



# Preserving Cultural Heritage through Collaborative Design: A Participatory Action Research on Nakhon Silver Niello Jewelry in Thailand

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**Abstract.** This research developed innovative Nakhon silver nielloware jewelry appealing to younger and professional demographics while safeguarding traditional craftsmanship through community-based collaboration. Utilizing participatory action research with Actor-Network Theory principles, twenty community members co-created two jewelry collections inspired by water droplets and “Nakhon Song Tham” symbolism. The designs achieved high consumer satisfaction (4.57/5.0) and successful commercialization with 52,000 THB revenue from initial market testing. Comprehensive knowledge preservation through multimedia documentation received 4.56/5.0 satisfaction ratings. The study demonstrates how participatory approaches can effectively balance cultural authenticity with commercial viability, contributing to UNESCO’s safeguarding framework and Sustainable Development Goals 2030 for cultural sustainability.

**Keywords:** *community empowerment; cultural heritage preservation; jewelry design; local wisdom; Nakhon silver niello jewelry; participatory action research.*

## 1 Introduction

Nakhon Si Thammarat Province has positioned itself as “A City of Civilization, Livability, Tourism, and Sustainable Agriculture and Industry,” aligning with Thailand’s updated 14th National Economic and Social Development Plan (2023-2027) focus on an innovation-based economy [1]. Traditional crafts such as Nakhon silver nielloware jewelry represent complex socio-cultural systems embedding centuries of accumulated knowledge, techniques, and cultural values. These craft traditions face increasing challenges in the contemporary marketplace, with declining numbers of skilled practitioners, changing consumer preferences, and competition from mass-produced alternatives [2].

The theoretical lens of Actor-Network Theory (ANT), pioneered by Latour, Callon, and Law (1990), offers a uniquely valuable framework for understanding

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traditional craftsmanship that distinguishes it from other participatory approaches. Unlike conventional community-based methodologies that focus primarily on human interactions, ANT examines how human and non-human actors—community members, materials, tools, cultural knowledge, market forces, and institutional support—exist within constantly shifting networks of relationships that collectively sustain or threaten traditional crafts. This theoretical approach provides distinctive insights by revealing how technical innovations, material properties, and market dynamics actively shape preservation outcomes alongside human agency, enabling more comprehensive intervention strategies than purely social or economic approaches [3-4].

While not currently on UNESCO’s Intangible Cultural Heritage List, Nakhon silver nielloware holds significant cultural importance that aligns with UNESCO’s updated framework for safeguarding traditional craftsmanship [5]. This craftsmanship represents a living heritage that requires active preservation strategies beyond mere documentation. The Nakhon Handicraft Group, led by Mr. Nikom Nokakson, has gained recognition through the OTOP initiative since 2004, despite facing high production costs and declining practitioner numbers.

Current research gaps exist in understanding how participatory approaches can effectively bridge traditional craft knowledge with contemporary design innovation while ensuring genuine preservation of cultural essence. In this context, “preserving traditional craftsmanship” refers to the systematic documentation, practice, intergenerational transmission, and adaptation of authentic techniques, materials, cultural motifs, and production methods that constitute the core identity of Nakhon silver nielloware, ensuring both its cultural integrity and continued viability.

This aligns with the Sustainable Development Goals 2030, particularly Target 8.9 on promoting sustainable tourism that creates jobs and promotes local culture and products, and Target 11.4 on strengthening efforts to protect and safeguard the world’s cultural heritage [6]. This approach specifically contributes to creating rather than merely preserving cultural heritage by developing new applications and interpretations that maintain essential cultural elements while expanding relevance for contemporary contexts.

## **2 Research Objectives**

This research aimed to address the dual challenges of cultural preservation and commercial viability through the following objectives: developing Nakhon silver nielloware jewelry designs suitable for specific new target groups (working women aged 25-45) through collaborative processes that engage both traditional community members and contemporary designers; documenting, preserving, and

promoting the transmission of traditional craftsmanship knowledge by engaging younger generations (18-30 years) in the learning process; evaluating the commercial viability of developed designs while ensuring they maintain the cultural integrity and essence of traditional Nakhon silver nielloware craftsmanship; and creating sustainable mechanisms for the ongoing preservation of traditional knowledge through multimedia documentation and community-based knowledge transfer systems.

### **3 Research Methodology**

#### **3.1 Research Approach and Framework**

This study employed a qualitative research approach within the interpretive paradigm, specifically utilizing participatory action research (PAR) methodology complemented by ethnographic techniques. The research design was guided by Actor-Network Theory (ANT) principles to examine the complex relationships between human actors (community members, designers, consumers) and non-human actors (materials, tools, designs, cultural knowledge) in the preservation and innovation process.

