

IMPLEMENTATION OF INCREMENTAL INNOVATION IN TRADITIONAL WEAVING ARTISAN GROUPS TO INCREASE COMPETITIVENESS IN THE DIGITAL ERA

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Abstract

Traditional Sumatran woven fabrics have noble cultural value and significant economic potential, but local artisans often face obstacles, including limited product variety, slow capital turnover, and a narrow market reach. This cross-regional community service activity aims to apply the concept of incremental innovation as a strategy to strengthen the creative economy among the Songket weaving artisans groups in Lintau (West Sumatra), Sois carried out through an active, participatory approach comprising four main stages: needs assessment (FGD), a zero-waste-based product diversification workshop, branding management, and digital marketing via the internet in Palembang (South Sumatra), and Siak Weaving (Riau), without losing their cultural identity. The implementation is carried out through an active, participatory approach comprising four main stages: needs assessment (FGD), a zero-waste-based product diversification workshop, branding management, and digital marketing via e-commerce and social media platforms. The results of the activity showed a significant increase in artisans' skill in producing derivative products (by 85%), an increase in the efficiency of raw materials through patchwork (by 90%), and an expansion of market access independent of full dependence on mediators. This gradual and consistent innovation has proven to be effective in increasing the income of artisan groups while strengthening the resilience of the traditional weaving creative industry in the cross-provincial digital era.

Introduction

The traditional weaving craft industry in the Sumatra region, especially West Sumatra Songket Weaving (Lintau), South Sumatra Songket (Palembang), and Siak Weaving in Riau, is not just an economic commodity. Woven fabrics in these three regions are a manifestation of cultural identity, history, and philosophical values passed down from generation to generation. The manufacturing process is complicated, requires high precision, and takes weeks to months to produce a piece of original woven fabric of high artistic value at a relatively premium selling price.

However, the dynamic characteristics of the market demand adaptation without sacrificing the noble value of originality.

Amid the modernization and globalization of the textile industry, the traditional home-weaving industry faces complex, overlapping challenges across the three provinces. The entry of factory-made printed fabrics (woven patterned textiles) at much lower prices has eroded the market share of original handmade weaving. On the other hand, the characteristics of traditional woven products, which are generally sold as long sheets of fabric, limit their functionality. Most consumers buy woven fabrics only for traditional ceremonies, weddings, or certain formal events. This has direct implications for the slow sales cycle and business capital turnover for artisans at the grassroots level.

Analysis of Partner Situations and Problems in Three Regions

Through in-depth observations and pre-activity interviews with groups of weaving artisan partners in West Sumatra, South Sumatra, and Riau, the service team found three main root problems that hinder the development of the local creative economy:

- a) **Limited Variation and Product Stagnation:** Artisans in all three regions consistently produce only standard sheet fabrics. There has been no structured effort to process fabrics into more casual ready-to-wear products, such as bags, wallets, outerwear, or everyday accessories.
- b) **Waste Management:** The cutting process or weaving residues often leave small pieces of fabric (patchwork) with beautiful patterns. Due to skill limitations, the remaining high-value fabric is discarded or simply stacked without proper handling.
- c) **Middleman Dependence and Limited Digital Access:** Distribution channels in West Sumatra, South Sumatra, and Riau are still largely dominated by conventional middleman schemes. Artisans forgo the potential for optimal profit margins because they lack direct access to the end consumer on e-commerce platforms.

Incremental Innovation Approach

Given the characteristics of the weaving industry, which is rich in cultural values, the adoption of radical innovation—such as replacing non-machine looms (ATBM) with high-speed automatic looms—is strongly discouraged. This will actually kill the authentic value, aesthetics, and philosophical authenticity of Sumatran weaving itself. Therefore, the ideal approach is to implement *Incremental Innovation* (Arfah Piliang, Meutia, Bastian, 2025).

Incremental innovation is a series of small, gradual, and consistent improvements to an existing product or production process to increase usage, efficiency, and market competitiveness (Arfah Piliang, Meutia, Elvin Bastian, 2025). In the context of this devotion, incremental innovation is applied to two main lines:

- a) **Product Downstreaming:** Changing the function of a small part of the weaving and optimizing the use of patchwork waste into small-scale creative products with a fast sales turnover (*fast-moving consumer goods*) (Elvin & Munawar, 2020).

- b) **Marketing Modernization:** Shifting or adding conventional sales methods to digital gradually through the use of *smartphones* already owned by artisans.

The ultimate goal of this community service activity is to transform artisans' mindset from mere "traditional weavers" to "creative economy actors" who are independent, adaptive, and highly competitive in the digital era, without stripping away the roots of local culture.

