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Triple Helix Collaboration in the Creation and Development of Regional Excellent Products by the Hand-Painted Batik Craftsmen Group

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Abstract. Banten Province ranks 7th out of 10 provinces with the most batik industries in Indonesia. This position indicates that Banten batik has significant economic and cultural potential. However, the development of hand-drawn batik still faces various obstacles, including fluctuations in raw materials, limited marketing, a decline in the number of artisans, low skills in motif and dye development, and limited capital. However, Banten batik has historical uniqueness because its motifs are inspired by cultural artifacts and the history of the Banten Sultanate. The complexity of these issues and potentials demands the involvement of various actors and sectors. This research aims to identify triple-helix collaboration patterns among government, academic, and business actors in the creation and development of regional batik flagship products. The method used is a qualitative approach with descriptive analysis. The research results show that inter-sectoral synergy plays an important role in enhancing production capacity, design innovation, access to capital, and market expansion, thereby strengthening the competitiveness of Banten batik as a regional flagship product.

Keywords: Collaboration; Triple Helix; Handwritten Batik

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INTRODUCTION

Indonesia has cultural diversity, one of which is hand-drawn batik, which has become a small and medium-sized enterprise (SME) industry and a source of livelihood for the community (Rasyimah et al., 2008). The batik industry plays a very important role in the national economy, for example, from January to April 2023, the export value of batik and batik products was USD 26.7 million, with a target of reaching USD 100 million (Ayu et al., 2020). Handwritten batik craftsmanship has transformed the essence of batik from merely a craft into a civilization. (Wahyuni et al., 2012). The batik civilization referred to here is a way of life based on the values of batik materialism, from the production process to consumption and commodities (Mardiana et al., 2022).

Based on the data in figure 1, it shows that Banten ranks 7th out of 10 provinces with the highest number of batik industries in Indonesia. That figure already sufficiently indicates the existence of Banten batik on a domestic scale

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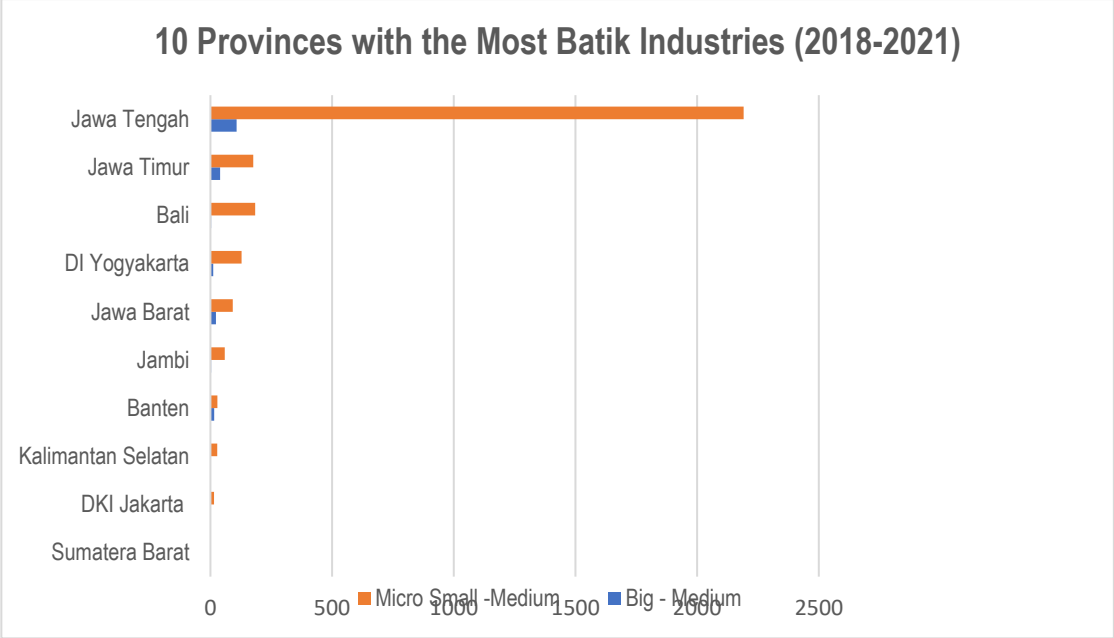

