stentoft, J., & Philipsen, K. (2023). The impact of information technology on product innovation in SMEs: The role of technological orientation. *Journal of Small Business Management*, 61(2), 384–410. <https://doi.org/10.1080/00472778.2020.1793550>
- Isfianadewi, D., Utami, T. L. W., & Kusumaningrum, S. D. (2025). The Role of Green Supply Chain Management and Green Innovation Towards the Sustainable Firm Performance of Eco-Print Businesses in Indonesia. *International Journal of Sustainable Development and Planning*, 20(2), 721–730. <https://doi.org/10.18280/ijstdp.200221>
- Karpova, E. E., Kunz, G. I., & Garner, M. B. (2021). Sustainability in the Textile and Apparel Industries. In *Going Global* (Issue July). <https://doi.org/10.5040/9781501338700.ch-004>
- Lara, L., Cabral, I., & Cunha, J. (2022). Ecological Approaches to Textile Dyeing: A Review. *Sustainability (Switzerland)*, 14(14). <https://doi.org/10.3390/su14148353>
- Mansur, A., Worldailmi, E., & Sutrisno, W. (2023). *A Literature Review on Digital Marketing Strategies and Its Impact on Batik SMEs After COVID-19 Pandemic*. 2244–2256. <https://doi.org/10.46254/ap03.20220371>
- Maryani, Abbas, B. S., Trisetjarso, A., & Saputra, W. (2020). *Mobile-Based Plus-Size Fashion and Custom Online Marketplace Prototype*. 410(Imcete 2019), 336–340. <https://doi.org/10.2991/assehr.k.200303.081>
- Mulyanto, Prameswari, N. S., Hartono, L., Fuad, F. R., & In Diana Sari, N. L. D. (2020). Training models of batik motif design development for designers in micro enterprises. *Vlakna a Textil*, 27(2), 74–88.
- Muñoz-Pascual, L., Galende, J., & Curado, C. (2021). Contributions to sustainability in smes: Human resources, sustainable product innovation performance and the mediating role of employee creativity. *Sustainability (Switzerland)*, 13(4), 1–20. <https://doi.org/10.3390/su13042008>
- Oyelakin, O., & Abdullahi, A. (2022). Assessing the efficacy of employee training and internal control system on financial management of small and medium scale enterprises in Nigeria. *African Journal of Economic and Management Studies*, March. <https://doi.org/10.1108/AJEMS-06-2021-0299>
- Raya, A. B., Andiani, R., Siregar, A. P., Prasada, I. Y., Indana, F., Simbolon, T. G. Y., Kinasih, A. T., & Nugroho, A. D. (2021). Challenges, open innovation, and engagement theory at craft smes: Evidence from Indonesian batik. *Journal of Open Innovation: Technology, Market, and*

*Complexity*, 7(2), 121. <https://doi.org/10.3390/joitmc7020121>

- Rofianto, W., Haque, M. G., Sunarsi, D., Purwanto, A., & Kahpiahpi, H. S. (2021). Cultural Product Branding, Antecedents, and Its Implications: A Study on The Context of Indonesian Batik. *International Journal of Social Policy and Law*, 2(2), 37–46.
- Satria, V. H., Baihaqy, A., Zuhroh, N. F., Laily, N., & Yahya, Y. (2024). Pounding Nature into Profit with Sustainable Techniques for Crafting High-value Eco-print Products. *South Asian Journal of Social Studies and Economics*, 21(6), 111–120. <https://doi.org/10.9734/sajsse/2024/v21i6836>
- Sugiarto, E., Syarif, M. I., Mulyono, K. B., bin Othman, A. N., & Krisnawati, M. (2025). How is ethnopedagogy-based education implemented? (A case study on the heritage of batik in Indonesia). *Cogent Education*, 12(1). <https://doi.org/10.1080/2331186X.2025.2466245>
- Suhartini, S., Mahbubah, N. A., & Basjir, M. (2021). Marketing Strategy Design Based on Information Technology in Batik Small and Medium-Sized Enterprises in Indonesia. *Eastern-European Journal of Enterprise Technologies*, 6(13–114), 39–48. <https://doi.org/10.15587/1729-4061.2021.244137>
- Tresnasari, R., & Zulganef, Z. (2023). Increasing MSME Performance Through Institutional Strengthening, Entrepreneurship, and Digital Marketing. *International Journal of Research in Community Services*, 4(1), 11–17. <https://doi.org/10.46336/ijrcs.v4i1.383>
- Wahyuningsih, U., Indarti, I., Yulistiana, Y., Sari, F. I., Salsabillah, L., & Fatmawati, Y. Z. (2023). *Diversification of Patterned Batik Products (Nyanggit Motif) in Clothing as an Alternative to the Competitiveness of Small and Medium Batik Enterprises*. Atlantis Press SARL. [https://doi.org/10.2991/978-2-38476-008-4\\_140](https://doi.org/10.2991/978-2-38476-008-4_140)
- Widjajanti, K., & Jumbri, I. A. (2025). Technopreneurship, innovation capability and social media marketing as catalysts for competitive advantages: A study of batik MSMEs in Pekalongan, Indonesia. *Multidisciplinary Science Journal*, 7(8). <https://doi.org/10.31893/multiscience.2025367>
- Widjajanti, K., Kusumaningtyas Sugiyanto, E., Widyaevan, D. A., Sari, A. R., Soekarno, J. A., & Semarang, H. (2023). Strategic Choice Development Using SWOT Analysis: Diversification Strategy of Batik Creative Industry in Blora, Indonesia. *Jee*, 12(1), 198–212. <http://journal.unnes.ac.id/sju/index.php/jeec>
- Zada, M., Yukun, C., & Zada, S. (2021). Effect of financial management practices on the development of small-to-medium size forest enterprises: insight from Pakistan. *GeoJournal*, 86(3), 1073–1088. <https://doi.org/10.1007/s10708-019-10111-4>