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# Enhancing traditional crafts for tourism value:
## A wellbeing-based approach using Echizen "washi"

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**Abstract**

*Traditional crafts must evolve by generating emotional and experiential value in addition to cultural and historical significance. Echizen "washi," a 1,500-year-old Japanese handmade paper, presents strong potential for wellbeing-oriented tourism through sensory design, experiential learning, and evidence-based functional value. This study examines two complementary pathways—cultural-experiential value and wellbeing-functional value—through case studies of Yanase Washi and Igarashi Paper Co., combined with a visitor perception survey and neurophysiological evaluation. Fieldwork at Yanase Washi revealed increasing participation by international visitors, strong interest in hands-on papermaking, and emerging challenges related to multilingual cultural interpretation. The studio also collaborates with designers to create three-dimensional washi artworks, demonstrating how traditional materials can be transformed into contemporary cultural assets. To assess public perception of these new forms, a survey was conducted. Respondents described three-dimensional washi as beautiful, innovative, and artistically valuable, and most viewed it as a promising tourism resource. To evaluate emotional responses to washi-based environments, an EEG experiment compared standard and functional washi-covered lighting. Nine young adults (19-22 years), a sample size aligned with exploratory EEG research standards, participated to ensure age-homogeneous neural responses. Results indicated increased alpha power and reduced beta activity under washi lighting, demonstrating relaxation and tension reduction. These findings support the interpretation that washi contributes to psychological comfort and wellbeing. Integrating field observations, survey data, and neurophysiological evidence, this study proposes a wellbeing-based framework for revitalizing traditional crafts through tourism. By combining heritage transmission, contemporary design, and scientific validation, Echizen washi demonstrates how traditional industries can generate new forms of cultural, emotional, and functional value. This model contributes to sustainable regional revitalization and offers a viable approach for elevating traditional crafts within global tourism and wellbeing markets.*

**Keywords**

*Echizen washi, wellbeing tourism, traditional crafts, experiential learning, EEG*

### 1. Introduction

Traditional crafts represent tangible artifacts as well as intangible cultural knowledge, regional identity, and intergenerational continuity. In Japan's rural craft regions, declining domestic demand and demographic changes have intensified the need for new forms of value creation. Tourism—particularly experiential and wellbeing-oriented tourism—offers a promising pathway for sustaining traditional craft industries by fostering emotional engagement, hands-on learning, and cultural transmission.

Echizen *washi* exemplifies this potential. Beyond its historic and artistic value, the material conveys sensory warmth, translucency, and tactility that align naturally with wellbeing-oriented experiences. However, sustaining the craft requires strategies that extend beyond product sales to create emotional, experiential, and scientifically validated value. This study examines two complementary models for revitalizing Echizen *washi* through tourism:

- Cultural deepening and experiential learning,
- Evidence-based wellbeing validation.

### 2. Literature review

Traditional crafts play a central role in sustaining cultural identity, regional distinctiveness, and intergenerational knowledge transmission. Prior studies emphasize that artisanal practices serve as both economic and symbolic assets for regional sustainability [Richards, 2018; Bramwell and Lane, 2011]. As traditional craft industries face shrinking domestic demand and demographic pressures, tourism has increasingly become a

critical driver of cultural preservation and innovation.

Experiential and creative tourism studies show that travelers seek immersive, participatory, and emotionally meaningful engagements with local culture [Pine and Gilmore, 1999; UNESCO, 2012]. Hands-on workshops enhance cultural understanding, promote sensory involvement, and strengthen emotional connection. These experiential elements increase perceived craft value and long-term sustainability [Yair et al., 2001].

Wellbeing-oriented tourism has also grown, reflecting global interest in emotional restoration, mindfulness, and sensory comfort [UNWTO, 2018]. Traditional crafts align naturally with wellbeing contexts due to tactile warmth, slow-paced manual work, and grounding sensory qualities. Handmade paper (*washi*), in particular, possesses unique light-diffusing properties and organic textures that enhance relaxation-focused environments.

Recent advances in neuro-aesthetics and neuro-tourism have introduced physiological methods—including electroencephalography (EEG)—to examine how cultural environments influence emotional states [Niedermeyer and da Silva, 2005]. These approaches offer empirical grounding for understanding the psychological benefits of craft-based experiences.

Despite the growing interest in cultural and wellbeing-oriented tourism, several gaps remain in the academic literature. Research on tourism seldom incorporates physiological evidence that objectively captures emotional or sensory responses to cultural environments. Conversely, wellbeing studies rarely address traditional crafts, even though their tactile, sensory, and aesthetic qualities intuitively align with psychological comfort and restorative experiences. Interdisciplinary integration also remains limited, with few studies bridging craft practice, sensory design, and empirical validation. These gaps underscore the need for a more comprehensive approach that links cultural heritage with measurable wellbeing outcomes.

