



ARTICLE

Revitalizing the Batik Industry in Indonesia: A Scenario Assessment

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ABSTRACT

The batik industry is an important cultural and economic asset for Indonesia. Therefore, it is crucial to consider its needs and challenges when developing policies. The industry employs a wide range of workers, including artisans, designers, managers, and marketers, thus creating diverse job opportunities for youth. The review includes published articles on batik, government reports, and conference proceedings to examine the current performance of the batik industry. The study discovered that batik has great potential for contributing to the country's economic growth and serves as a tool for human development. Some empirical findings have further demonstrated that batik should be preserved as one of the country's main economic commodities for import and export activities, through the enforcement of relevant policies by authorities. Nevertheless, the sustainable development of the batik industry is still questionable, as it may negatively impact the environment, leading to an unsustainable ecosystem. The study provides some implications for policymakers and serves as a reference for future research.

KEYWORDS

batik, scenario, Indonesia, challenges, policies, sociology

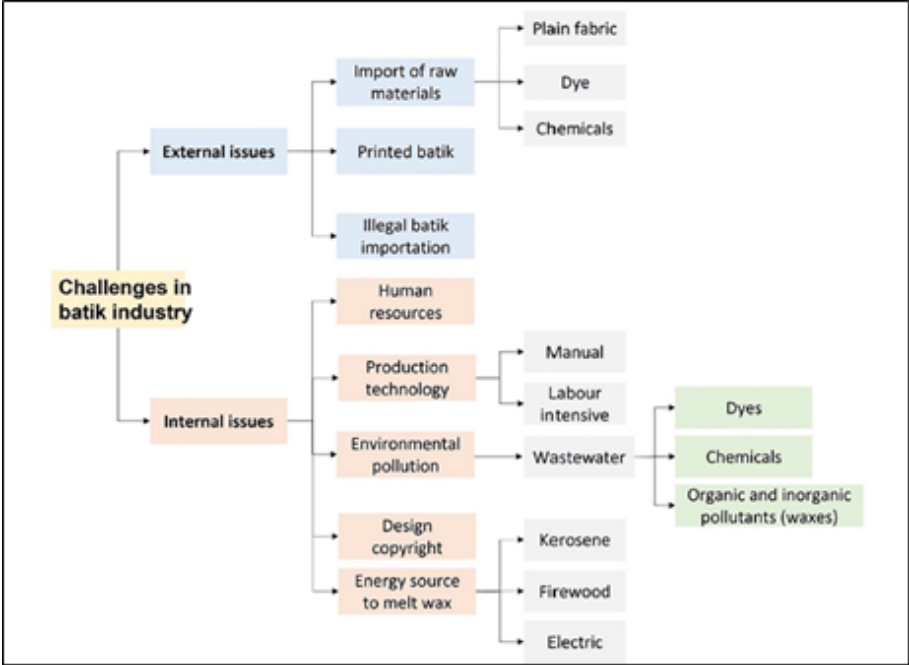
Introduction

In 2009, Indonesian batik was inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity (Indonesian Batik, n.d.). Beyond its artistic value, batik serves as a cultural emblem through which Indonesians express social status, communal identity, connections to the natural world, historical narratives, and cultural heritage. The cultural identity of the Indonesian people is entwined with batik. This hand-dyed cotton and silk fabric encapsulates the nation's history through both its techniques and its symbolism. In Indonesia, the craft of batik is usually handed down within families for generations. The Indonesian batik industry has been officially recognized by the Department of Trade of Indonesia as one of the country's 14 established creative industries (Gatut & Aryanto, 2010). The contribution of batik as a creative industry in building Indonesia's economy and socio-culture is undeniable (Syed Shaharuddin et al., 2021). At present, the batik industry in Malaysia and Indonesia is dominated by two types of production techniques: hand-drawn batik (batik *tjanting*) and batik stamp (batik *terap/blok*) (Syed Shaharuddin et al., 2021).

To ensure the sustainable production and use of batik, the Indonesian government initiated a campaign encouraging all citizens to wear batik on Fridays in response to UNESCO's recognition of the art form. The practice of wearing batik as a symbol of national identity by students, government employees, and business executives has grown throughout Indonesia. Today, the batik industry is deeply rooted in national culture and continues to thrive as a creative sector. Its popularity has increased due to innovations in materials and design introduced by Indonesian fashion designers. Contemporary batik is widely used to produce clothing, household items, and souvenirs. The sector comprises more than 39,000 small and medium-sized enterprises (SMEs), employing over 900,000 individuals (Indarti, 2021). Ironically, despite its cultural recognition and economic significance, the batik industry is facing structural challenges that threaten its long-term sustainability. Therefore, this study uses the term *revitalizing* to refer to efforts aimed at renewing and strengthening key components of the industry, including human capital development, cultural preservation, sustainable production practices, policy enhancement, and global competitiveness.

Despite its contributions to national revenue and social development of communities, the batik industry, as highlighted in the numbers of entrepreneurship and micro-enterprises literature, is expected to encounter significant challenges in the near future, particularly in the areas of human resource management and cultural preservation. To specify, Indonesian batik industry currently is facing the issue of shortage of skilled workers within the Indonesian batik industry (Figure 1). Such issue is attributed to various factors, including the manual and labor-intensive nature of batik production (Salleh et al., 2008), as well as the persistent reliance on traditional methods (Khalili, 2018). Therefore, the batik industry is in dire need of developing competent human capital to ensure its sustainability.

Figure 1
A Critical Review on Challenges in Batik Industry



Note. Source: Syed Shaharuddin et al., 2021.

However, efforts to attract skilled workforce among younger generation participating in the domestic batik business are increasingly constrained, as evidenced in both Malaysia and Indonesia (Akhir et al., 2015; Dwinugroho et al., 2019; Khalili, 2018). Contributing factors include low wages, declining product demand, unpredictable income, and the growing appeal of alternative industries (Redzuan & Aref, 2011; Syed Shaharuddin et al., 2021). This volatility of batik industry is similarly observed by Kristiana et al. (2023). Due to the lengthy and resource-intensive production process, the industry is often deemed economically unattractive to investors seeking rapid returns. This issue is further intensified by the influx of cheaper, modern, and foreign-made batik substitutes, which continue to undermine the competitiveness of the traditional batik sector (Razali et al., 2021).

Also, the lack of engagement among youth in the batik industry is linked to its strong association with older generations. Batik is rarely seen as fashionable or relevant, especially when compared to imported branded clothing, therefore seldom worn by younger Indonesians. This growing detachment raises concerns about batik's long-term presence in the lifestyle of future generations. This relates to the intergenerational understanding of batik, especially how it functions as a cultural and generational identity, as highlighted by Wuryasti (2019). This issue also inhibits the growth of batik-based SMEs (Supheni et al., 2023). Ultimately, the issue reflects

broader challenges in cultural education and economic opportunity. Reconnecting batik with Indonesian youth is central to the effort of revitalizing batik as a cultural heritage and identity for years to come.