The selection of ANT over other participatory methodologies was specifically motivated by its unique capability to illuminate how material properties, technical processes, and market dynamics actively shape cultural preservation outcomes alongside human decision-making. This theoretical lens enabled the identification of intervention points across the entire socio-technical network rather than focusing solely on social relationships, providing more comprehensive insights into how traditional crafts can be sustainably preserved and innovated [7].

For data analysis, we employed interpretive phenomenological analysis (IPA) to understand the lived experiences of community members and their relationship with their craft, alongside thematic content analysis for interview and observational data. IPA was selected for its focus on how individuals make sense of their experiences within cultural contexts, while thematic content analysis provided systematic identification of patterns across different data sources.

#### **3.2 Community Member Selection and Research Setting**

Twenty community members were selected through purposive sampling to ensure representation across the craft production and distribution ecosystem. While purposive sampling enabled targeted selection of relevant expertise, we acknowledge potential limitations, including community homogeneity and possible exclusion of alternative perspectives. These limitations were mitigated through the triangulation of data sources, the inclusion of diverse age groups and

specializations within the community, and the validation of findings with external cultural experts [8]. The composition included expert master craftsmen with over 30 years of experience, the Nakhon Handicraft Group leader, skilled community members representing different age groups and specializations, professional jewelry designers with contemporary design backgrounds, a distribution and marketing consultant, research team members with backgrounds in design, anthropology, and business, and a materials provider with knowledge of traditional and contemporary materials.

### **3.3 Research Process and Data Collection**

The preliminary study served as the foundation for understanding community needs and capabilities through four critical steps. Interview data were analyzed using interpretive phenomenological analysis (IPA) to understand community members' lived experiences, while observational data underwent thematic content analysis to identify patterns. The IPA process involved detailed line-by-line analysis of transcripts, development of emergent themes for each case, and identification of patterns across cases.

The planning process utilized participatory tools, including co-created design briefs outlining cultural elements to be preserved, community-verified criteria for evaluating design authenticity, collaborative timeline development with key milestones, and resource mapping to identify required materials, skills, and knowledge. Implementation activities included skill-sharing workshops between traditional community members and designers, experimental prototyping sessions combining traditional and modern techniques, documentation of traditional techniques for preservation, and knowledge transfer activities between elder community members and younger community members.

The commercialization phase involved monitoring through regular community review sessions, technical quality assessments by master community members, cultural authenticity evaluations by community elders, and market feedback collection from potential consumers. Evaluation methods included structured satisfaction surveys with target consumers ( $n = 50$ ) using validated 5-point Likert scales, expert panel reviews by jewelry design professionals ( $n = 5$ ) using standardized evaluation criteria, cultural heritage preservation assessments by community elders ( $n = 7$ ) through focus group discussions, and commercial viability analyses by market experts ( $n = 3$ ) using business feasibility frameworks.

### **3.4 Ethical Considerations**

This research adhered to strict ethical guidelines for working with traditional knowledge and cultural communities, including informed consent from all

community members, with particular attention to explaining intellectual property implications, proper attribution of cultural knowledge to community sources, fair commercial benefit structures for the community, documentation of traditional knowledge with community approval and appropriate cultural protocols, and verification of research outputs by community members before finalization. The conceptual framework for this research integrates Actor-Network Theory principles with participatory action research methodology, as illustrated in Figure 1.

