

Giriloyo Batik Wax Waste Processing Innovation into Value-Added Products as a Sustainable Solution for MSMEs

Shalsabilla Malika Astyno^{1,*}, Fithri Widyanita Yarisma²

¹Management Study Program, Faculty of Economics and Business, Universitas Persatuan Guru Republik Indonesia

²Digital Business Study Program, Faculty of Economics and Business, Universitas Persatuan Guru Republik Indonesia

* Corresponding author: billashalsa62@gmail.com

Abstract.

The Giriloyo Batik Center in Yogyakarta faces environmental challenges due to the accumulation of wax waste (batik candles) from the production process. This community service activity aims to provide sustainable solutions through training on recycling wax waste into decorative candles with economic value. Using a qualitative method with a case study approach, data is collected through observation, interviews, and direct engagement. The results show that solid wax waste can be reprocessed into decorative wax through a boiling process, the addition of additional materials such as paraffin and gondorukem, and printing. This innovation is able to reduce environmental pollution and encourage community economic empowerment. This program also emphasizes the importance of institutional collaboration and technological support in strengthening the sustainability of MSMEs in the batik sector. Keywords: batik wax waste; Recycling; decorative candles; community service; MSMEs

I. INTRODUCTION

Batik is a craft that has a high artistic value and has become part of Indonesian culture (especially Javanese) which is the heritage of the ancestors of the Indonesian nation since ancient times. The history of batik in Indonesia is related to the development of the Majapahit kingdom and the kingdom after it. In some records, the development of batik was carried out in the time of the Mataram kingdom, then developed in the kingdoms of Solo and Yogyakarta (Taufiqoh, Nurdevi, and Khotimah 2018).

The batik tradition was initially a hereditary tradition, so sometimes a motif can be recognized as coming from a certain family batik. Some batik motifs can show a person's status. Even until now, some traditional batik motifs are only used by the royal families of Yogyakarta and Surakarta (Taufiqoh, Nurdevi, and Khotimah 2018).

There are many batik village centers in Yogyakarta. Giriloyo Batik Village is one of the batik craft centers in Yogyakarta which is still running and invites tourists to learn batik or just shop for batik fabrics produced by artisans in the Batik Village. In a month industrial houses in Giriloyo Batik Village process batik at least twice, which means that in a month there is two discharges of waste used for dyeing batik fabrics, while not all industrial houses have batik waste processing equipment, only some industrial houses already have batik waste processing equipment, but there are also those that do not have batik waste processing equipment which causes not all batik waste to be processed properly (Muliasari and Widiastuti 2020).

Marketing communication activities in artisan groups are generally still conventional such as: participating in trade fairs, collaborating with travel agencies and direct marketing to tourists

who come to Giriloyo Batik Village. In the product aspect, it can be shown that the artisan group is able to produce products with good quality. However, product development has not been carried out such as utilizing the remaining batik wax waste to produce batik derivative products or value-added products made from batik wax. Besides that, there are still opportunities to innovate products (Harsoyo and Puspitasari 2023).

The rest of the batik stew includes wax which can be used again in other batik production. This batik candle is made of oil, making it easy to separate from cooking water. The type of batik wax is also influenced by the properties of the materials used as a wax mixture such as paraffin, gointene, vegetable fat, and animal. Even the same type of candle, differs in quality when the candle is used repeatedly or when the wax candle is recycled. The composition and quality of batik has a great impact on the quality, durability and image of motifs made on batik fabric (Mulyaningsih et al. 2023).

Another problem is the processing of wax waste when the wax washing process is difficult to decompose, while the volume of wax waste in a period of 1 (one) month reaches 40 kg. or 480 kg per year. With the large use of batik candles that cause waste, recycling technology is needed so that the batik wax waste can be reused and does not cause environmental pollution (Teguh et al. 2024). The waste problem is one of the problems that requires a lot of attention to find the right alternative solutions. This is what encourages lecturers and students of Universitas Persatuan Guru Republik Indonesia Semarang (UPGRIS) to conduct research so as to find the idea of processing batik industrial waste into quality and added value (UM 2023).

II. METHODS

This research uses a qualitative method with a case study approach, because this research is unique and has different characteristics from one to another. Qualitative research is a type of educational research in which the researcher relies on the views of the participant or informant: the researcher asks at length, asks general questions, collects data mostly consists of words (or texts) from participants, describes and analyzes the text into themes, and makes requests subjectively and biased (provoking other questions) (Safarudin, , Zulfamanna2, and Sepriyanti 2023). The research cycle begins with selecting the research object, which is then continued by conducting interviews (as shown in picture 1 and 2) about the research object. Next, collect the data obtained from the interview session and then analyze the data (Mulasari and Widiastuti 2020).