In addition to focusing on human resource management in the batik, the involvement of development agencies in introducing and implementing effective policy is crucial to the long-term sustainability of the batik industry in Indonesia. In this regard, policy frameworks in Indonesia have generally been supportive of industry players (Manurung et al., 2018). For example, as Manurung et al. (2018) note, Presidential Decree of the Republic of Indonesia Number 127 of 2001 specifically describes specific business sectors for small enterprises and outlines conditions under which medium and large enterprises may operate through partnership agreements. Such policy enables batik entrepreneurs in Indonesia to benefit from the partnership program, which can support their businesses sustainability (Manurung et al., 2018).

While existing studies have explored the batik industry in Indonesia from various angles, including cultural symbolism (Rofianto et al., 2021; Steelyana, 2012), artisanal creativity (Shaari, 2015), or the development of small-scale enterprises (Supheni et al., 2023), there is a noticeable lack of research adopting a comprehensive, policy-oriented scenario analysis of the industry. Most literature tends to focus on regional case studies or specific dimensions such as design evolution and export performance. However, limited attention has been paid to how national policies, human capital dynamics, and sustainability challenges influence the long-term viability of the batik industry. Furthermore, there is a lack of synthesized analysis drawing from a diverse secondary sources, such as government policies, economic data, and cultural documentation. This study addresses these gaps by providing a macro-level assessment through qualitative content analysis, integrating policy review, economic trends, cultural identity, and sustainable development perspectives.

This study is significant in exploring the prospects of the batik industry in Indonesia through a scenario-based approach, and the implementation potential as well as promotional strategies. Moreover, this study also aims to highlight the existing policies that support batik enhancement and its sustainability in the context of Indonesia. As the first study to document both the policy and scenario-based perspectives of the batik industry in Indonesia, it provides a foundational reference for future research on the Indonesian batik industry.

Batik as Cultural Product

Batik serves as a multifaceted cultural expression, manifesting in various products such as garments, household items, and architectural decorations. On the one hand, batik garments represent more than just fashion; they convey deep symbolic meanings. On the other hand, batik also embodies hedonic values that emphasize its aesthetic and cultural significance (Rofianto et al., 2021). According to Shaari (2015), batik, as part of the material cultural domain, reflects creative expressions rooted in indigenous knowledge, shaped by environmental elements and social interactions that embody communal identity. Batik artisans infuse their creations with personal emotions and

cultural norms, which shape the expression and interpretation of universal emotions within societal contexts.

Steelyana (2012) argued that batik documents cultural traditions, preserving ancient practices within communities through various art forms. This preservation is crucial for Indonesian artisans to articulate their cultural heritage through batik, bridging cultural continuities across generations (Setyo et al., 2021). Poon (2020) asserted that batik plays a pivotal role in bolstering Indonesia's cultural and economic landscape, suggesting that its craftsmanship and cultural significance enhance the tourism sector's value.

Batik as a Symbol of National Identity

Batik motifs serve as a medium for expressing national identity, reflecting state-driven narratives that redefine nationalism in modern Indonesia (Krisnawati et al., 2019; Ramlan, 2019). According to Febriani et al. (2023), batik's evolution as a national emblem is intricately tied to Indonesia's historical and cultural narratives, shaping national consciousness in a manner similar to processes observed in other nations. Local identities are also prominently reflected through specific batik motifs, which local governments promote as educational tools and symbols of civic pride (Negara, 2018). To exemplify, Pekalongan's Jlamprang motif encapsulates local wisdom and communal harmony, stressing the importance of preserving such motifs to maintain cultural identity (Devina & Atrinawati, 2022).

Since the UNESCO recognition in 2009, batik's global stature has soared, symbolizing Indonesian heritage abroad and fostering national pride. This acknowledgment has spurred substantial governmental supports for the batik industry, aimed at enhancing local production and securing the craft through both intellectual property protections and legal frameworks (Widiarty, 2024; Widjajanti et al., 2023). Both legal and non-legal measures are essential for protecting batik from external claims and supporting domestic industries (Sulistianingsih & Pujiono, 2018).

Government Policies on Batik Commercialization and Preservation

Since its UNESCO endorsement in 2009, batik's global profile has significantly increased, symbolizing Indonesian heritage and fostering national pride. Indonesians abroad often don batik during special events to express their national identity. This recognition has profoundly impacted the nation as evidenced by the government's robust support for the batik industry and the surge in local demand and production. Efforts to maintain batik as a symbol of national identity include securing copyright under specific legislation, enforcing stringent export regulations, and supporting local craftsmen and business owners in the batik sector (Widiarty, 2024). Strategies to promote the growth of the batik creative economy also involve leveraging local resources to enhance competitive edges (Widjajanti et al., 2023). Moreover, the safeguarding of Indonesian batik involves both legal and non-legal measures to ensure the products remain distinctly Indonesian, prevent foreign claims, boost domestic production, increase job opportunities (particularly for small and medium-sized enterprises), and mitigate potential threats to its sustainability (Sulistianingsih

& Pujiono, 2018). Table 1 lists the category of policies and regulations established to safeguard batik in Indonesia, based on various sources from past studies.

Table 1
Category of Policies and Regulations Stipulated Regarding Safe-Guarding Batik in Indonesia

Category	Policies and Regulations
Preservation	Civil servants are required to wear batik on weekdays, and students in all public schools are mandated to wear batik once a week
International Trade	Preparing batik products with national and international standards; Expanding marketing through online networks and participating in local and international exhibitions; Protecting the batik industry under applicable laws by registering with the Directorate General of Intellectual Property Rights at the Ministry of Law and Human Rights to obtain patent rights
Creative Economy	The Ministry of Creative Economy continually promotes batik in international forums, discussing its history, the process of making batik, and business strategies that could benefit participating countries
Import	The Indonesian Ministry of Trade announced Regulation 53/M-DAG/PER/7/2015, which bans the import of batik motifs into Indonesia; New import restrictions have been introduced for textiles produced using the batik technique
Patent	Intellectual Property Rights (IPR) protection is enforced; The Indonesian government has also issued a brand certification through the Ministry of Industry called <i>Batikmark</i> , which certifies Indonesian batik products