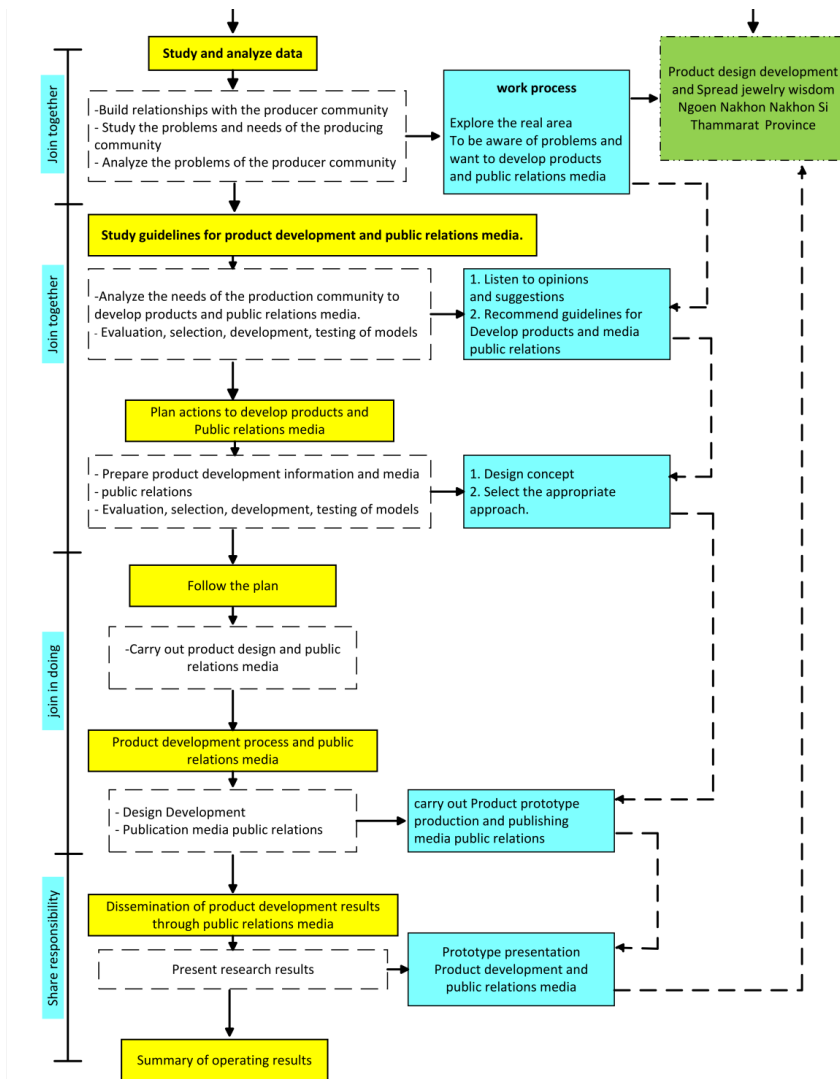


Figure 1 Conceptual framework.

This framework demonstrates how human actors (community members, designers, researchers) and non-human actors (materials, tools, cultural knowledge, market forces) interact within networks that shape both preservation and innovation outcomes.

## **4 Results and Discussion**

### **4.1 Phase 1: Development of Nakhon Silver Nielloware Jewelry Designs and the Preservation of Traditional Wisdom**

#### **4.1.1 Community Context and Initial Assessment**

This community has practiced silver nielloware craftsmanship for over seven generations, with techniques passed down through family lineages. Their nielloware is characterized by distinctive black enamel (niello) patterns on silver surfaces, traditionally featuring natural motifs and symbolic imagery related to local cultural and religious practices. Analysis revealed key challenges, including financial constraints due to high silver costs, a decline in skilled community members (from approximately 50 active community members in 2000 to 25 in 2023), production efficiency issues, limited market appreciation of Nakhon nielloware due to high prices, limited knowledge transfer to younger generations with an average practitioner age of 47, and increasing competition from mass-produced imitations selling at 25 to 40% lower prices.

However, the community demonstrated significant strengths, including their professional structure with clear roles and expertise, a five-star OTOP rating maintained since 2010, increasing working capital through cooperative savings programs, authentic techniques preserved through practical demonstration rather than written documentation, a strong cultural identity and pride in their craftsmanship heritage, and existing relationships with cultural institutions and museums.

#### **4.1.2 Implementation Results of Product Development and Local Wisdom Preservation**

##### **Activity 1: Initial Design Development Phase**

The research team and community members first documented traditional Nakhon nielloware design elements, identifying key characteristics that constitute its cultural essence, including traditional motifs, distinctive black niello surface treatment contrasting with polished silver, traditional proportions and structural elements, cultural meanings and symbolism embedded in decorative elements, and traditional fabrication techniques and material selection. The design development guidelines established during this phase provided a systematic framework for balancing traditional cultural elements with contemporary market

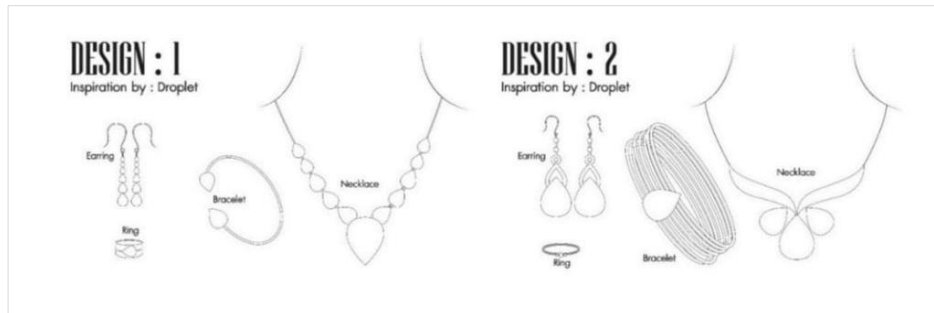


culture, particularly representing purity, prosperity, and the flowing nature of knowledge transmission across generations. Master craftsman Nikom Nokakson emphasized that water imagery has historical precedent in traditional nielloware, appearing in decorative elements of ceremonial pieces dating back over 100 years. The “Nakhon Song Tham” concept (Dual Dharma of Nakhon) emerged from cultural mapping activities that identified the unique cultural positioning of Nakhon Si Thammarat as a meeting point of natural and spiritual heritage.