This process can take place several times depending on the scope and depth required in the research process itself (Sukmana, Hardani, and Irawansyah 2020). This research was carried out on May 20, 2025 with the aim of seeing the influence of waste produced from the batik making process on the quality of land/environment in Giriloyo Batik Village, precisely in Wukirsari Village, Imogiri District, Bantul Regency, Special Region of Yogyakarta.



Picture 1. Interview with the manager

Source : Field observation, 2025



Picture 2. Socialization

Source : Field observation, 2025

III. RESULT AND DISCUSSION

Based on the results of interviews and observations in the field, the researcher provided a solution in the form of wax waste recycling technology or candles with results in the form of recycled candles with better quality. The use of recycled wax will improve product quality and provide solutions in waste treatment (Teguh et al. 2024).

There are 2 (two) types of waste from the batik process; solid waste (as shown in picture 3) and liquid waste (as shown in picture 4). Solid waste has been managed well where the waste can be reused to be used as material to light a fire or in Javanese it is commonly called *daden geni*. But in the case of liquid waste, not properly managed, some are discharged into the river, some are applied directly to the soil without undergoing a neutralization process (Muliasari and Widiastuti 2020).



Picture 3. Solid waste wax

Source : Field observation, 2025



Picture 4. Liquid Waste

Source : Field observation, 2025

To be able to solve the partner's problem, it will be done by recycling waste (as in picture 5) at wax so that it can be reused with better quality and does not pollute the environment. Candle or what is called batik wax as one of the materials that has an influence on the quality level of batik fabric, the process of recycling batik wax can be explained as follows; (Teguh et al. 2024)



Picture 5. Batik Wax Waste

Source : KBRN News, October 2024

- a. Boil wax batik from waste to boil (as shown in picture 6), until the water content in the wax batik waste that is being boiled is wasted. To find out if the contents of the boiling water have disappeared is when the boiling candle is left until the foam is gone and no longer emits bubbles and let it clear and twist like a vortex.



Picture 6. Boiling process

Source : Field observation, 2025

- b. Furthermore, after the clear boil means that the prepared wax batik can be used or other additional ingredients added.
- c. Next, add gondorukem material, then paraffin and continue with microwax until it melts.
- d. Then, after gondorukem and paraffin begin to melt, continue to insert kendal and cat's eyes until liquid and dissolved. Next, stir for 2 to 5 minutes then turn off the heat.
- e. Once the ingredients have come in and the heat has been turned off, allow it to sit for up to 2 hours to allow the heat to decrease.
- f. Printing after the recycled wax is cooked and filtered, then printing will be done. The candles will be printed with molds made of glass that can be reused into value-added products (decorative candles) (as shown in picture 7).



Picture 7. Decorative Candle

Source : UM News, June 2023

IV. CONCLUSION

Giriloyo Batik UKM has several problems in developing its business, including solid wax waste that is difficult to decompose so as not to pollute the environment. This community service activity provides a solution, namely by providing training on the recycling process of batik wax waste so that it does not pollute the environment and can be reused for the batik process or innovating products that can provide added value. The batik wax recycling process is based on several studies that have been carried out in reprocessing batik wax waste. Recycled Batik Candles have good quality so that they can be reused for the batik process and used as value-added products (decorative candles) (Teguh et al. 2024).

To maximize the potential of the creative economy and increase marketing sustainability, it is recommended that people use waste as the main raw material in the production of high-value-added goods. The community must also be accompanied by government agencies to develop waste treatment skills and facilitate the need for the right technological tools so that the community can continue to do business and digital marketing. Thus, waste that was previously a problem can be turned into a resource that supports the local economy and strengthens the MSME sector and contributes to environmental sustainability (Zharif et al. 2024).

V. ACKNOWLEDGMENTS

With gratitude, the author would like to express his deepest gratitude to the Giriloyo Batik community, especially to the members of the Giriloyo Batik Association who have given warm welcomes, support, and active participation during the implementation of community service programs in International Community Service (ICS) activities in 2025. Gratitude was also expressed to the batik craftsmen and managers of Batik Giriloyo who were willing to take the time and share knowledge. Thank you are also conveyed to your beloved family, especially Mom and Dad who always give prayers, encouragement, and invaluable affection.