Figure 1. Batik Producing Provinces

Source: Databox-katadata, Posted 2024

The existing hand-drawn batik in Banten Province faces various issues, namely: First, fluctuations and limitations in the availability of raw materials, marketing restrictions, and a decrease in the number of batik artisans. Second, the limitations in knowledge, skills, motif development, and dyeing are among the factors that hinder the development of batik products. However, it is not impossible for the existence of hand-drawn batik in Banten to become an economic and cultural potential, a flagship product of the Banten Province. Batik Banten has distinctive and unique characteristics because, in addition to each motif telling a story, it also originates from artifacts such as pottery and the names of the Banten kingdom's rulers. (Kompas, 2011). In addition to its uniqueness, producing and marketing batik in the modern era today is something that must be taken into account. (Fitriani et al., 2023).

Based on the static data figure 2, the number of tourists in Banten is high, with 58 tourist destination points spread across the province. This suggests that business opportunities should be much more profitable. However, behind the business opportunities, there is another problem, which is the capital for the business. Therefore, the synergy of this business sector is very much needed to help micro-scale traders start businesses and provide job opportunities. The batik industry is the solution, as it is one of the most promising businesses. In Banten Province, hand-drawn batik, one of the cultural heritages with high economic value, especially when made innovatively and creatively, becomes an important strategy to encourage local economic growth

and enhance the competitiveness of SMEs. However, hand-drawn batik artisans face challenges such as limited access to technology, markets, and capital.

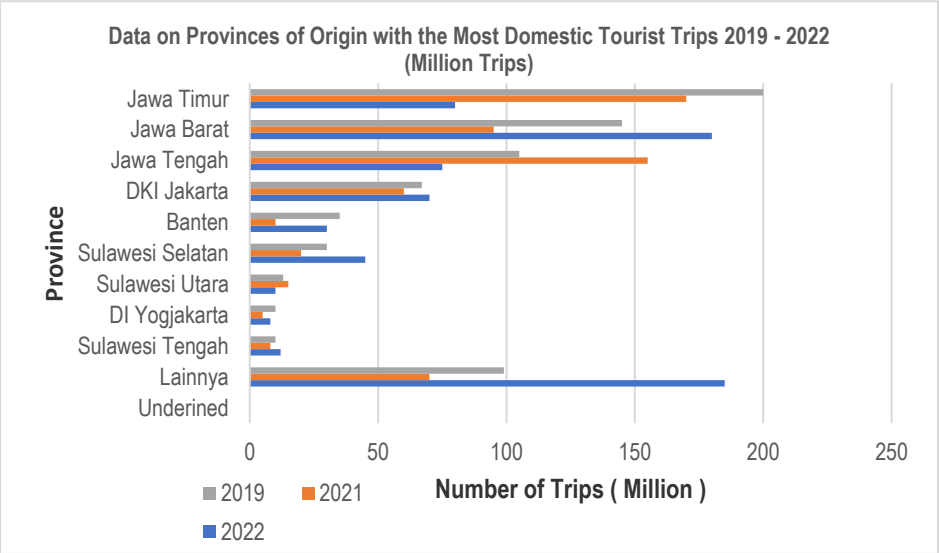

Figure 2. Tourist Arrival Data

Source: Tempo,2024

In Banten Province, hand-drawn batik, one of the cultural heritages with high economic value, especially when made innovatively and creatively, becomes an important strategy to encourage local economic growth and enhance the competitiveness of SMEs. However, hand-drawn batik artisans face challenges such as limited access to technology, markets, and capital. The Triple Helix concept, proposed by (Etzkowtz et al., 2008) offers a solution that collaborates through cooperation between academia, industry, and government. These three parties play an important role in building an innovation ecosystem that supports the development of small and medium-sized enterprises based on local culture. This study investigates how Triple Helix collaboration contributes to the creation and development of Banten's superior hand-drawn batik products.