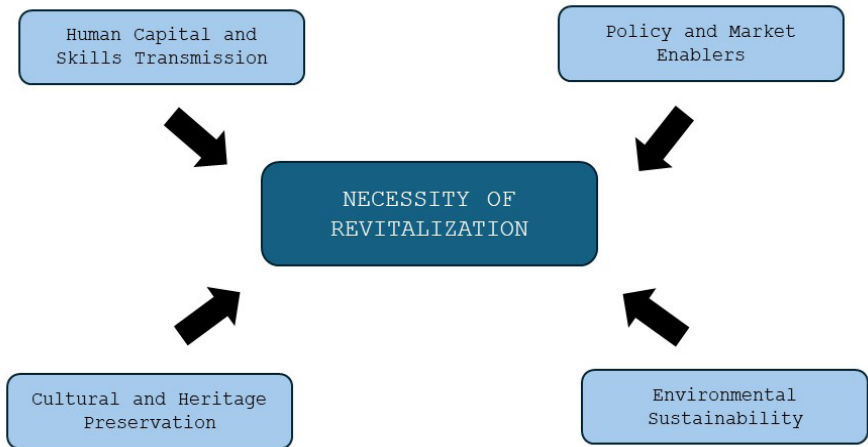
A range of policies has been implemented to protect and promote batik, from mandating its use in public uniforms to restricting textile imports that mimic batik techniques (Syed Shaharuddin et al., 2021). These efforts are complemented by intellectual property measures like *Batikmark*, which certifies authentic Indonesian batik products. Nugroho et al. (2022) described the nascent batik clusters in *Barlingmascakeb*, where governmental focus remains on enhancing production capabilities rather than promoting cultural heritage, leading to a lack of distinctive cultural identity in these clusters. Meanwhile, Gunungkidul Regency, the utilisation of local natural resources and the presence of supportive regional policies have fostered a batik industry, consequently stimulating the local economy and bolstering the cultural tourism agenda in Yogyakarta (Setiyartiti & Rachmawatie, 2021).

While previous literature has extensively examined batik from cultural, artistic, or micro-enterprise perspectives (e.g., Poon, 2020; Steelyana, 2012), there is limited research that integrates policy review with scenario-based approaches to assess the long-term sustainability of the batik industry. This study seeks to bridge that gap by providing a macro-level assessment that synthesizes cultural preservation, economic development, and policy dynamics.

Based on the reviewed literature, the necessity to revitalize the batik industry in Indonesia can be explained through a conceptual framework comprising four key

dimensions: human capital and skills transmission, cultural and heritage preservation, environmental sustainability, and policy and market enablers. The interaction of these dimensions underscores the urgency for comprehensive revitalization strategies. Figure 2 illustrates the proposed framework.

Figure 2
Conceptual Framework for Revitalizing the Batik Industry



Note. Source: developed by the authors.

Methodology

This qualitative study adopted a descriptive approach using content analysis to examine the development and sustainability of the batik industry in Indonesia. The analysis was based on a systematic review of secondary sources, including academic journal articles, government reports, official documents, and relevant websites. Through content analysis, this study identified patterns, themes, and narratives surrounding batik-related policies, production trends, socioeconomic roles, and sustainability challenges. This approach allowed for a deeper understanding of how cultural, economic, and environmental dimensions intersect within the industry. Similar to the methodology employed by Farhana et al. (2022), the use of qualitative content analysis in this study provided a structured way to derive insights from a diverse range of textual data and contributes to scenario assessment and policy implications. There has been limited information on batik available in past literature due to the current scenario and policy assessment. This necessitated a review of batik and its current scenario in the context of Indonesia to enrich the existing literature. Moreover, this study applied a similar review approach used by Farhana et al. (2022), who studied the scenario of the textile industry in Malaysia and found that this approach provided valuable insights into the topic and paved the way for offering implications.

This review focuses on the current state of the batik industry in Indonesia, with particular attention to issues related to production and promotion. By relying on

secondary data sources this study provided valuable insights to support analysis and policy development. Unlike prior studies that often concentrated on specific case studies, technical aspects, or regional batik clusters, this paper adopted a scenario-based perspective through qualitative content analysis of diverse data sources. This broader analytical lens enabled the identification of thematic trends and policy-level gaps that had been largely overlooked in the literature, offering new insights into strategic development pathways for the batik industry in Indonesia. Overall, the use of secondary data sources in this study facilitated a comprehensive and holistic view of the batik industry, enabling informed decision-making and the development of effective strategies for growth and success.

In addition, this study employed a scenario assessment approach to evaluate future pathways for the batik industry based on qualitative insights. Scenario assessment in the context of this study, refers to a qualitative evaluation of potential development trajectories for the batik industry in Indonesia. The assessment aimed at exploring how different socioeconomic, cultural, and environmental factors influence the future sustainability and competitiveness of the batik industry in Indonesia, drawn upon policy documents, industry reports, academic literature, and content analysis. The following scenarios and criteria were considered.

- Status Quo Scenario reflects the continuation of current practices and policies with minimal innovation or reform;
- Sustainability-Oriented Scenario envisions the adoption of environmentally responsible production methods (e.g., natural dyes, waste management) and compliance with eco-certification standards;
- Innovation and Market Expansion Scenario focuses on digital transformation, creative product development, branding, and access to new local and international markets;
- Policy-Driven Revitalization Scenario involves the strengthening of institutional frameworks, financial incentives, and integrated policy enforcement supporting batik SMEs, artisans, and sustainability efforts.

The criteria used to assess these scenarios were based on four key dimensions derived from the conceptual framework, namely human capital and skills transmission, cultural and heritage preservation, environmental sustainability and policy and market enablers.

Findings

Batik Related Government Plans

Indonesian batik, widely regarded as a symbol of local culture and heritage, was officially inscribed by UNESCO as an Intangible Cultural Heritage of Humanity on October 2, 2009, in recognition of its cultural value and authenticity (Indonesian Batik, n.d.). This endorsement was well received in Indonesia, further strengthening the efforts to preserve its cultural heritage such as the declaration of October 2nd as National Batik Day (Sulistianingsih & Pujiono, 2018). Such recognition also has elevated batik, from essentially just a method of dyeing textiles, to the status of cultural

heritage worthy of global recognition. The heritage and narrative of batik can be traced back to the Hindu-Buddhist Kingdom of Kalinga in Java, 650–850 AD (Febriani et al., 2023). However, it did not receive special attention until UNESCO's recognition. This acknowledgment helped keep Indonesian batik "alive," as it might have "disappeared" long ago without the efforts of relevant authorities.

To continue safeguarding batik, local authorities have initiated several policies, especially within the local context. First, the "wear batik" policy emphasizes that all government officials are encouraged to wear batik on certain types of government-related occasions. For instance, some parts of Indonesia have instituted policies mandating the wearing of batik on specific occasions, including but not limited to school, work, and official events. On Fridays and other designated days, government employees and schoolchildren are required to wear batik clothing. This policy serves as a strategic effort to expand the market for batik producers, stimulate domestic demand, and strengthen the local economy through the promotion of batik products (Sulistianingsih & Pujiono, 2018).

Brand certification is another important policy developed to protect batik industry in Indonesia. Through the Ministry of Industry, the Indonesian government introduced Batikmark, a batik certification program to formally recognize batik products produced within Indonesia. The certification incorporates both accreditation and communal brand concept. It is awarded to batik business owners whose products have been approved by the National Standardization Agency (BSN) and meet the Indonesian National Standardization (SNI) requirements, and possess a registered trademark (Sulistianingsih & Pujiono, 2018).