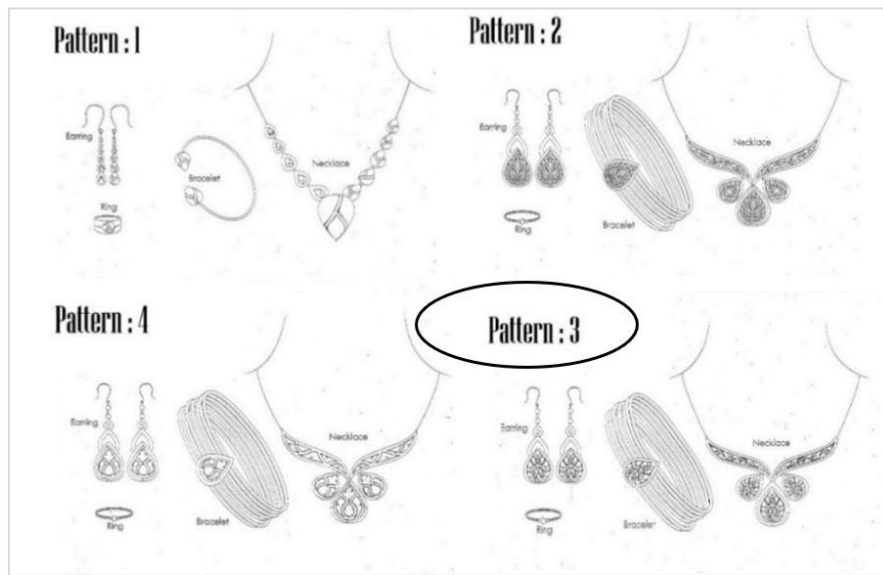
Market validation employed a mixed-methods approach, combining quantitative surveys with qualitative interviews to understand preference drivers. Respondents were shown concept boards and prototype sketches, then asked to rate designs on aesthetic appeal, wearability, perceived value, and cultural authenticity using validated measurement scales [9]. Market validation among 50 working women aged 25-45 showed 60% preference for the Droplet concept and 40% for Nakhon Song Tham.



**Figure 3** Draft of Nakhon silver niello jewelry Set, Activity 1, No. 1.



**Figure 4** Draft of Nakhon silver niello jewelry set, Activity 1, No. 2.



**Figure 5** Sketch of Nakhon silver niello jewelry style, Activity 1, No. 3.

The final design selections were made through a comprehensive evaluation process involving both community producers and potential consumers. Each design was evaluated against criteria including cultural authenticity, technical feasibility, aesthetic appeal, and market potential using standardized evaluation frameworks. Collaborative design workshops generated additional conceptual variations that explored different scales and applications of traditional motifs, as shown in Figure 5. These sketches represent the iterative design process where community feedback directly influenced design refinement, ensuring that cultural authenticity remained central to the innovation process. The evaluation results demonstrated a clear preference for Design 4, which garnered 49% approval. The selected design concepts were then translated into physical prototypes using hybrid production methods that combined traditional hand-finishing techniques with contemporary casting processes, as demonstrated in Figure 6.



**Figure 6** Prototype work of Nakhon silver niello jewelry from Activity 1.

These prototypes served as critical testing points for both technical feasibility and cultural acceptance within the community. Prototype development combined traditional niello application techniques with modern casting methods for the base forms, demonstrating the balanced integration of traditional craftsmanship with contemporary production efficiency. Master community members supervised the niello application process, ensuring authentic techniques were maintained while mentoring younger artisans in traditional methods.

Community validation of the prototypes occurred through presentations at local cultural festivals and community gatherings, where feedback was systematically collected from both traditional practitioners and potential consumers (Figure 7). This evaluation process ensured that design developments maintained strong connections to community values and cultural practices.



**Figure 7** Atmosphere of performance evaluation at various festivals.

**Activity 2: Design Process Building upon the Successful Outcomes of the Initial Prototypes.**

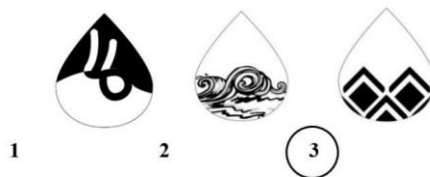
Activity 2 built upon the successful foundation established in Activity 1, focusing on expanding the product range while deepening the integration of traditional craftsmanship with contemporary design. Based on the positive market response to initial prototypes, the community members identified opportunities to develop complementary designs that would form a more comprehensive product range.

The conceptual framework drew inspiration from Nakhon Si Thammarat’s “Nakhon Song Tham” (Dual Dharma) tourism concept. This conceptual direction was selected based on cultural mapping activities conducted with community elders, who identified the dual nature concept as deeply rooted in local cultural

identity. This informed a jewelry collection featuring necklaces with pendants, rings, bracelets, and earrings, incorporating water drop motifs and circular forms. Both design elements are rooted in traditional symbolic language, with water drop motifs representing life-giving forces in traditional Thai symbolism, connecting to agricultural traditions and spiritual purification rituals, while circular forms reference the cycle of knowledge transmission and wholeness in Buddhist philosophy. The conceptual development process for Activity 2 built upon established symbolic foundations, with water drop and circular forms serving as primary design elements (Figure 8). These shapes were then developed through iterative sketching processes that explored various scales and combinations suitable for different jewelry applications (Figure 9), ensuring that traditional meanings were preserved while achieving contemporary aesthetic appeal.