Devotion Methods

This community service activity was carried out simultaneously and focused on three main locomotives of the weaving industry in Sumatra, namely:

- a) **West Sumatra Province:** Focused on the Songket Weaving Craftsmen Group in Lintau, Tanah Datar Regency.
- b) **South Sumatra Province:** Focused on Traditional Songket Artisan Groups in the Palembang City Center Area.
- c) **Riau Province:** Focused on the Siak Weaving Craftsmen Group in Siak and Pekanbaru Regencies.

Stages of Activity

The program implementation method uses an active participatory approach based on Action Research through 4 systematic stages:

- a) **Preparation Stage & FGD:** The team synchronized the program with group leaders in each of the three provinces to map patchwork waste availability and preferences for derivative products.
- b) **Zero-Waste-Based Product Diversification Workshop:** Technical training on pattern cutting and sewing woven fabrics into modern lifestyle products without damaging the main motif, utilizing the remaining pieces of fabric as accessory applications
- c) **Branding and Digitalization Workshop:** Training on determining HPP, aesthetic product photography techniques with smartphones, making exclusive packaging, and opening online stores in the marketplace (Shopee/Tokopedia) and social media.
- d) **Mentoring and Evaluation:** Intensive mentoring for 3 months post-workshop to monitor the quality of derivative products, the stability of digital account management, and the evaluation of partner turnover graphs.



Figure 1. Stages of Service Implementation Method



Figure 2. Observation of the Production Process of Traditional Woven Fabrics with Artisans



Figure 3. Focus Group Discussion (FGD) Stage with Weaving Artisan Partners

Results and Discussion

Incremental innovation interventions have a significant real impact on the production structure of artisan groups in the three provinces. The traditional linear production model has been successfully transformed into a circular craft ecosystem with minimal waste (zero waste).

The Impact of Downstreaming Creative Derivative Products

Production and Product Aspects	Conditions Before the Activity	Conditions After the Activity	Economic & Regional Impact
Product Diversity	Only produces a 2-meter-long sheet of fabric.	It has 5 new product lines: Sheet fabric, Tote Bag combination weaving, Ethnic purse, Pouch, and Outer.	Reaching new market segments (young people/tourists) in West Sumatra, South Sumatra, and Riau.
Utilization of Raw Materials	The remaining pieces of cloth (patchwork) are discarded as useless waste.	The rest of the patchwork is curated into detailed applications on small functional products.	Reduce production waste by up to 90% and reduce raw material operational losses.
Capital Cycle	Slow (Fabrics are only sold in a matter	Fast (Small products/accessories	Maintaining the stability of the daily

	of months during the festive/traditional season).	sold regularly every week as souvenirs).	cash flow of artisan groups at the grassroots level.
Packaging Standards	The product is wrapped only in plain, clear plastic, without a brand identity.	The product is packaged in an exclusive hardbox, featuring brand labels and storytelling cards.	Increase the aesthetic value and selling price of products in consumers' eyes by up to 40%.

Table 1. The Impact of Downstreaming Creative Derivative Products

Based on the comparative data presented in Table 1, it is evident that there has been a significant structural transformation among traditional weaving artisan groups in West Sumatra, South Sumatra, and Riau following the implementation of *incremental innovation* interventions. This transformation touches on four fundamental aspects of the creative industry, namely the diversity of product lines, the efficiency of raw material utilization, the cash flow turnover cycle, and the standardization of aesthetic selling value through modern product packaging.

In terms of product line diversity, the strong emotional and cultural attachment of local artisans had previously led to *stagnation in the product line*. Conventional production patterns, which are oriented only toward producing large-sheet fabrics (2 meters), limit market penetration. Through an incremental innovation approach, the service team succeeded in educating artisans to create downstream creative products without interfering with the main weaving production activities. The birth of five new derivative product lines—such as *tote bags*, ethnic purses, *pouches*, and *casual outer fashion*—has become a bridge for this cultural commodity to enter a new market niche, especially the younger generation and tourists who have a high interest in ethnic *lifestyle* products but want practical daily functionality.

This product diversification also has direct implications for solving ecological problems and improving the efficiency of raw material production (*waste management*). Before this program was implemented, the remains of sublime woven fabric with high aesthetic value were often disposed of as conventional waste because artisans lacked knowledge of textile reconstruction techniques. Zero-waste-based training *has been proven to reduce operational losses of raw materials and fabric waste* by up to 90%. The remnants of the patchwork are now systematically curated for reapplication as original ornamental details on small-scale functional products.

In macro-microeconomics, the shift from a specialized tertiary commodity (customary cloth sheets) to a regular functional product has drastically altered the capital turnover cycle (*cash flow*) of grassroots artisan groups. The once-seasonal, very slow cycle of sheet fabric sales – which depend on the calendar of traditional ceremonies or weddings – is now offset by the stability of daily or weekly income from the sale of *fast-moving consumer goods, souvenirs and woven accessories*. This stable cash flow provides a breath of fresh air for the financial resilience of

artisan families, while ensuring liquidity for the independent purchase of high-quality yarn raw materials without incurring debt to intermediaries.