On the other hand, the Indonesian government also protects the local batik industry through enforcement activities involving copyrights on batik designs, trademarks, patents, industrial designs, and geographical indications. These measures are effective in combating illegal activities in the batik industry, such as design theft and unauthorized sales. To exemplify, according to Sulistianingsih and Pujiono (2018), batik artworks are eligible for copyright protection under Article 40, paragraph (1), letter j of Act No. 28 of 2014 on Copyright. They further noted that protection can be obtained by registering with the Directorate of Copyright and Industrial Design under the Ministry of Justice and Human Rights, or through the Directorate General of Intellectual Property. Geographical Indication applications, meanwhile, are processed by the Directorate of Trademark and Geographical Indication within the same ministry (Sulistianingsih & Pujiono, 2018). While such policies are welcomed, serious monitoring systems and implementation by relevant agencies are crucial for ensuring the sustainability of the batik industry in Indonesia.

Government policies have generally been supportive of stakeholders in the batik industry. The regulations comprise stated that business sectors can be entered by medium-sized and large enterprises. It also identifies certain sectors that are exclusively reserved for small businesses, provided they form partnerships with larger companies. Small-cap batik entrepreneurs benefit significantly from this approach, as it allows them to sustain and expand their businesses through the partnership program (Manurun et al., 2018). Nevertheless, Sulistianingsih & Pujiono

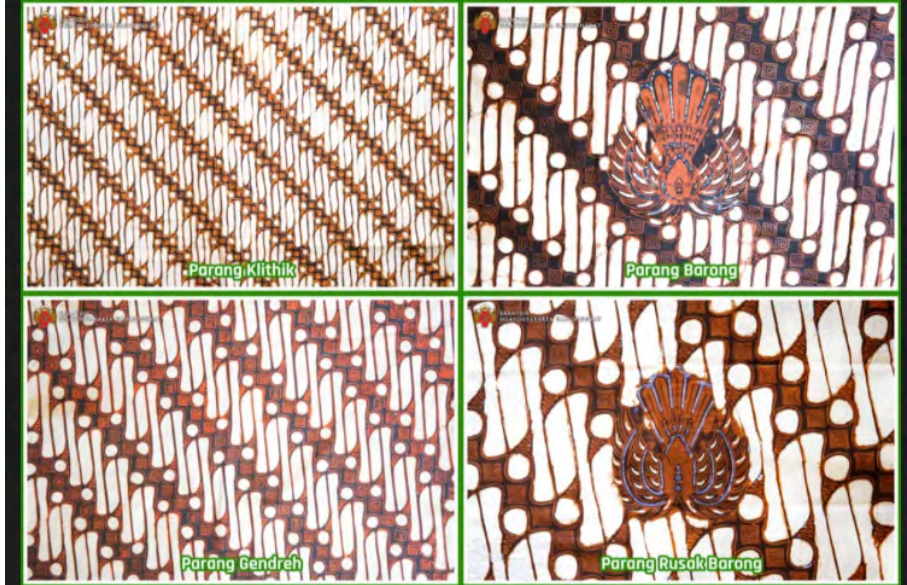
(2018) claimed that “there has not been any policy from the Indonesian government that supports Indonesia’s batik products to be able to compete in the international arena until recently.” This claim raises questions about the effectiveness of the Indonesian government’s ongoing efforts to revitalize batik both locally and internationally.

Indonesian Batik Production Efforts

Generally, batik production involves two major techniques: hand-drawn and batik stamp. These techniques are commonly practiced by local craftsmen everywhere. Furthermore, the techniques differ in terms of tools used, production time, ability to deliver complex designs, product price, and volume of output (Syed Shaharuddin et al., 2021). Both techniques require skilled human resources to produce high-quality products for commercial purposes. However, a persistent shortage of skilled artisans in countries such as Indonesia and Malaysia poses a threat to the industry’s competitiveness. The batik production techniques can be quite impressive, particularly the hand-drawn technique, which involves drawing wax designs on the fabric by applying molten wax onto the fabric through a spout and small cup made of copper or brass, which are connected to a wooden handle called *canting*. This tool consists of a small cup and a spout attached to a wooden handle, with the cup serving as a wax reservoir. Copper, being a superior conductor of heat compared to brass, helps maintain the wax in a molten state for a longer duration, thus enhancing the efficiency of the waxing process.

Meanwhile, the batik stamp technique is unique in its production process. In this method, a metal block immersed in melted wax is used to impress the batik design motif onto the fabric (Syed Shaharuddin et al., 2021). Logically, the demand for hand-drawn batik is higher compared to batik stamp due to its unique designs made by the craftsman. In addition, batik design and motifs play a pivotal role in attracting people to the products. The batik designs and motifs of Indonesia can be influenced by various aspects of social, cultural, religious, and historical factors, including past colonization (Febriani et al., 2023). It is a local belief that batik design motifs represent and manifest daily cultural and spiritual activities. For example, Indonesia’s cultural landscape is notably diverse, with around 630 ethnic groups residing across more than 3,000 islands. To be more precise, over 400 traditional and contemporary batik themes can be seen in Yogyakarta, which the World Craft Council has named the city as City of the World Batik. Because of this diversity, classifying batik motifs can be difficult (Syed Shaharuddin et al., 2021).

Mastering different types of batik design motifs is challenging, especially for someone without a genuine interest in batik craftsmanship and design. In Indonesia, batik with various motifs is widely available to Indonesians and often reflects local culture and heritage (Figure 3). One of the most recognizable motifs is *parang*, which was typically worn by the royal family, as illustrated in Figure 3. Today, these once-exclusive designs are worn by the general public, often without awareness of their symbolic meanings. While the older generation still strives to preserve the cultural significance of each motif, it remains uncertain how long this tradition will sustain.

Figure 3*Examples of Batik Motifs (Batik Keraton)*

Note. Source: Motif Batik, 2018.

Performance in National GDP

The batik industry in Indonesia, which is largely driven by SMEs, continues to thrive despite facing serious structural problems. The industry significantly contributes to the state's foreign exchange earnings. For instance, batik exports to the United States, which is among the major market for Indonesia's batik, have increased substantially since 1999, particularly after UNESCO's recognition of Indonesian batik (Siswanto et al., 2022). Moreover, Indonesia is regarded as a global leader in the batik industry in which the industry plays a vital role in the national economy and contributes significantly to the country's GDP (Siswanto et al., 2022).

The Indonesian Ministry of Industry reported that the creative industry earned Rp 642 trillion (USD 39,387,984,000.00), which accounted for 7.05% of Indonesia's GDP in 2015. The three main sectors contributing to this figure were culinary at 34.2%, followed by fashion at 27.9%, and craft at 14.88%. Additionally, the creative industry ranked as the fourth largest sector in national employment, employing 10.7%, or 11.8 million people (Hasan et al., 2023). These figures show that youth involvement in craft or batik industry is significantly essential in ensuring sustainable development of the industry. Youths are the next leaders in Indonesia, especially in important economic sectors like batik and other creative industries. Therefore, youth empowerment in the industry must be prioritized, particularly through policies that address employment challenges and promote engagement in high-value industries like batik. Such involvement not only provides youths with entrepreneurial opportunities but also contributes directly to national economic growth.