The complexity of mapping these issues and potentials requires the involvement of multiple actors and sectors globally at this time. (Wening et al., 1981) so that the objective of this research program can be formulated, to increase the sales of hand-drawn batik using a triple helix collaboration, namely government, academia, and business. This study has become urgent to research as the Banten Provincial Government continues to promote and develop the history and cultural arts of Banten Province. The role of the business world is to support the government by providing capital support through investments to economic actors in the creative industry, and to act as mentors who provide knowledge and input to economic actors, while the role of academics is to support research in strengthening regional policies.

METHODS

This research method uses a qualitative approach, with the research locations in several hand-drawn batik centers in Banten Province, such as Lebak Regency and Serang City. With the determination of informants consisting of representatives from the local government (Disperindagkop), academics from partner universities, business actors and groups of batik artisans, and other supporting stakeholders (BUMDes, creative communities). The analysis stages involve steps such as the collection of both primary and secondary data. The primary data were obtained through direct interviews with a more in-depth approach to the designated informants, where the collected data consisted of words, images, and not numbers (Prijambodo et al., 2024). Second, the qualitative descriptive analysis in this study uses the model interactive Miles dan Huberman according to (Nugroho et al., 2019) namely with data collection, data reduction, data presentation, and model conclusion using Nvivo 12 software. Based on the subsequent data review to answer the questions in this research, this study uses the Triple Helix Collaboration pattern according to (Etzkowtz et al., 2008) in the Creation and Development of Superior Regional Products by the Handwritten Batik Craftsmen Group in Banten Province. the researcher uses NVivo 12 software to analyze computer-based data aimed at organizing, exploring, and finding patterns from unstructured data such as interview transcripts, field notes, and other supporting documents. The analysis process is carried out through stages such as Transcription and Data Import, Thematic Coding, Query and Visualization, Conclusion and Interpretation.

Using the thematic coding table generated by NVivo 12, the analysis results show six main themes that reflect the dynamics of Triple Helix collaboration in the development of hand-drawn batik in Banten Province. These themes include the role of the government, the role of academics, the role of entrepreneurs, product innovation, barriers to cooperation, and economic and social consequences. Each theme consists of sub-themes that describe the roles and challenges faced by each party involved. For example, the government provides facilities, academics provide knowledge, and businesses engage in digital marketing. The use of natural dyes and design innovations became strengths in product development, but poor coordination and digital literacy became issues. These results underscore the importance of synergy among actors and demonstrate that NVivo 12 can be effectively used to systematically organize and analyze qualitative data).

RESULTS AND DISCUSSION

By considering the aforementioned issues and addressing the research objective, which is to create and develop a hand-drawn batik business using the triple helix collaboration concept

(Wibowo et al., 2020). According to the Triple Helix concept developed by (Etzkowtz et al., 2008) the image above shows the development of relationships between the three main actors in the innovation system: government, university, and industry. The concept explains how collaboration among actors evolves from the simplest form to a complex and continuously changing synergistic model. In the first image, it shows the Static Model, where the three actors work separately and are not connected. In this model, the government only acts as a regulator, and universities only engage in education and research. On the other hand, the industry focuses on business, economics, and production. Because there is no relationship or coordination among the actors, innovation does not develop cooperatively.

Furthermore, the illustration shows the Laissez-Faire Model, which is a type of relationship that is beginning to open up between the three parties, but remains disorganized and selfish. In this model, each actor recognizes the importance of cooperation, but the interactions that occur are unstructured and limited. For example, industry and universities can collaborate on specific research projects. However, the government is not actively involved as a policy facilitator. In the same way, the government can support MSME programs but not link them to the creative or academic industries. There is no synergy in vision, roles, and goals, so the potential for collaboration is not maximized.