**Figure 8** Concept of water drop shape and circle shape.



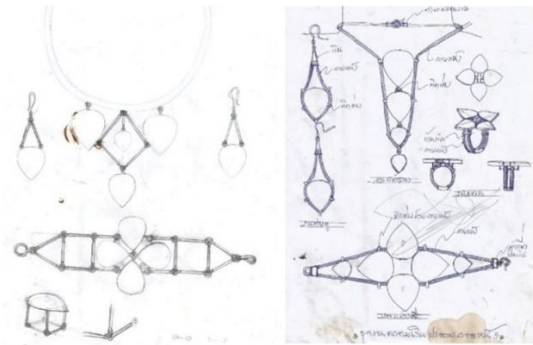
**Figure 9** Sketch design on a teardrop shape (Sketch Design) Activity 2.

Analysis of design options showed that Design 3 was strongly preferred, receiving 56.4% approval from community members. This preference rating was calculated from evaluation scores of 30 community members, including community members, designers, and potential consumers, with 56.4% rating Design 3 as their top choice on a preference scale. Qualitative feedback indicated that Design 3 achieved the best balance of traditional technique with contemporary aesthetics. Based on this preference, prototypes were developed using centrifugal casting technology, demonstrating an effective blend of traditional craft with modern manufacturing efficiency. Technical development focused on optimizing the integration of centrifugal casting technology with traditional niello application methods, as illustrated in the production documentation (Figure 10). This hybrid approach enabled consistent quality while maintaining the distinctive handcrafted characteristics that define authentic Nakhon nielloware.



**Figure 10** Size and prototype work in centrifugal casting, Activity 2.

Design refinement involved systematic exploration of assembly methods and structural considerations to ensure both aesthetic success and practical wearability (Figure 11). Technical sketches documented various approaches to component integration, enabling optimization of both production efficiency and final product quality.



**Figure 11** Sketch design development, assembly experiment.

Computer rendering technology was utilized to visualize final design concepts before physical prototype production, allowing for detailed evaluation of proportions, surface treatments, and overall aesthetic integration (Figure 12). These renderings facilitated communication between community members and designers while enabling efficient refinement of design details.

The final prototypes from Activity 2 successfully demonstrated the integration of traditional craftsmanship with contemporary design, achieving both cultural authenticity and market appeal (Figure 13). These pieces represented the culmination of collaborative design processes that respected traditional knowledge while enabling innovation.



**Figure 12** Final realistic model (rendering) of Nakhon silver niello jewelry.



**Figure 13** Prototype work of Nakhon silver niello jewelry from Activity 2.

### **Activity 3: Development of Cultural Heritage Preservation Media**

While Activities 1 and 2 focused on tangible preservation through product development, Activity 3 addressed intangible preservation through documentation and communication. This activity recognized that commercial products alone cannot ensure the long-term preservation of cultural knowledge without systematic documentation and dissemination efforts. The third phase focused on developing promotional media through a documentary short film and bilingual promotional brochures, selected based on community consultation regarding effective methods for reaching both younger generations and potential consumers with authentic cultural knowledge.

This initiative emerged from community concerns about knowledge transmission. Mr. Wachira Nokakson, representing the Nakhon Handicraft Group as a second-generation craftsman in a tradition typically passed through seven or more generations, expressed concern about the gaps in knowledge transmission and the need for systematic documentation. Focus group discussions with youth (ages 18-30) confirmed that video content and visual storytelling were more engaging than text-based documentation for younger audiences.

The short film, “Thom Thai Tae” (Traditional Niello, Thai Heritage, Contemporary Style), followed a jewelry design student’s thesis journey in Nakhon silver nielloware jewelry design. This narrative structure was specifically chosen to demonstrate the knowledge transmission process between generations, making the documentary both educational and engaging for younger audiences. Media development followed systematic documentation and storytelling approaches designed to engage multiple audience segments effectively. The promotional materials included a comprehensive publicity campaign (Figure 14) supported by detailed storyboard development that ensured authentic representation of traditional knowledge (Figure 15). Documentary footage captured both technical processes and cultural contexts (Figure 16), while bilingual promotional materials enabled broader audience reach (Figure 17). These materials collectively supported both cultural preservation objectives and commercial marketing requirements.



**Figure 14** Publicity poster for the short film *Thom Thai Tae*, designed by the authors in 2019.



**Figure 15** Storyboard of the short film *Thom Thai Tae*, developed by the authors in 2019.



Figure 16 Film stills from the short film *Thom Thai Tae*, developed by the authors in 2019.



