



INNOVATION OF WATER HYACINTH-BASED HANDICRAFTS: A STRATEGY FOR COMMUNITY ECONOMIC ENHANCEMENT IN BANJARMASIN

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ABSTRACT

Banjarmasin, frequently referred to as the "City of a Thousand Rivers," is endowed with substantial natural resources, among which is the prolific aquatic weed *Eichhornia crassipes* (water hyacinth). Although conventionally regarded as an environmental pest, this Research examines its viability as a sustainable raw material for local handicraft manufacturing, to stimulate economic advancement within the community. Using a qualitative methodology, data were collected through in-depth interviews and participant observation with the "Ilung Benawa" weaving collective. The study seeks to: (1) assess the economic implications of water hyacinth handicraft production; (2) pinpoint principal challenges in its development; and (3) advance strategic recommendations for sectoral growth. The findings reveal that water hyacinth is successfully converted into marketable goods—such as bags, hampers, and home décor—that provide supplementary income to local artisans, most of whom are women. Notwithstanding these benefits, persistent constraints include reliance on favourable weather for drying raw materials, limited product and colour diversification, and challenges in scaling production to meet broader market demand. Recommendations underscore the need for targeted governmental and non-governmental support through capital investment, technical training in dyeing and preservation, and the establishment of cooperative frameworks to bolster productive capacity and market penetration. In conclusion, this study affirms that valorising water hyacinth through handicraft production is a feasible dual-purpose strategy that advances both environmental stewardship and sustainable livelihoods, thereby aligning with the wider aims of the circular economy and community resilience.

Keywords: Water Hyacinth; Eco-friendly Handicrafts; Socio-economic Development; Sustainable Livelihoods; Circular Economy.

PRELIMINARY

Banjarmasin, the provincial capital of South Kalimantan, Indonesia, is distinguished by its expansive riverine ecosystem. Despite this wealth of natural resources, the city faces significant socio-economic challenges, including underemployment and an increasing labour surplus, exacerbated by ongoing rural-urban migration. Official data reveal that more than 56% of the working-age population is employed in formal labour or clerical positions, thereby constraining opportunities in the informal and creative economic sectors (BPS Kota Banjarmasin, 2024). Simultaneously, the rampant spread of water hyacinth (*Eichhornia crassipes*) in local waterways constitutes a persistent ecological issue, obstructing navigation, accelerating siltation, and disturbing aquatic ecosystems. In some areas of Java, water hyacinth is used as a raw material for making products such as handicrafts, fish feed, tofu processing tools, and more (Dira et al., 2025; Haetami et al., 2024).

Globally, repurposing invasive species into economic assets is emerging as a recognised sustainable development strategy (Patel et al., 2020). Water hyacinth, specifically, has been investigated for its potential in bioremediation, biofuel generation, and as a raw material for handicrafts and composite products (Rezania et al., 2015). In Indonesia, several regions have begun exploring its application in handicraft manufacturing, confirming its feasibility as a fibrous resource (Naninsih et al., 2024). In Banjarmasin, however, its utilisation remains incipient and predominantly confined to use as a soil conditioner.

This study is founded on the concept of the creative economy, in which value is generated from cultural assets, knowledge, and creativity, often through the use of locally sourced materials (UNCTAD, 2020). The pre-existing weaving proficiencies widespread among Banjarmasin's communities, traditionally employed with materials such as *purun* and rattan, furnish a foundational skill base adaptable to water hyacinth. This Research proposes that innovation using this plentiful 'waste' material can act as a catalyst for a nascent green industry.

Consequently, this study aims to: (1) critically evaluate the function of water hyacinth-based handicrafts in bolstering the economic resilience of Banjarmasin's communities; (2) pinpoint the technical, social, and market-centric challenges impeding the sector's progression; and (3) furnish evidence-based recommendations for policymakers, non-governmental organisations, and artisan collectives to cultivate a sustainable and scalable handicraft industry. This inquiry extends beyond mere economic scrutiny, contributing also to discourses on sustainable environmental stewardship and community-based adaptation strategies.