The Triple Helix model, which demonstrates ideal cooperation, is the third model presented. The government, universities, and industry are closely linked in this model. The three not only perform their traditional tasks but also contribute to innovation. Universities, for example, function not only as places of learning but also as business incubators and partners in applied research. The government not only makes regulations; they also encourage cooperation and build infrastructure. while the business sector participates in the process of research and development of knowledge-based products. According to this model, roles and tasks can be adjusted according to the needs and common goals in a dynamic innovation environment.

Therefore, this illustration provides a clear picture of how the relationships between actors have shifted from an isolated model to a mutually reinforcing collaborative model. The Triple Helix model becomes an appropriate framework to be applied in the context of developing regional flagship products such as hand-drawn batik in Banten Province. The development of batik does not only rely on artisans, but also requires research support from universities and government policies that recognize the product. Innovation, business sustainability, and the enhancement of local product competitiveness at the national and international levels will be driven by this integrated cooperation.



Figure 3. Triple Helix Strategy

(Source: Institute of Reasoning and Research, 2025)

The three main actors of innovation academics, the business world, and the community collaborate to build an innovation model that impacts societal welfare. This model is illustrated below. The three actors achieve what is shown at the core of the diagram: knowledge and technology transfer (Knowledge & Technology Transfer), user needs (User Needs), and economic benefits. Through preparatory activities such as applied research, design, and information technology, academics assist in the knowledge transfer process. The business world helps produce goods and services that are beneficial to society, while the community provides feedback and real needs that drive education and business. In other words, sustainable innovation must stem from the needs of society and be actively supported by the industrial sector and higher education institutions. The image above also explains the concept of the Triple Helix by depicting the community as an important component in building a socially oriented and responsive innovation ecosystem. At the grassroots level, the community, which consists of local organizations, community groups, and local governments, is responsible for identifying needs and problems. Furthermore, this information is used by academics to conduct more contextual and relevant research, and by businesses to create goods and services that are truly needed. According to this model, not only technology and the market determine the success of innovation, but also the active involvement of end users. This method improves the quality of life for society and encourages economic growth.

The synergy of these three sectors is the principle of the three innovation requirements in the relationships among actors in the triple helix model. The government acts as an actor that

influences the control of industrial movement and the economy through various policies. The second requirement for business is the existence of a laissez-faire model. The third requirement is the presence of a hybrid triple helix, which is a combination of roles among the three involved actors (Mardiana et al., 2022). The three actors include indicators such as inspiration, challenges, competence, support, commitment, excellence, creativity, ideas, and skills in producing competitively valuable economic products (Wibowo et al., 2020).

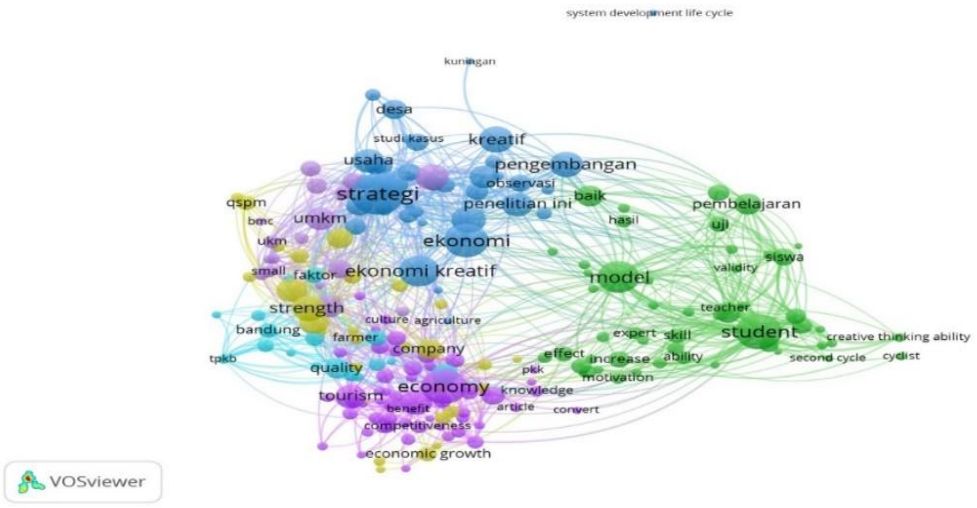

Figure 4. State Of The Art
(Source: Article processed using VOS Viewer, 2025)

