E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025

14TH INDES 2025

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INVENTION, INNOVATION &
DESIGN COMPETITION 2025

Organized by:

Office of Research, Industry,
Community & Alumni Network
UiTM Perak Branch

Perpustakaan Negara Malaysia Cataloguing in Publication Data

No e- ISBN: 978-967-2776-52-9

Cover Design: Dr. Mohd Khairulnizam Ramlie

Typesetting : Georgia

EDITORIAL BOARD

A DESIGN INNOVATION OF BATIK CENTRE EXHIBITION: BRIDGING SUSTAINABILITY FOR ARTISAN COMMUNITY

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ABSTRACT

Malaysia's batik heritage, sustained by over 80,000 artisans, faces significant engagement decline due to outdated exhibition formats and weak technological integration. While cultural institutions attract millions annually, batik remains trapped in static displays, undercutting its appeal to younger, tech-oriented audiences. This research proposes a transformative design innovation for a Batik Centre Exhibition that balances immersive display technologies with sustainability principles and cultural authenticity. Adopting a qualitative comparative case method, the study analyses three Malaysian sites and four global precedents through thematic and content analysis. Findings inform a flexible exhibition framework featuring motion-activated AR storytelling booths, projection-mapped facades, and live community labs. This framework aims to reinvigorate cultural appreciation, democratize heritage access, and secure batik's continuity in a digital, multicultural Malaysia. The research expands on the proposed framework by highlighting the need for interaction-driven experiences that go beyond visual appreciation. The inclusion of motion-activated AR storytelling booths provides dynamic narratives that connect users emotionally with the craft. Projection-mapped facades bring static surfaces to life, allowing batik patterns and stories to unfold across walls and objects in real-time. Live community labs act as collaborative spaces where artisans and visitors engage in batik-making activities, reinforcing intergenerational knowledge transfer. These components, informed by the comparative case analysis, reflect the potential of integrating culture, technology, and sustainability into a cohesive design strategy. By doing so, the Batik Centre Exhibition not only enhances visitor engagement but also supports broader goals of cultural preservation and innovation. This model presents a replicable blueprint for revitalizing heritage in contemporary contexts.

Keyword: Batik Innovation, Exhibition Design, Interactive Technologies, Cultural Sustainability, Malaysian Heritage

1. INTRODUCTION

Despite its global recognition and historical significance, Malaysia's batik industry struggles with relevance in contemporary museum settings (Simon et al., 2005). Static vitrines fail to engage today's audiences, accustomed to immersive and responsive media (Hani et al., 2012). Research affirms that interactive exhibitions enrich visitor learning and strengthen emotional ties with artifacts (Vaz et al., 2017). Yet, local batik displays often exclude co-creative digital tools or participatory storytelling, distancing younger generations and risking artisanal knowledge erosion (Razali et al., 2021). Innovation in this context must remain culturally sensitive; careless digitization may obscure the authenticity of traditional practices (Hussein et al., 2021).

This paper positions design innovation as a bridge between tradition and technology, proposing spatial and technological reconfigurations of batik exhibitions to promote inclusivity, interactivity, and ecological awareness. This study seeks to introduce a design-driven innovation model that transforms the conventional batik exhibition experience into an immersive, participatory, and sustainability-centered space, bridging cultural preservation with digital and spatial innovation in Malaysia's creative industry.

2. METHODOLOGY

The research adopts a qualitative comparative case study approach tailored to design innovation within cultural exhibition settings. The study was conducted in four phases:

I. Selection of case study: Three local case studies (Terengganu Batik Hub, Penang Batik Pavilion, Kuala Lumpur Craft Complex) and four international precedents (La Cité du Vin – France, Yokohama Cup Noodles Museum – Japan, The Textile Museum – USA, Batik Museum Pekalongan – Indonesia) were selected for their diverse curatorial practices and interactive strategies.

II. Data Collection: Data was collected through:

- *Document Analysis* of exhibition catalogues, institutional websites, visitor feedback, and academic reviews.
- *On-site Observations* at Malaysian locations to record spatial flow, engagement patterns, and presence of interactive installations.

III. Thematic Coding and Content Analysis: Data were coded thematically using three innovation-oriented categories:

- *Technological Integration* (e.g., digital interfaces, AR/VR, kinetic displays)
- *Cultural Narrative Design* (e.g., storytelling, participatory craft labs)
- *Sustainability Embeddedness* (e.g., material use, energy-conscious design, artisan collaboration)

IV. Cross-Case Synthesis: Insights were distilled and mapped into a design framework for innovation in textile exhibition, focused on cultural preservation and visitor-centered experience.