Handicrafts constitute a substantial component of the creative economy, merging cultural heritage with artistic expression and commercial enterprise. They are characterised as artefacts crafted by hand or with rudimentary tools, encapsulating both functional and aesthetic merit while echoing local identity (Rumisih, 2022). In developing nations, the handicraft sector serves as a crucial source of income, especially for women in rural and peri-urban areas, promoting entrepreneurship and safeguarding traditional artisanal skills (Littrell & Dickson, 2010).

Eichhornia crassipes ranks among the world's most invasive aquatic flora. Its unchecked proliferation inflicts considerable ecological and economic harm by deoxygenating water, blocking sunlight, and interfering with waterborne transport (Villamagna & Murphy, 2010). This plant is considered a weed because of its rapid growth, which can damage the aquatic environment (Faadhilah, 2019). Nonetheless, its cellulose-dense biomass presents

considerable potential for various applications. Contemporary Research underscores its utility in manufacturing paper, furniture, textiles, and handicrafts, thereby converting an ecological liability into an economic prospect—a tenet central to the circular economy model (Njoku et al., 2021). The conversion of water hyacinth into craft material generally entails harvesting, desiccation, splitting, and weaving the stems, a process that demands skill but necessitates minimal capital outlay.

The confluence of environmental management and livelihood generation is embodied in the 'green livelihoods' paradigm. Employing invasive species for handicraft production can support the attainment of multiple Sustainable Development Goals (SDGs), including SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 15 (Life on Land) (UNDP, 2022). Research in comparable contexts, such as the utilisation of water hyacinth for crafts in Makassar (Naninsih et al., 2024) and Surabaya (Amalia & Atmaja, 2019), demonstrates favourable effects on household earnings and female empowerment, notwithstanding the prevailing obstacles to scaling production and securing market access.

METHOD

This study employed a qualitative descriptive approach to gain an in-depth understanding of the practices, challenges, and perceptions of water hyacinth artisans. The Research was conducted with the "Ilung Benawa" weaving group, operating under the "Rumah Kreatif Delmi" community center in Banjarmasin. This group comprises approximately 100 members, primarily women, representing a key stakeholder in this emerging sector.

Data collection was carried out between January and March 2025 through two primary methods: (1) Semi-structured in-depth interviews with ten key informants, including group leaders, experienced weavers, and marketing coordinators; and (2) Participant observation, where researchers engaged in the crafting process to document the stages of material preparation, weaving, and finishing.

To ensure data validity and credibility, method triangulation was applied by cross-verifying interview data with observational notes and photographs of the production process (Djiwandono & Yulianto, 2023). Data analysis followed the interactive model by Miles et al. (2014), which involves three concurrent flows of activity: (1) Data Condensation: Interview transcripts and field notes were systematically coded and categorized into themes such as "economic impact," "production challenges," and "market strategies"; (2) Data Display: Organized matrices and narrative summaries were constructed to visualize relationships within the data; and (3) Conclusion Drawing/Verification: Emerging findings were continually

checked against the raw data and discussed among researchers to ensure interpretive consistency and theoretical saturation (Fiantika et al., 2022).

RESULTS AND DISCUSSION

The Ilung Benawa group has successfully innovated by processing water hyacinth stems into a range of durable, aesthetically pleasing products. The primary product line includes handbags, tissue holders, hampers, plate coasters, and placemats. Artisans have developed techniques to blend water hyacinth sourced from different locales—notably combining the harder stalks from Amuntai with the softer, greener stalks from Banjarmasin—to enhance product durability and visual appeal.