The author also expressed his highest appreciation to Mrs. Fithri Widyanita Yarisma, S.E., Ak., M.Ak. as a supervisor for all direction, guidance, and motivation given during the process of implementing activities until the preparation of this article. Not to forget, the author would like to thank my teammates and comrades-in-arms, especially M. Isma Febriansyah, for their cooperation, support, and active contribution during the writing activity. In addition, the author also thanked UPGRIS for the institutional support and facilities provided so that this service activity could run smoothly. And I want to thank myself. Thank you for persevering, and not giving up despite being faced with various challenges and fatigue during the process of this work. This process is not just about completing tasks, but also a journey to know and understand yourself more deeply. Hopefully this small step will be the beginning of the next big journey.

The author states that there is no conflict of interest in the implementation of this activity. In addition, this research and activity does not receive special funding from public, commercial, or non-profit funding institutions.

REFERENCES

- Harsoyo, Titik Desi, and Kakanita Ari Puspitasari. 2023. "Pelatihan Inovasi Produk Untuk Meningkatkan Daya Tarik Wisata Di Kampung Batik Tulis Giriloyo Di Yogyakarta." *Journal of Community Service and Empowerment* 4(1): 10–19.
- Muliasari, I Gusti Ayu Dwi, and Widiastuti. 2020. "DAYA DUKUNG LINGKUNGAN TERKAIT PENGOLAHAN LIMBAH BATIK DI KAMPUNG BATIK GIRILOYO , KABUPATEN BANTUL , YOGYAKARTA Pendahuluan Lingkungan Hidup Merupakan Alam Budaya Menggunakan Batik Oleh Kraton Yogyakarta Yang Sering Digunakan Untuk Mendukung Kegiatan Seh." *Atrium* 6(2): 131–39.
- Mulyaningsih, Neng Nenden, Indica Yona Okyranida, Qisthi Maghfiroh, and Fita Widiyatun. 2023. "Analisis Fisika Kualitas Lilin Batik Yang Sudah Digunakan Berulang." *Prosiding Seminar Nasional Penelitian dan Pengabdian Kepada Masyarakat (SNPP)*: 376–85. <https://journal.ikipgripta.ac.id/index.php/snpp/article/view/7030>.
- Safarudin, Rizal, Martin Kustati , Zulfamanna2, and Nana Sepriyanti. 2023. "Penelitian Kualitatif." *Journal Of Social Science Research*. https://id.wikipedia.org/wiki/Penelitian_kualitatif.
- Sukmana, Dhika Juliana, Hardani Hardani, and Irawansyah Irawansyah. 2020. "Pemeriksaan Kesehatan Gratis Sebagai Upaya Peningkatan Kesadaran Masyarakat Terhadap Deteksi Dini Penyakit Tidak Menular." *Indonesian Journal of Community Services* 2(1): 19. doi:10.30659/ijocs.2.1.19-26.
- Taufiqoh, Binti Rohmani, Ita Nurdevi, and Husnul Khotimah. 2018. "Batik Sebagai Warisan Budaya Indonesia." *Prosiding SENASBASA*: 58–65.
- Teguh, Mutinda, Widayanto Hartawan, Abdillah Mas, Ahmad Baihaqi, Program Studi, Bisnis Digital, Fakultas Ekonomi, et al. 2024. "Daur Ulang Lilin Batik Untuk Efisiensi Biaya Dan Peningkatan Kualitas Produk UKM Batik Manggur." *Jurnal Teknologi dan Pengabdian Masyarakat*: 73–79.
- UM, Luthfi Maulida Rochmah – Mahasiswa. 2023. "Berdedikasi Untuk Masyarakat: UM Berikan Pelatihan Pembuatan Lilin Dari Limbah Industri Batik." <https://um.ac.id/berita/berdedikasi-untuk-masyarakat-um-berikan-pelatihan-pembuatan-lilin>

n-dari-limbah-industri-batik/.

Zharif, Muhammad Rafly, Ailsa Vindy Assari, Itsnaindes Nur Aqilah, Muhammad Iqbal, Alya Fara, Nur Afifah, Muhammad Akhdan Syafiq, et al. 2024. "Pengembangan Ekonomi Kreatif : Pemanfaatan Limbah Sebagai Produk Bernilai Jual Tinggi Dan Pemasaran Berkelanjutan." *JURNAL PENGABDIAN MASYARAKAT BANGSA* 2(7): 2737–45.