Business Scales

Batik in Indonesia has paved the way for the growth of SMEs and has contributed significantly to the national GDP as well as human development. When examining the evolution of the micro-enterprise-scale batik industries in Indonesia, Supheni et al. (2023) reported that, as of 2021, there were 1,794 micro-enterprise-scale batik industries, 815 small-scale industries, and 342 medium-sized businesses (Table 2). This indicates that the majority of the Indonesian batik sector (60.79%) operates on a micro scale. East Java alone hosts up to 176 batik enterprises. The continued expansion of these businesses is expected to enhance living standards, particularly at the local level. Thus, batik functions not only as a vital economic commodity but also as an instrument for human development in Indonesia.

Table 2
Number of Batik Industries by Business Scale in Indonesia in 2021

No.	Business Scale	Number of Industries	Percentage
1.	Micro	1,794	60.79
2.	Small	815	27.62
3.	Intermediate	342	11.59
Total batik industry in Indonesia		2,951	100.0

Note. Source: adapted from Supheni et al., 2023, p. 111.

Interestingly, the batik industry in Indonesia experienced notable growth during COVID-19. This is because batik was recognized as a significant material in mask production, which led to a surge in demand and contributed to the industry’s expansion (Nursalim et al., 2023). As a result, the business potential for batik increased tremendously during COVID-19 due to the rising demand for masks made from batik (Supheni et al., 2023).

Import and Export Status

According to Supheni et al. (2023), Indonesia exported batik product worth USD 604 million. This reveals the significant potential of batik to contribute to the national economy and enhance national competitiveness in business activities. As a subsector of the creative industry in Indonesia, the batik industry holds substantial value in terms of import and export status. The Ministry of Industry reported that the value of batik exports was USD 156 million in 2015 (Table 3). Furthermore, another government report revealed that the export value of batik products reached USD 51.5 million until October 2017. However, by 2019, batik exports generally showed a declining trend. Exports of batik were USD 52.44 million in 2018, reflecting a 10.3% decrease compared to the previous year. In contrast, batik exports totaled USD 17.9 million during the first semester of 2019. In comparison to the previous year, the value of the decline reached 61% in 2017, marking the most notable drop. Batik was exported to countries such as the United States, Europe, and Japan (Sulistianingsih & Pujiono, 2018). As a result, Indonesian batik exports have gained recognition as a significant factor in national foreign exchange. It is a positive sign that the batik industry continues to perform and sustain itself in the long term.

Table 3
The Batik Exports Rates

Year	Export, USD million
2015	156.0
2016	149.9
2017	58.46
2018	52.44
2019	17.9

Note. Source: Sari et al., 2020.

Challenges to Sustainable Development

The batik industry is not only a cultural symbol of Indonesia but also a crucial economic sector. It contributes significantly to the country's GDP and provides employment opportunities, particularly for women in rural areas. According to Istiqomah et al. (2021), the batik industry supports local economies and fosters community development. The incorporation of traditional craftsmanship with modern techniques has enhanced the marketability of batik products, both domestically and internationally (Xiao, 2024). Sustainable development within the batik industry involves maintaining economic viability while preserving cultural heritage and minimizing environmental impact. The industry observes several United Nations Sustainable Development Goals (SDGs), such as decent work and economic growth (SDG 8), responsible consumption and production (SDG 12), and climate action (SDG 13). For instance, initiatives to use natural dyes and eco-friendly production methods are steps towards achieving these goals (Gunawan et al., 2022).

Despite its contributions, the batik industry faces several challenges especially in advancing sustainable development. One significant issue is environmental pollution. Traditional batik production involves the use of synthetic dyes and chemicals, which can result in hazardous waste and water pollution. Therefore, Sirait (2018) highlighted the need for improved waste management systems and the adoption of environmentally friendly dyeing processes. Another challenge is the preservation of traditional techniques and the welfare of artisans. The industry is experiencing a shift towards mechanization and mass production, which can undermine the value of handcrafted batik and displace skilled artisans. This transition poses a threat to cultural heritage and the socioeconomic fabric of communities reliant on traditional batik production (Suci et al., 2024). Additionally, global market competition and fluctuating demand present economic challenges. Batik producers must innovate and adapt to changing consumer preferences while maintaining the authenticity and quality of their products. This requires substantial investment in technology and marketing, which may not be feasible for small-scale producers (Syed Shaharuddin et al., 2021).

Another issue related to sustainable development in the batik industry is the use of sustainable raw materials. There is a growing emphasis on sourcing eco-friendly raw materials, such as organic cotton and natural dyes, to reduce the industry's

environmental footprint. However, the limited availability and high cost of these materials remain as barriers for advancing such efforts. A. Handayani et al. (2025) asserted that a collaborative approach involving government support, industry partnerships, and consumer awareness is essential to overcome these challenges. Moreover, the lack of access to education and capacity-building opportunities also hampers progress toward sustainability. To address the issue, programs that focus on sustainable production techniques, business management, and market access are vital in empowering artisans to thrive in a competitive environment while adhering to sustainable principles (Prasetyo et al., 2022).

Table 4 provides a comprehensive summary of the key challenges currently faced by the batik industry in Indonesia, synthesized from relevant literature and reports. These challenges range from human capital issues, such as declining interest among youth and weakened intergenerational knowledge transfer, to structural and environmental concerns, including limited access to modern technology, unsustainable production practices, and inadequate policy enforcement. Each challenge is supported by specific academic or institutional references, thereby reinforcing the validity of the issues identified. This table serves to complement and expand upon the overview previously presented in Figure 1 by offering a more detailed and citation-supported perspective. It also provides the foundation for the scenario assessment and the proposed revitalization strategies discussed in the subsequent sections.

Table 4
Research Studies on Key Issues in the Batik Industry in Indonesia

Issue	Study Reference
Declining interest among younger generations	Sari et al. (2020); Steelyana (2012)
Lack of intergenerational knowledge transfer	Manurung et al. (2018); Rofianto et al. (2021)
Environmental pollution from traditional production processes	Poon (2020); Susanto et al. (2017)
Limited access to modern technology and digital tools	Darmawan & Hidayat (2023); Shaari (2015)
Weak integration of sustainability practices	W. Handayani et al. (2024); Gunawan et al. (2022)
Inadequate government policy implementation and monitoring	Supheni et al. (2023); Nugroho et al. (2022)
Low competitiveness in international markets	Mulyani et al. (2022); Hardjati et al. (2020)
Insufficient training and skill development programs	Prasetyono et al. (2019); Friskadewi & Setiadi (2020)
Limited financial support for SMEs	Istanti & Linarki (2021); Rita (2019)
Fragmented market access and poor branding strategies	Dwimahendrawan et al. (2023); Suhartini et al. (2021)

The batik industry in Indonesia plays a pivotal role in promoting sustainable development, though it faces significant challenges. Addressing environmental pollution, preserving traditional techniques, and overcoming economic hurdles are

critical to ensuring the industry's sustainability. Future research should focus on developing innovative solutions and fostering collaboration among stakeholders to support the batik industry's sustainable growth. With concerted efforts, the batik industry can continue to be a symbol of cultural heritage and a catalyst for sustainable development in Indonesia.