According to the weavers of Ilung Benawa, water hyacinths from different regions have distinct characteristics. In South Kalimantan, water hyacinth from Amuntai is known for its superior quality, with harder stalks, while water hyacinth from Banjarmasin has softer stalks but is greener. Ilung Benawa combines the two types of water hyacinth to create sellable products. These include bags, tissue holders, hampers, placemats, and more. Previous research suggests that using water hyacinth for crafting bags, sandals, baskets, and flower pots is an ideal solution for addressing ecological issues, producing high-quality products, and creating economic opportunities for local communities, thus improving their incomes (Amalia & Atmaja, 2019; Hasibuan et al., 2023; Naninsih et al., 2024).

The economic contribution is direct and measurable. Products are priced between IDR 75,000 and IDR 200,000 (approximately USD 5-13), with price determined by size, design complexity, and added accessories. For many weavers, this activity provides a crucial secondary household income, enhancing family economic resilience. This finding aligns with global evidence that micro-enterprises based on natural materials can significantly contribute to poverty alleviation and women's financial independence (Meagher, 2019).

Natural and logistical factors heavily Influence the production cycle:

1. **Raw Material Preparation:** The drying process is entirely weather-dependent, requiring several days of sunshine. The humid climate in Banjarmasin often prolongs this stage, creating supply chain bottlenecks.
2. **Product Diversification:** A major limitation is the lack of effective and safe dyeing techniques. Most products retain the natural beige colour of dried hyacinth, limiting their market appeal compared to more colourful handicrafts from other regions.
3. **Scalability and Labor:** Production is artisanal and time-intensive. Fulfilling large or bulk orders is a significant challenge due to the limited number of skilled weavers and the

manual nature of the work. The sector's growth is constrained by this inability to scale production efficiently.

These challenges resonate with findings from other studies on natural fiber crafts in Indonesia, which cite similar issues of production standardization, quality control, and reliance on informal, word-of-mouth marketing (Ernawati et al., 2021). Current marketing relies heavily on social networks and social media platforms (Facebook, Instagram), as well as participation in local exhibitions and bazaars. While this has generated a steady local customer base, it limits expansion to regional, national, or potential export markets. The lack of a cohesive brand identity, standardized quality packaging, and an online sales strategy further constrains growth.

CONCLUSION

This study demonstrates that water hyacinth-based handicrafts in Banjarmasin hold substantial promise for generating sustainable livelihoods and addressing local environmental issues. The activity empowers local women, utilizes a problematic invasive species, and contributes to the cultural creative economy. However, its potential is currently constrained by technical processing limitations, limited product diversification, and underdeveloped market linkages.

To transform this nascent activity into a robust green industry, a multi-stakeholder approach is recommended:

1. For Local Government (Pemda):
 - a. Facilitate Training Programs: Partner with universities and NGOs to provide technical workshops on natural dyeing, chemical-free preservation, product design, and quality standardization.
 - b. Provide Strategic Support: Offer micro-finance or grant schemes for equipment (e.g., solar dryers) and initial capital. Include water hyacinth crafts in local tourism and cultural promotion packages.
 - c. Establish a Processing Center: Create a communal facility for drying, storing, and dyeing raw materials to mitigate weather dependencies and improve efficiency.
2. For Artisan Groups (e.g., Ilung Benawa):
 - a. Strengthen Institutional Capacity: Form a more formal cooperative structure to manage orders, raw material procurement, and quality control collectively.
 - b. Develop a Digital Presence: Create a unified brand and e-commerce platform to reach wider markets. Invest in basic product photography and social media storytelling.

- c. Explore Product Innovation: Collaborate with designers to develop new product lines (e.g., home furnishings, office accessories) that cater to contemporary market trends.
3. For Future Research:
- a. Conduct lifecycle and market analysis to quantify the full economic and environmental impact.
 - b. Explore technical Research on improving the durability, colour fastness, and weave strength of water hyacinth fibers.

By implementing these recommendations, Banjarmasin can position itself as a leader in innovative, eco-friendly community enterprises, turning an environmental challenge into a story of economic resilience and sustainable development.

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