Based on the search using the Publish or Perish application, there are 1000 articles visualized through the VOS Viewer application with the keyword Creative Economy. The results show that there are several studies grouped as follows: first, economic improvement; second, development strategy processes; third, analytical preparation on potential growth opportunities; fourth, support and monitoring of business growth opportunities implementation. From several previous studies, the researcher observes that there has not yet been a specific study on the development of regional flagship products focusing on triple helix collaboration to develop businesses among batik craftsmen.

Batik Banten is an expression of local culture that not only presents visual beauty but also reflects the history, noble values, and identity of the Banten community. This heritage has great potential for creative economy if managed with a collaborative approach. According to (Firdaus, 2024) the preservation of Batik Banten is important for maintaining cultural values while also promoting the strengthening of the regional economy. In this context, the Triple Helix model developed by Loet Leydesdorff and Henry Etzkowitz becomes relevant because it emphasizes

the interaction of three main sectors: academia, industry, and government in creating innovation. (Amral, 2024). This collaboration is not only functional but also complementary in creating an innovative space. As explained by (Andrias., 2021) the synergy between universities, batik practitioners, and the government has successfully created the development of batik tourism villages in Banyuwangi. That example can serve as a reference in the effort to develop Batik Banten, where cross-sector collaboration becomes the main foundation in creating competitive regional flagship products based on local wisdom.

The Triple Helix approach in the development of hand-drawn batik in Banten Province can provide strategic direction in strengthening the capacity of SMEs and the competitiveness of local products (Daulay, 2018). Asserts that the success of developing the creative economy sector is greatly influenced by strong integration between the academic world, the business sector, and the role of the government. A similar finding was also made by (Dewandaru, 2021). Which reveals that the process of intersectoral knowledge transfer can strengthen innovation among creative MSME actors. Visual merchandising or attractive product arrangement also plays a role in shaping positive consumer perceptions, as stated by (Anugrahayu,2023). In addition (Ramadini, 2016). Mentioning that cross-sector collaboration is very important to address the limitations in human resources and market access for small business actors (Gontor et al., 2023). Adding a dimension of character education through the synergy between educational institutions and religious values, which can create entrepreneurs who are not only innovative but also moral. By adopting the Triple Helix model, Batik Banten can be developed holistically, from production and marketing aspects to strengthening human resources and cultural values.

Various studies show that the success of batik preservation and development also depends on the role of local communities and product innovation (Ubaya,2022). Example of how the story of Panji is used as inspiration for batik design, which not only preserves cultural values but also adds an attractive aesthetic touch. According to (Nurjanah et al.,2021). The preservation of hand-drawn batik requires promotional support, training, and synergy between the community, tourism operators, and the government (Mardiana et al.,2022). Highlighting the importance of synergy between academics, business practitioners, and the government in promoting and developing competitive products in a dynamic market. The same thing was stated (Fitriani, 2023). That the implementation of the Triple Helix in the ikat weaving business in Bima encourages the improvement of innovation and business management through the active collaboration of the three sectors. In the context of the creative industry (Purnama, 2023). Stating that the synergy between Triple Helix actors can produce sustainable innovation. On the other hand (Wening et

al., 1981). Showing how hand-drawn batik in Dusun Giriloyo has managed to survive through the strengthening of the local community. Therefore, the development strategy for Batik Banten can be directed towards similar collaborations that emphasize culture-based innovation and community empowerment.