This method ensures grounded design recommendations supported by empirical insights and global benchmarks.

3. FINDINGS

Analysis of case studies and student schematic designs revealed key innovation patterns:

I. Visitor Engagement Through Immersive Interaction – Kinetic projections, AR-enabled stations, and virtual try-on booths transform passive viewers into active participants. In student designs, spatial fluidity was prioritized, with multi-layered zones allowing transitions from observation to experimentation.

II. Educational Enrichment Through Sensory Technology – Interactive storytelling delivered through motion-sensor triggers, voice-activated media, and augmented textiles simplified complex narratives of batik-making. This enhanced retention and promoted empathy toward artisans'lived experiences.

III. Cultural Continuity Through Co-Creation and Digitization – Student designs demonstrated awareness of preservation, integrating artisan-led digital archives and projection-based demonstrations. This ensures longevity and wider access while safeguarding authenticity.

IV. Design Thinking for Inclusive, Sustainable Innovation – Designs emphasized flexible spaces, natural ventilation, and local materials, embodying Malaysia's ecological wisdom. Co-creation labs in some schemes empowered visitors to learn dyeing techniques and contribute to evolving digital motifs.

3.1 Innovation Framework

To synthesize findings, a modular and replicable Innovation Framework for Batik Exhibition Design is proposed:

I. AR-Enhanced Narrative Zones: Featuring layered storytelling through digital projection and voice-guided interviews with artisans.

II. Interactive Textile Labs: Visitors can simulate dyeing processes and generate virtual batik motifs using touch interfaces.

III. Projection-Mapped Facades: Motion-activated external displays that turn architectural surfaces into cultural canvases.

IV. Co-Creation & Sustainability Hub: Includes artisan-led workshops, digital archiving kiosks, and eco-craft corners using natural dyes.

This innovation framework is adaptable to different sites, offering scalability and alignment with Malaysia's creative industry goals. It serves as a prototype for future exhibitions seeking to merge experiential learning with heritage conservation.

Figure 1 Immersive Batik Exhibition utilizing augmented reality and virtual reality technology elevating users' experience

4. CONCLUSION

This research articulates a culturally grounded yet technologically forward vision for revitalizing batik exhibition formats in Malaysia. By leveraging comparative analysis, field observation, and student-led design exploration, it advances a design innovation framework that addresses sustainability, engagement, and cultural transmission. The proposed Batik Centre redefines exhibition design as an interactive ecosystem where tradition meets immersive technology, and artisans are not just subjects of display but partners in innovation.

By embedding digital storytelling, sensory learning, and participatory co-creation into spatial configurations, this model ensures that Malaysia's batik legacy remains not only preserved but continuously reinterpreted, experienced, and celebrated. Future work may explore prototyping these design strategies through VR testing, stakeholder co-design workshops, and integration into national tourism and heritage policy initiatives.

REFERENCES

Hani, U., Azzadina, I., Sianipar, C. P. M., Setyagung, E. H., & Ishii, T. (2012). Preserving Cultural Heritage through Creative Industry: A Lesson from Saung Angklung Udjo. *Procedia Economics and Finance*, *4*, 193–200. https://doi.org/10.1016/s2212-5671(12)00334-6

Hussein, N., Omar, M. K., & Mohd Surin, E. F. (2021). Handicraft Industry Entrepreneurial Ecosystem (HIEE): An Empirical Evidence of Malaysian Handicraft Micro and Small Industry Entrepreneurs. *International Journal of Academic Research in Business and Social Sciences*, *11*(6). https://doi.org/10.6007/ijarbss/v11-i6/10337

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

Simon, A., Welch, G., & Bolas, M. (2005). Emerging display technologies - New systems and applications: From images to sensing, interaction and enhancement. *Proceedings - IEEE Virtual Reality*, 313. https://doi.org/10.1109/vr.2005.32

Vaz, R. I. F., Fernandes, P. O., & Veiga, A. C. R. (2017). *Interactive Technologies in Museums* (pp. 30–53). https://doi.org/10.4018/978-1-5225-2927-9.ch002

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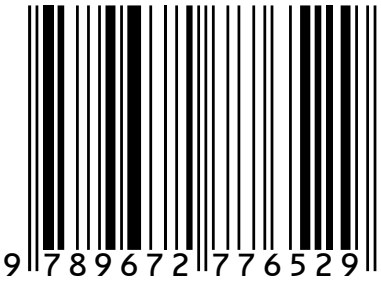
e ISBN 978-967-2776-52-9



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