Conclusion and Implications

This study highlights the existing policies on batik enhancement and its sustainability, supported by evidence from secondary sources such as previous studies, articles, government reports, and statistics. It also positions revitalization as a holistic process encompassing the rejuvenation of declining artisan engagement, enhancement of eco-friendly production, strengthening of policy frameworks, and repositioning of batik as a viable economic sector in both domestic and international markets. By exploring the prospects of the batik industry in Indonesia from a scenario perspective, the study found that batik is not only a national identity for Indonesia but also receives significant recognition at both national and international levels. This acknowledgment presents an opportunity to preserve its cultural heritage.

The Indonesian government has implemented several initiatives to promote and protect the batik industry, including local policies and a batik certification program. Additionally, enforcement activities such as copyright protections, trademarks, patents, industrial designs, and geographical indications are being employed to safeguard batik designs. The study also examined Indonesian batik production techniques and how each design represents different identities, ethnicities, areas, beliefs, traditions, and cultures in Indonesia.

Despite the batik industry in Indonesia being competitive on a global level and contributing significantly to the national economy and GDP, it faces several challenges. Small-scale batik businesses often struggle with competition and a lack of capital. Efforts toward sustainable development are further constrained by environmental degradation resulting from industrial waste and a general lack of awareness among artisans and business owners regarding sustainable practices. In addition, the industry also faces global competition, and there is a declining interest among the younger generation to continue the batik tradition.

This study employed a qualitative content analysis of scholarly articles, policy documents, and government reports to explore the current scenario of the batik industry. This approach allowed the researchers to systematically extract and interpret key themes related to policy effectiveness, production dynamics, and sustainability challenges. As such, the study not only contributes to the understanding of Indonesia's cultural economy but also offers practical insights for revitalizing traditional industries through integrated, evidence-based strategies. Future efforts should prioritize cross-sector collaboration and support for eco-friendly innovation, especially among youth and micro-enterprises. In doing so, the batik industry can be sustainably positioned within Indonesia's national development agenda and the broader framework of global Sustainable Development Goals.

This study has several important implications:

1. **Policy Makers:** This study examines the current state of the batik industry, providing a basis for policymakers to redesign or review existing policies to preserve and enhance the competitiveness of Indonesia's batik industry, both nationally and internationally. For example, policymakers could consider providing financial incentives and grants for small-scale batik producers to help them scale their operations and compete more effectively. Additionally, policies could focus on promoting eco-friendly Batik production methods to mitigate environmental impact.
2. **Academic Contribution:** The study contributes to the existing body of knowledge by offering an in-depth analysis of the batik industry in Indonesia, with a particular focus on policies, sustainability, and production techniques. For instance, this research can serve as a reference for future studies examining the economic and cultural impacts of traditional crafts in developing countries. It can also be used to develop educational curricula that include batik production techniques and the significance of preserving cultural heritage.
3. **Public Awareness:** The findings of this study are crucial for improving public knowledge, including producers, designers, and consumers, about the batik industry in Indonesia. Understanding the uniqueness and current state of the industry is essential for fostering appreciation and support, ensuring the industry remains sustainable and resilient over time. For example, public campaigns and educational programs can be developed to inform people about the environmental impact of batik production and encourage the adoption of sustainable practices. Furthermore, showcasing success stories of young entrepreneurs in the batik industry could inspire the younger generation to engage in and carry forward this cultural tradition.

In conclusion, while the batik industry in Indonesia holds a dominant position in the global market and significantly contributes to the national economy, addressing its challenges is crucial for its sustainable development and continued cultural significance. By implementing targeted policies, contributing to academic discourse, and raising public awareness, the batik industry can continue to thrive and maintain its important role in Indonesia's cultural and economic landscape.

Limitations and Future Research Directions

Despite the comprehensive insights offered in this study, several limitations must be acknowledged. First, the research primarily relied on secondary sources such as journal articles, policy documents, government reports, and official websites. While these sources provided valuable macro-level insights into the batik industry's current scenario, policies, and challenges, they did not fully reflect the lived experiences, detailed perspectives, or daily operational realities of batik artisans, business owners, and policy implementers at the grassroots level.

Secondly, the absence of primary data such as interviews, focus group discussions, or survey findings limited the depth and contextual specificity of the study. For instance, issues such as the emotional connection of artisans to their

craft, intergenerational knowledge transfer, or resistance to adopting sustainable production methods could not be thoroughly explored. Additionally, secondary data may contain outdated or generalized information that does not capture recent shifts in policy implementation or market dynamics, especially in a post-COVID-19 context.

Third, the study's scope was national-level and largely descriptive. It did not include regional or provincial variations, although the batik industry across Indonesia is highly diverse in terms of production techniques, motif traditions, access to markets, and levels of government support. A more localized lens could reveal region-specific challenges and opportunities that are otherwise masked in a national-level assessment.

Future research should therefore consider adopting a mixed-methods approach to gain deeper, contextualized understanding of the industry. Qualitative techniques such as ethnographic fieldwork, in-depth interviews, and participatory observation can enrich the understanding of batik's cultural significance, sustainability practices, and community-level innovation. Quantitative methods, such as economic impact assessments or spatial analysis using GIS, can complement these findings by quantifying batik's contribution to employment, income, and regional development.

In addition, longitudinal studies are recommended to assess how ongoing policy interventions, educational initiatives, and market trends influence the batik industry over time. Comparative studies with other traditional or creative industries, both within Indonesia and in other Southeast Asian countries could also be beneficial in benchmarking best practices and identifying cross-cultural lessons in heritage preservation and sustainable development. By acknowledging these limitations and proposing avenues for future inquiry, this study aims to lay the foundation for more targeted and inclusive strategies to revitalize the batik industry in Indonesia in ways that are culturally, economically, and environmentally sustainable.