The development of small and medium enterprises (SMEs) such as hand-drawn batik in Banten Province requires a cross-sectoral collaborative approach to create an adaptive and innovative business ecosystem. According to (Tahwin et al., 2021) the synergy between stakeholders such as academics, entrepreneurs, and the government becomes an important foundation in creating business sustainability through training, policies, and market access. The Triple Helix Model proposed in The Triple Helix Model 2024 reinforces this idea by emphasizing that the integration of universities, industry, and government can enhance innovation capacity and encourage SMEs to compete in the global market. In addition, (Tiossi et al., 2023) underline the importance of intersectoral coordination in formulating innovative and sustainable development-oriented public policies. In the context of product promotion, the utilization of digital technology becomes an important strategy (Tranggono, et al., 2022). State that digital marketing integrated with social media can increase the reach of batik products and enhance cultural appeal interactively. Therefore, a collaborative and technology-based approach becomes an important foundation in developing batik SMEs as a regional flagship product. The application of the Triple Helix in the development of the batik sector has proven successful in several regions (Wahyuniet al., 2012). Shows that this approach is capable of integrating aspects of product innovation, tourism management, and sustainable local community empowerment, as seen in the development of the Tuban batik tourism village. A similar phenomenon is also reflected in the central role of Dusun Giriloyo as a center for traditional hand-drawn batik, which continues to thrive thanks to collaboration among actors and consistent institutional support (Wening et al., 1981). From a technological perspective (Wibowo et al., 2020). Explain that innovations such as the use of batik drying tools and digital marketing have increased production efficiency and expanded the market for batik SMEs. Furthermore (Wijayanti et al., 2021). Emphasize that the success of developing the creative industry, including batik, heavily depends on the synergy of Triple Helix actors in strengthening human resources and product competitiveness. Thus, cross-sector collaboration facilitated by the Triple Helix model becomes key in driving innovation, cultural preservation, and strengthening the local economy in Banten Province.

CONCLUSSION

This study shows that the creation and development of superior hand-drawn batik products in Banten province are greatly influenced by the triple Helix collaboration model, which involves elements of government, academia, and business. The synergy between these actors has proven to enhance the quality and variety of local hand-drawn batik motifs, expand market reach thereby increasing export levels, and boost the income of artisans. The involvement of academics in applied research has also resulted in innovations in design and the use of environmentally friendly natural dyes. Pemerintah juga memfasilitasi pengrajin untuk berpartisipasi dalam berbagai pameran dan mendukung proses legalisasi usaha. Although the use of the triple helix collaboration in the development of Banten hand-drawn batik shows promising results, there are still many challenges hindering cross-sector collaboration. The lack of synchronization in programs and the unintegrated implementation of agendas, limited infrastructure especially in rural areas where artisans live, and the lack of digital knowledge among artisans, particularly the older generation. This makes it difficult for them to access e-commerce platforms and promote themselves on social media independently. Secara keseluruhan, penelitian ini menunjukkan bahwa penciptaan produk berbasis budaya yang menampilkan batik tangan dari daerah tersebut memerlukan pendekatan multi-aktor yang terstruktur dan adaptif. The triple helix model is a strategic framework that can help all parties collaborate to maximize the potential of the local creative economy. Pemerintah membantu dengan kebijakan, menjaga regulasi, dan menyediakan akses ke modal. Businesses are responsible for downstream marketing processing and brand development, while academics drive innovation thru research and knowledge transfer. Collaborate effectively. these three components can transform the batik industry from merely a cultural heritage into a competitive local economic force. Oleh karena itu, komitmen jangka panjang diperlukan untuk mempertahankan kolaborasi ini, termasuk dalam perumusan peta jalan pengembangan batik regional, pendanaan berkelanjutan, dan penyediaan infrastruktur pendukung. These findings also indicate that this collaborative model can be replicated in other creative economy sectors with different local contexts, as long as it is adapted to the local social, cultural, and economic conditions. Batik Banten, thru the Triple Helix collaboration, can serve as a successful example of integrating culture and innovation in the development of the local economy based on local wisdom.

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