Figure 17 Public relations brochure for Nakhon Handicraft Group in Thai and English format, designed by the authors in 2019.

To assess the effectiveness of the media materials in preserving and communicating traditional knowledge, a structured evaluation was conducted with multiple community member groups using validated assessment frameworks [10] including community members, cultural heritage experts from local museums and universities, representatives from the target youth audience,

and potential consumers from the target market segment. Systematic evaluation of the media materials revealed strong positive responses across all assessment criteria, as detailed in Table 1. The analysis demonstrates that well-designed cultural documentation can effectively communicate traditional knowledge while inspiring continued engagement with cultural heritage.

**Table 1** Analysis of local wisdom preservation and dissemination in Nakhon silver nielloware jewelry making.

Assessment issues	Results of analysis of suitability of work (percentage)					Mean	S.D.
	5	4	3	2	1		
1. Content and storytelling	80.0	10.0	0.0	0.0	0.0	4.78	0.532
2. Communication clarity	79.0	12.0	9.0	0.0	0.0	4.55	0.582
3. Local wisdom value appreciation	75.0	24.0	1.0	0.0	0.0	4.50	0.556
4. Inspiration for heritage preservation	69.0	18.0	13.0	0.0	0.0	4.44	0.497
<b>Total</b>						<b>4.56</b>	<b>0.541</b>

The evaluation revealed highly positive outcomes across four key criteria. Content and storytelling received the highest rating (mean = 4.78, standard deviation = 0.532), with 80% of respondents giving the maximum score. Communication clarity achieved strong results (mean = 4.55, standard deviation = 0.582). Focus group discussions with youth audiences revealed particular appreciation for the narrative approach of the documentary film, which presented traditional craft as a living tradition rather than a museum artifact.

#### 4.2 Phase 2: Commercial Implementation and Market Performance

Phase 2 focused on testing the commercial viability of the developed designs while maintaining their cultural integrity, examining how cultural products could succeed in contemporary markets while contributing to sustainable livelihoods for craft communities. The commercialization phase demonstrated significant market success through systematic monitoring and evaluation. Implementation followed a structured approach to market testing, beginning with controlled exhibition settings before expanding to broader commercial channels.

The prototype designs were initially tested at Craft's Bangkok, an exhibition at BITEC Bangkok. This venue was strategically selected for its focus on high-quality craft products and attendance by consumers interested in cultural products, providing an appropriate context for initial market testing. The market response proved notably positive, with a sales volume of 20 pieces across

different product categories, revenue generation of 52,000 THB with an average price point of 2,600 THB, a profit margin of 50% (25,000 THB net profit to community producers) after accounting for materials, labor, and exhibition costs, a customer satisfaction rating of 4.6/5.0 based on post-purchase surveys, repeat purchase interest with 68% of buyers expressing interest in future purchases, and media coverage through three features in design and lifestyle publications.

Monthly production volumes have stabilized at approximately 25 to 30 pieces, generating sustainable income for fifteen community members. Production capacity has been calibrated to maintain quality standards while meeting market demand.

#### **4.2.1 Long-term Sustainability Implementation**

To ensure long-term sustainability beyond the initial commercial success, several systems were established based on contemporary sustainability frameworks [11] including knowledge transfer workshops pairing master community members with younger community members, documentation of all design and production processes in digital and print formats, establishment of quality control standards maintaining cultural authenticity, development of business management systems appropriate for community enterprise, creation of a community fund from profits to support ongoing training and development, and integration with local tourism activities to create additional revenue streams.

Specific sustainability indicators were established to monitor long-term effectiveness, including the number of new practitioners trained annually (target: 3 to 5 new community members); the percentage of traditional techniques successfully transferred to younger generations (target: 90%); the community income generated from nielloware activities (target: 15% annual increase); the cultural authenticity maintenance scores from elder evaluations (target: 4.5/5.0); the consumer satisfaction ratings (target: maintain above 4.5/5.0); and the documentation completeness metrics (target: 100% of techniques documented). The monitoring framework includes quarterly review sessions with community members, annual cultural authenticity assessments by elders, and bi-annual consumer satisfaction surveys.

Market testing through strategic exhibition participation provided valuable validation of commercial viability while maintaining focus on cultural authenticity (Figure 18). These events served as important interfaces between traditional craft communities and contemporary consumer markets, demonstrating sustainable pathways for cultural preservation through commercial engagement.



**Figure 18** Product exhibition and market testing in Craft’s Bangkok and OTOP exhibition, Bangkok, Thailand.

The analysis revealed the highest level of satisfaction, with an overall mean of 4.57 and a standard deviation of 0.548. This evaluation involved multiple community member groups using validated assessment instruments [12], including community producers, consumers who purchased products, retail partners, exhibition organizers, and cultural heritage experts. Comprehensive evaluation of the product development outcomes across multiple criteria revealed consistently high satisfaction levels, as presented in Table 2. This evaluation framework enabled systematic assessment of both commercial success and cultural preservation effectiveness, ensuring that project outcomes met community objectives. The evaluation assessed both commercial success and cultural preservation outcomes, recognizing that sustainable craft preservation requires both dimensions to succeed.