References

Akhir, N. H. M., Ismail, N. W., Said, R., & Kaliappan, S. R. (2015). Traditional craftsmanship: The origin, culture, and challenges of batik industry in Malaysia. In R. Omar, H. Bahrom, & G. de Mello (Eds.), *Islamic perspectives relating to business, arts, culture and communication: Proceedings of the 1st ICIBACC 2014* (pp. 229–237). Springer. https://doi.org/10.1007/978-981-287-429-0_22

Darmawan, D., & Hidayat, R. (2023). Pengaruh Displin dan Motivasi Kerja terhadap Produktivitas dan Implementasi pada Kinerja Karyawan PT. Nippon Paint Indonesia (Studi Khusus Bagian Painting) [The influence of discipline and work motivation on productivity and implementation of employee performance at PT. Nippon Paint Indonesia (Special study of the Painting Division)]. *Jurnal Ilmiah Ilmu Pendidikan*, 6(9), 6653–6659. <https://doi.org/10.54371/jiip.v6i9.2810>

Devina, A., & Atrinawati, A. (2022). Jlamprang batik: Pekalongan cultural identity from natural resources in the environment. *E3S Web of Conferences*, 359, Article 04001. <https://doi.org/10.1051/e3sconf/202235904001>

Dwimahendrawan, A., Nugraha, A., & Irawan, D. (2023). Competitive advantage strategy batik creative industry. *Proceedings of the International Conference on Economics, Business and Information Technology*, 4, 156–161. <https://doi.org/10.31967/prmandala.v4i0.743>

Dwinugroho, T. B., Kumarajati, D. Y. H., Kurniawanti, & Hapsari, Y. T. (2019). Design and implementation of CNC (computer numerical control) based automatic stamp batik machine program with automatic gripper using Mach 3. *Journal of Physics: Conference Series*, 1254, Article 012069. <https://doi.org/10.1088/1742-6596/1254/1/012069>

Farhana, K., Mahamude, A. S. F., & Mica, M. T. (2022). The scenario of textile industry in Malaysia: A review for potentiality. *Materials Circular Economy*, 4, Article 20. <https://doi.org/10.1007/s42824-022-00063-5>

Febriani, R., Knippenberg, L., & Aarts, N. (2023). The making of a national icon: Narratives of batik in Indonesia. *Cogent Arts & Humanities*, 10(1), Article 2254042. <https://doi.org/10.1080/23311983.2023.2254042>

Friskadewi, N., & Setiadi. (2020). The challenges of batik workers: A case studies at Gumelem Banjarnegara. In *Proceedings of the International Joint Conference on Arts and Humanities (IJCAH 2020)* (pp. 1296–1302). Atlantis Press. <https://doi.org/10.2991/assehr.k.201201.219>

Gatut, B., & Aryanto, V. (2010). Batik industry of Indonesia: The rise, fall and prospect. *Studies in Business and Economics*, 5(3), 156–170.

Gunawan, A. A., Bloemer, J., van Riel, A. C., & Essers, C. (2022). Institutional barriers and facilitators of sustainability for Indonesian batik SMEs: A policy agenda. *Sustainability*, 14(14), Article 8772. <https://doi.org/10.3390/su14148772>

Handayani, A. P., Andreas, H., Pradipta, D., & Sarsito, D. A. (2025). Cultural heritage and environmental challenges on conservation process of batik: Ground water and subsidence in Pekalongan. *International Journal of Conservation Science*, 16(1), 71–82. <https://doi.org/10.36868/IJCS.2025.01.04>

Handayani, W., Suwarno, D., & Widianarko, B. (2024). Challenges on water footprint (WF) accounting of batik production: A reflection from the study on batik SMEs in Jarum Village, Klaten Regency, Indonesia. *Asian Journal of Water, Environment and Pollution*, 21(2), 1–6. <https://doi.org/10.3233/AJW240015>

Hardjati, S., Prathama, A., & Wahyudi, K. E. (2020). Determinant strategies in empowering batik craftsmen to increase competitiveness. *Journal of Social Science Research*, 16, 93–98. <https://doi.org/10.24297/jssr.v16i.8878>

Hasan, A., Nurhasanah, N., Mardhani, M., & Aswadi, K. (2023). Creative industries and regional economic growth: Time series evidence from Aceh, Indonesia. *Journal of Economics Education and Entrepreneurship*, 4(2), 74–80. <https://doi.org/10.20527/jee.v4i2.8312>

Indarti, S. (2021). The effects of education and training, management supervision on development of entrepreneurship attitude and growth of small and micro enterprise. *International Journal of Organizational Analysis*, 29(1), 16–34. <https://doi.org/10.1108/IJOA-09-2019-1890>

Indonesian Batik. (n.d.). UNESCO. <https://ich.unesco.org/en/RL/indonesian-batik-00170>

Istanti, L. N., & Linarki, M. D. (2021). Working capital of Kampoeng Batik Jetis Sidoarjo SMEs in East Java. *KnE Social Sciences*, 5(8), 333–340. <https://doi.org/10.18502/kss.v5i8.9385>

Istiqomah, N. M., Yunikawati, N. A., Priambodo, M. P., Puspasari, E. Y., Irdianto, W., Jabbar, M. A., & Sidi, F. (2021). Batik industry in Banyuwangi: Model of craftsmen community and prospects. In *Proceedings of the Sixth Padang International Conference on Economics Education, Economics, Business and Management, Accounting and Entrepreneurship (PICEEBA 2020)* (pp. 181–186). Atlantis Press. <https://doi.org/10.2991/aebmr.k.210616.027>

Khalili, S. S. M. (2018, June 25). Social media lifeline for block batik. *New Straits Times*. <https://www.nst.com.my/lifestyle/bots/2018/06/383745/social-media-lifeline-block-batik>

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>

Kristiana, S. P. D., Asih, A. M. S., & Sudiarso, A. (2023). Designing simulation to improve production efficiency of batik industry. *Simulation & Gaming*, 54(6), 730–759. <https://doi.org/10.1177/10468781231205667>

Manurung, R. T., Zulfikar, A., Sari, I. N., Kurniasih, N., Saddhono, K., Setiawan, Y. B., Murjainah, & Parwito. (2018). Internationalization of batik in the creative industry of Harajutik. *Advances in Social Science, Education and Humanities Research*, 203, 9–13. <https://doi.org/10.2991/iclick-18.2019.2>

Motif Batik Larangan Keraton Yogyakarta [Yogyakarta Palace's prohibited batik motif]. (2018, March 19). Karaton Ngayogyakarta Hadiningrat [Royal Palace of Yogyakarta]. <https://www.kratonjogja.id/kagungan-dalem/12-motif-batik-larangan-keraton-yogyakarta/>

Mulyani, S., Nurkamid, M., & Gunawan, B. (2022). Mewujudkan Akuntansi UKM Batik Bakaran Juwana Melalui Model Pembukuan Sederhana [Realizing the accounting of the Bakaran Juwana batik SME through a simple bookkeeping model]. *E-Dimas: Jurnal Pengabdian kepada Masyarakat*, 13(1), 14–19. <https://doi.org/10.26877/e-dimas.v13i1.4065>

Negara, T. (2018). Introducing values of local cultural through batik motifs as the identity of Surabaya city. *Advances in Social Science, Education and Humanities Research*, 173, 332–334. <https://doi.org/10.2991/icei-17.2018.88>

Nugroho, P., Damayanti, M., Artiningsih, A., Lestari, D., & Putri, N. R. (2022). Missing policy for supporting cultural heritage preservation of batik industry clusters in Barlingmascakeb Region, Indonesia. *IOP Conference Series: Earth and Environmental Science*, 1082, Article 012017. <https://doi.org/10.1088/1755-1315/1082/1/012017>

Nursalim, A., Sobandi, B., & Sya'bany, D. M. (2023). Batik mask manufacturing technology as an appearance equipment and for the prevention of the spread of Covid-19. *Journal of Engineering Science and Technology*, 18(3), 1775–1790.