Finally, the incremental innovation intervention was concluded by strengthening product visual selling value through packaging standardization. Plain, clear plastic packaging previously used by artisans tends to reduce the premium impression of handmade woven fabrics. By switching to exclusive composite packaging (*hardbox*) with a local brand identity and storytelling cards (narrative cards that convey the region's philosophy and noble cultural motifs), the product has experienced a substantial increase in value. This story-based packaging step has been empirically proven to increase product prices in consumers' eyes by up to 40%, while strengthening the *bargaining power* and competitiveness of weaving brands in West Sumatra, South Sumatra, and Riau in the national digital market.

Digital Transformation and Partner Marketing Independence

The second-largest challenge addressed by this service activity is breaking the chain of dependence of partners on local intermediaries (Korsen et al., 2022). For many years, mediators have controlled the selling price of weaving because they have access to market information, while artisans are in a weak bargaining position. By holding digital marketing training, the service team helps to erode the digital *divide* (Wang et al., 2025). The education process is carried out slowly, given the varying levels of digital literacy among members of the artisan group. The face-to-face approach and *step-by-step, hands-on simulation* have proven effective in increasing craftsmen's confidence in operating e-commerce applications.

Now, partners have an official online store account for their group, managed independently. The impact of this digitalization includes:

- a) **Price Transparency and Higher Profit Margins:** By selling directly to end consumers online, artisans can achieve full net profit without being squeezed by intermediary commissions.
- b) **National Market Reach:** Based on data from partner online stores over the three months of mentoring, product orders no longer come only from the local area of Sumatra but also expand to the island of Java, Bali, and even some areas of Kalimantan.
- c) **Improved Branding Capabilities:** Artisans are increasingly incorporating the philosophical narrative behind their weaving motifs into their online product descriptions. This *storytelling marketing step* has been proven to increase buyers' interest and appreciation of the authenticity of handmade weaving.

Implementation Barriers and Program Sustainability Solutions

Although this service program achieved many successes, the service team also identified obstacles in the field during implementation. The main obstacle is the craftsmen's inconsistent timekeeping. The majority of craftsmen are homemakers who must divide their time among weaving, caring for their families, and participating in this new training. To ensure the program's sustainability after the service team withdrew, a new group management structure was established. In the group, a *job desk* is divided according to the interests and skills of each member:

- a) Senior members who have high precision are focused on the main production line (weaving high-quality fabrics).
- b) Young members who are more adaptive to technology are appointed to the "Creative Team and Digital Admin" role, responsible for cutting derivative products, packaging, photography, and order management in e-commerce.

This competency-based division of labor ensures that incremental innovation activities can continue to run organically and independently without disrupting the well-established rhythm of traditional weaving work.

The Effectiveness of Cross-Provincial Marketing Digitalization

With intensive assistance, the digital divide among local artisans has gradually been bridged (Elvin Bastian, Arfah Piliang, 2024). Although there are variations in technology literacy levels across regions, with artisans in Palembang and Pekanbaru tending to be more adaptive than those in suburban areas of Lintau, the peer-to-peer learning approach has proven effective in fostering independence in digital marketing (Yusof et al., 2023).

After three months of launching the group's official digital store, there has been a significant expansion of market reach. Weaving products no longer depend on local intermediaries; they now directly penetrate the national market in Java, Bali, and Kalimantan. The use of storytelling marketing strategies that narrate the philosophical meaning of local motifs (such as the Pucuak Rebung motif in Siak Weaving or Songket Lintau) has been proven to increase end consumers' appreciation and willingness to pay.

Independent Group Sustainability Solutions

To overcome the constraints of limited time for artisans, most of whom are homemakers, a competency-based division of roles was established. Senior artisans are fully focused on the production line, weaving premium-quality main fabrics, while young members are assigned to the Creative Team and Digital Admin, who manage derivative product creation, packaging, and online order management. This new structure ensures the sustainability of incremental innovation organically after the service program is completed.

CONCLUSION

This community service activity, which focuses on applying the concept of incremental innovation among a group of traditional Sumatran weaving craftsmen, has had a real impact in boosting the economic competitiveness of partners. Through small modifications to downstream product aspects (such as manufacturing zero-waste bags, wallets, and accessories) and the modernization of digital marketing methods, artisans managed to escape the trap of dependence on intermediaries and product stagnation. This incremental innovation strategy has proven to be very safe and effective in the craft industry, grounded in a noble culture. This innovation can respond to the demands of the dynamic, fast-changing modern market without in the slightest damaging, changing, or degrading the values of authenticity, philosophy, and culture inherent in the manufacturing process of traditional Sumatran woven fabrics. The success of this program is

expected to serve as a model for developing culture-based creative economy commodities in other regions of Indonesia.

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