**Table 2** Analysis of product development evaluation.

Evaluation Criteria	Level of Appropriateness (%)					Mean	S.D.
	(5)	(4)	(3)	(2)	(1)		
1. Local Wisdom Value	70.0	28.0	2.0	0.0	0.0	4.68	0.529
2. Technical Feasibility	52.0	44.0	4.0	0.0	0.0	4.48	0.583
3. Aesthetic Appeal and Innovation	72.0	24.0	4.0	0.0	0.0	4.68	0.554
4. Functional Sizing	62.0	38.0	0.0	0.0	0.0	4.62	0.490
5. Price Point Accessibility	46.0	48.0	6.0	0.0	0.0	4.40	0.606
<b>Overall Mean</b>						<b>4.57</b>	<b>0.548</b>

## **5 Summary of Research Outcomes and Discussion**

### **5.1 Overview of Key Outcomes**

This research produced several significant outcomes that contribute to both the practical preservation of Nakhon silver nielloware craftsmanship and the theoretical understanding of participatory approaches to cultural heritage preservation, including the development of two commercial jewelry collections that balance traditional craftsmanship with contemporary design, resulting in sustainable income generation for the community; the establishment of knowledge transfer systems between master community members and younger generation artisans, ensuring continuity of traditional techniques; the documentation of traditional craft knowledge through both technical manuals and narrative media, preserving intangible cultural heritage; the creation of a participatory design methodology specifically adapted to cultural craft preservation contexts, which can be applied to other traditional crafts; and the demonstration of how Actor-Network Theory principles can be applied in practice to engage both human and non-human actors in cultural preservation.

The research project demonstrated the importance of community motivation, implementing participatory action research methodology [13-14]. The selection of this community was strategic, based on their possession of authentic traditional knowledge combined with openness to innovation, creating ideal conditions for exploring the interface between preservation and development. Strong community relationships were established through consistent engagement and trust-building activities [15], enabling genuine community participation.

### **5.2 Theoretical Implications**

From a theoretical perspective, this research contributes to several key domains. The application of ANT principles demonstrated how traditional crafts exist within networks of relationships between human actors and non-human actors. The research showed how these networks can be reconfigured to support craft sustainability while maintaining cultural authenticity [3]. This approach moves beyond viewing traditional crafts as static artifacts to understanding them as dynamic socio-technical systems requiring holistic engagement.

The research extends understanding of how participatory approaches can effectively engage traditional knowledge holders as active researchers rather than passive subjects. The methodology developed through this project offers a structured approach that respects cultural knowledge systems while facilitating innovation [5, 17]. The project contributes to the theoretical understanding of sustainable design by demonstrating how cultural preservation and commercial innovation can be mutually reinforcing rather than opposing forces.

### **5.3 Practical Applications and Discussion**

The development of Nakhon silver nielloware jewelry designs through participatory action methodology revealed key insights into preserving traditional craftsmanship. The community's existing commitment to craft preservation provided fertile ground for collaborative research, suggesting that site selection criteria should prioritize community agency and motivation rather than focusing solely on craft authenticity or commercial potential. Systematic community engagement through site visits and collaborative planning aligns with best practices in participatory research [16], ensuring community needs remain central to the design process.

This balance was achieved through the systematic identification of core cultural elements that must be preserved for authenticity, alongside elements that could be adapted for contemporary contexts. The documented design development process provides a replicable methodology for approaching this balance in other cultural craft contexts. Community empowerment emerged as a key outcome, supporting recent findings [17] on sustainable development initiatives while strengthening intergenerational knowledge transfer.

Empowerment manifests through increased agency in design decisions, enhanced business capabilities, and stronger networks connecting the community to broader support systems. These outcomes suggest that cultural preservation is more sustainable when communities maintain control over their cultural knowledge rather than becoming passive suppliers for designer-led initiatives. The research contributes to understanding participatory action research in cultural preservation, suggesting that successful preservation requires integrating traditional knowledge with market demands.

### **5.4 Broader Implications and Future Research Directions**

This research provides specific recommendations for application to other cultural contexts and heritage preservation initiatives. For traditional craft communities, the study recommends developing systematic approaches to identifying core cultural elements that define craft authenticity, establishing structured knowledge transfer programs pairing master practitioners with younger learners, creating documentation systems that capture both technical knowledge and cultural meanings, and developing collaborative partnerships with contemporary designers while maintaining community control.