Poon, S. (2020). Symbolic resistance: Tradition in batik transitions sustain beauty, cultural heritage and status in the era of modernity. *World Journal of Social Science*, 7(2), 1–10. <https://doi.org/10.5430/wjss.v7n2p1>

Prasetyo, P., Sulaiman, A. I., & Prastyanti, S. (2022). Educational communication in learning batik as preservation of local wisdom products for the young generation. *Technium Education and Humanities*, 2(3), 1–15. <https://doi.org/10.47577/teh.v3i1.7615>

Prasetyono, H., Kurniasari, D., & Desnaranti, L. (2019). Evaluation of the implementation of Batik-skills training program. *Research and Evaluation in Education*, 5(2), 130–143. <https://doi.org/10.21831/reid.v5i2.23918>

Rita, M. R. (2019). Financial bootstrapping: External financing dependency alternatives for SMEs: Bahasa Inggris. *Jurnal Ekonomi dan Bisnis*, 22(1), 83–100. <https://doi.org/10.24914/jeb.v22i1.2335>

Setyo, J., Paramita, R. W. D., & Sulistyan, R. B. (2021). Exploration community empowerment of Lumajang typical batik enterprises for culture preservation. *International Journal of Entrepreneurship and Business Development*, 4(3), 351–355. <https://doi.org/10.29138/ijebd.v4i3.1392>

Sirait, M. (2018). Cleaner production options for reducing industrial waste: The case of batik industry in Malang, East Java-Indonesia. *IOP Conference Series: Earth and Environmental Science*, 106, Article 012069. <https://doi.org/10.1088/1755-1315/106/1/012069>

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), 39–48. <https://doi.org/10.15587/1729-4061.2021.244137>

Susanto, D., Isharyadi, F., & Ritonga, M. (2017). Manfaat Ekonomi Penerapan Standar Pada Usaha Kecil Menengah Menggunakan ISO Methodology [Economic benefits of standards on small medium enterprise using ISO Methodology]. *Jurnal Standardisasi*, 19(1), 25–38. <https://doi.org/10.31153/js.v19i1.411>

Ramlan, K. (2019). Batik as a site for performing national identity: A comparative critical discourse analysis. In *The Second International Conference on Malay Language Teaching, Literature and Culture*, Goethe University of Frankfurt, 2019, 25–26 March (pp. 888–903). Faculty of Educational Studies, Universiti Putra Malaysia.

Razali, H. M., Ibrahim, M., Omar, M., & Hashim, S. F. M. (2021). Current challenges of the batik industry in Malaysia and proposed solutions. *AIP Conference Proceedings*, 2347, Article 020269. <https://doi.org/10.1063/5.0055651>

Redzuan, M., & Aref, F. (2011). Constraints and potentials of handicraft industry in underdeveloped region of Malaysia. *African Journal of Business Management*, 5(2), 256–260.

Rofianto, W., Haque, M. G., Sunarsi, D., Purwanto, A., & Kahpi, 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. <https://doi.org/10.8888/ijospl.v2i2.55>

Salleh, N. M., Othman, M., Badari, Z., Azahari, S., & Bohari, S. (2008, July 3–9). *Perception of problems and challenges faced by batik industry woman entrepreneurs in Malaysia* [Paper presentation]. 10th International Interdisciplinary Congress on Women, Madrid, Spain. <http://psasir.upm.edu.my/id/eprint/20902>

Sari, S. R., Arifan, F., Triyono, T., & Niswah, U. (2020). Value chain analysis on handmade batik products. *JEJAK: Jurnal Ekonomi dan Kebijakan*, 13(1), 230–241. <https://doi.org/10.15294/jejak.v13i1.21771>

Setiyartiti, L., & Rachmawatie, D. (2021). Batik industry development based on rural economic development: The case study of Gunungkidul Regency. *E3S Web of Conferences*, 316, Article 04013. <https://doi.org/10.1051/e3sconf/202131604013>

Shaari, N. (2015). Indigenous knowledge creativity in batik cultural product based on Kansei. In M. Plaisent & K. A. Mkhitarian (Eds.), *Proceedings of International Conference on Social Sciences and Humanities (ICSSH'15), 2015, May 5–6, Bali, Indonesia* (pp. 56–60). <https://doi.org/10.15242/ICEHM.ED0515056>

Siswanto, D. J., Dewi, E. S., Wahyudi, I., & Syah, T. Y. R. (2022). Analysis of factors affecting the export of batik in Indonesia. *Journal of Social Science*, 3(6), 2081–2089. <https://doi.org/10.46799/jss.v3i6.483>

Steelyana, W. (2012). Batik, a beautiful cultural heritage that preserve culture and support economic development in Indonesia. *Binus Business Review*, 3(1), 116–130. <https://doi.org/10.21512/bbr.v3i1.1288>

Suci, S., Wakhid, H. I., & Lailatul, H. N. (2024). Educating women of batik artisans on heritage tourism-environmental bases. *BIO Web of Conferences*, 146, Article 01012. <https://doi.org/10.1051/bioconf/202414601012>

Sulistianingsih, D., & Pujiono, P. (2018). The protection of Indonesian batik products in economic globalization. *Advances in Social Science, Education and Humanities Research*, 192, 198–204. <https://doi.org/10.2991/aisl-18.2018.38>

Supheni, I., Olpah, H., Ambarwati, A., Nabila, A. J., & Novianti, G. E. (2023). Training and accompaniment innovation product superior and marketing. *Empowerment Society*, 6(2), 110–117. <https://doi.org/10.30741/eps.v6i2.919>

Syed Shaharuddin, S. I., Shamsuddin, M. S., Drahman, M. H., Hasan, Z., Mohd Asri, N. A., Nordin, A. A., & Shaffiar, N. M. (2021). A review on the Malaysian and Indonesian batik production, challenges, and innovations in the 21st century. *SAGE Open*, 11(3). <https://doi.org/10.1177/21582440211040128>

Widiarty, W. S. (2024). Legal protection of batik as a cultural heritage in Indonesia from an intellectual property rights perspective. *Journal of Humanities and Social Sciences Studies*, 6(3), 55–58. <https://doi.org/10.32996/jhsss.2024.6.3.6>

Widjajanti, K., Sugiyanto, E. K., Widyaevan, D. A., & Sari, A. R. (2023). Strategic choice development using SWOT analysis: Diversification strategy of batik creative industry in Blora, Indonesia. *Journal of Economic Education*, 12(1), 198–212.

Wuryasti, F. (2019, October 2). Industri Batik Punya Orientasi Ekspor [The batik industry has an export orientation]. *Media Indonesia*. <https://mediaindonesia.com/ekonomi/262983/industri-batik-punya-orientasi-ekspor>

Xiao, M. (2024). Innovative applications and market impact of Indonesian batik in modern fashion. *Studies in Art and Architecture*, 3(2), 62–66. <https://doi.org/10.56397/SAA.2024.06.13>