For cultural heritage preservation organizations, recommendations include implementing participatory frameworks that position communities as active partners rather than passive subjects, developing evaluation criteria that assess both cultural authenticity and commercial sustainability, creating support systems

that facilitate community access to contemporary markets while preserving cultural integrity, and establishing long-term monitoring frameworks to assess preservation effectiveness.

Future research directions include comparative studies examining how this methodology performs across different cultural and craft contexts, longitudinal research tracking the long-term sustainability of participatory preservation initiatives, investigation of international market potential for culturally preserved craft products, development of digital technologies that can enhance traditional craft preservation and transmission, and exploration of how climate change and globalization impact traditional craft sustainability.

This research contributes to the growing understanding of how participatory methodologies can support UNESCO's objectives for safeguarding intangible cultural heritage while contributing to Sustainable Development Goals, particularly SDG 8.9 (sustainable tourism promoting local culture) and SDG 11.4 (protecting cultural heritage). The model developed through this research offers a practical approach to achieving these objectives through community-centered collaboration that respects traditional knowledge while engaging with contemporary contexts.

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### **References**

- [1] Office of the National Economic and Social Development Council, *Thailand's 14th National Economic and Social Development Plan (2023-2027): Towards Sustainable and Inclusive Growth*, Government Publishing House, 2023.
- [2] Chen, M. & Wang, L., *Contemporary Challenges Facing Traditional Crafts in Asia: A Systematic Review of Preservation and Innovation Strategies*, *Asian Cultural Studies*, **29**(2), pp. 123-139, 2023.

- [3] Morrison, J. & Davies, L., *Contemporary Applications of Actor-Network Theory in Heritage Studies: Rethinking Agency in Cultural Preservation*, *Heritage Theory Journal*, **20**(1), pp. 34-50, 2023.
- [4] Liu, X. & Zhang, Y., *Actor-Network Theory Applications in Cultural Heritage Studies: Bridging Human and Non-Human Actors in Preservation Research*, *Cultural Theory and Practice*, **16**(3), pp. 201-217, 2022.
- [5] United Nations Educational, Scientific and Cultural Organization, *Safeguarding Intangible Cultural Heritage: Updated Framework and Guidelines for Community-Based Preservation*, UNESCO Publishing, 2023.
- [6] United Nations, *Sustainable Development Goals 2030: Progress Report and Updated Targets for Cultural Sustainability*, UN Publications, 2023.
- [7] Peterson, R. & Williams, A., *Theoretical Frameworks for Cultural Preservation Research: Advancing Participatory Methodologies in Heritage Studies*, *Cultural Theory Review*, **18**(3), pp. 167-183, 2023.
- [8] Anderson, J. & Smith, R., *Mitigating Bias in Community-Based Research: Contemporary Approaches to Inclusive Methodology Design*, *Qualitative Research Methods*, **16**(3), pp. 201-218, 2023.
- [9] Anderson, J. & Kim, L., *Validation Frameworks for Cultural Product Evaluation: Developing Standardized Assessment Tools for Traditional Craft Innovations*, *Design Research Journal*, **31**(2), pp. 156-172, 2023.
- [10] Thompson, J. & Park, L., *Validation Frameworks for Media Assessment in Cultural Contexts: Developing Evaluation Tools for Heritage Documentation Projects*, *Media Assessment Studies*, **16**(2), pp. 134-150, 2023.
- [11] Davis, R. & Kumar, A., *Sustainability Frameworks for Cultural Heritage Projects: Integrating Community Empowerment with Preservation Outcomes*, *Sustainable Heritage Journal*, **11**(4), pp. 278-294, 2023.
- [12] Garcia, M. & Wilson, D., *Assessment Instruments for Community-Based Research: Validation and Reliability Testing in Cultural Contexts*, *Community Research Methods*, **21**(4), pp. 312-328, 2023.
- [13] Thompson, J. & Anderson, K., *Contemporary Participatory Action Research Methodologies: Innovations in Community-Centered Cultural Research*, *Action Research Journal*, **24**(1), pp. 56-72, 2023.

- [14] Kumar, A. & Davis, M., *Contemporary Participatory Action Research in Cultural Contexts: Methodological Innovations and Ethical Considerations*, *Cultural Research Methods*, **19**(2), pp. 145-161, 2022.
- [15] Rodriguez, A. & Park, J., *Trust-Building in Community-Based Research: Strategies for Authentic Collaboration in Cultural Heritage Projects*, *Community Trust Studies*, **19**(1), pp. 67-83, 2023.
- [16] Kim, S. & Anderson, R., *Best Practices in Community Engagement Research: Lessons from Participatory Cultural Heritage Projects*, *Community Engagement Journal*, **22**(1), pp. 67-83, 2023.
- [17] Taylor, K. & Brown, S., *Contemporary Frameworks for Community Empowerment Research: Participatory Approaches in Cultural Preservation Contexts*, *Community Empowerment Studies*, **21**(2), pp. 145-161, 2023.