Echizen *washi* provides a compelling context for such integration. Produced in the Imadate region of Fukui Prefecture, it represents a 1,500-year-old biocultural heritage founded upon local mythology, pristine water sources, and the continuity of intergenerational artisanal communities. Its material properties—durability, fine fiber structure, translucence, and soft light diffusion—have supported its use in calligraphy, architecture, interior design, and contemporary art. As industrial challenges mount, the Echizen region has increasingly incorporated *washi* into tourism through museums, workshops, and cultural programs that invite visitors to experience the craft directly.

At the same time, contemporary makers in the region have expanded the expressive and functional potential of *washi* by developing three-dimensional sculptural forms, architectural lighting applications, and engineered functional materials that enhance ambience and sensory comfort. These developments align closely with global trends in experiential, creative, and wellbeing-oriented tourism, where visitors seek meaningful engagement with place, craft, and sensory experience.

Within this broader context, the following case studies examine two representative pathways of value creation in the Echizen craft ecosystem. The first, exemplified by Yanase Washi, highlights cultural transmission, hands-on experiential learning, and design co-creation with contemporary artists and international visitors. The second, represented by Igarashi Paper Co., demonstrates how functional *washi* materials were assessed in our study through neuro-physiological measurements to evaluate their relaxation effects and potential contribution to wellbeing. Together, these cases illustrate how traditional crafts can evolve into sustainable cultural tourism resources that address both emotional engagement and cultural significance while also creating new forms of value grounded in experiential and scientific perspectives.

## 3. Case study 1: Yanase Washi—cultural experience, design innovation, and international tourism

### *3.1 International craft tourism and interpretation needs*

Field interviews at Yanase Washi revealed increasing numbers of visitors from Europe and North America seeking hands-on papermaking experiences. Artisans reported challenges in explaining specialized tools and cultural background, highlighting the need for multilingual and visual interpretation tools.

### *3.2 Preservation of metal mold techniques*

Yanase Washi maintains and utilizes traditional metal molds used to imprint patterned designs. Young artisans train through annual production of zodiac-themed *shikishi*, preserving both technical skills and cultural practices.

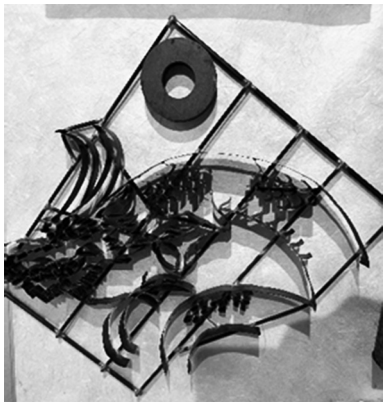

Figure 1: Traditional metal mold used for patterned *washi*

### *3.3 Development of three-dimensional washi*

Designer collaborations at Yanase Washi have produced sculptural works such as stone-like *washi* objects and the Harukami series. These re-interpretations position *washi* as a contemporary artistic and cultural medium.

### *3.4 Perception survey on three-dimensional washi*

A perception survey was conducted with 26 respondents, who were allowed to select multiple descriptors regarding

Figure 2: 3D *washi* artwork (lightweight stone-like structure)

their impressions of three-dimensional *washi*. Analysis of the survey responses revealed that impressions were generally positive. "Beautiful" was selected by 12 respondents (46.2 %), followed by "Rare or Interesting" (38.5 %) and "Artistic" (34.6 %). "Innovative" was chosen by 30.8 %, while 26.9 % selected "Attractive as a tourism resource." Meanwhile, 19.2 % reported "No particular impression."

These findings suggest that the appeal of three-dimensional *washi* stems primarily from its aesthetic and artistic qualities, rather than from explicit recognition as a tourism asset. This implies that engagement is driven more by sensory appreciation, curiosity, and interest in craftsmanship, than by tourism-oriented framing. Accordingly, 3D *washi* may contribute to regional tourism indirectly, by fostering deeper cultural appreciation and emotional resonance that can support long-term interest in local craft traditions.

### *3.5 Summary*

Yanase Washi exemplifies experiential cultural tourism by fostering meaningful cross-cultural interaction, supporting the transmission of traditional heritage, and promoting design innovation. Through hands-on papermaking activities, the studio creates emotionally engaging experiences that deepen visitors' cultural understanding and strengthen their connection to Echizen *washi*.

## 4. Case study 2: Igarashi Paper Co.—evidence-based well-being value of *washi* lighting

Igarashi Paper Co. integrates traditional craftsmanship with functional material innovation, producing engineered *washi* designed to diffuse light softly and promote psychological comfort.

### *4.1 Background and objective*

With growing interest in wellbeing tourism and sensory design, this study investigated whether *washi*-filtered lighting provides measurable relaxation benefits. EEG and subjective evaluations were used to compare:

- Bare bulb lighting
- Standard *washi*-covered lighting
- Functional *washi*-covered lighting

### *4.2 Methods*

#### *4.2.1 Participants*

Nine neuro-typical young adults (19-22 years old) participated in the experiment. This sample size follows common guidelines for exploratory EEG studies, where 6-12 participants are typically used to detect sensory-induced neural effects.

#### *4.2.2 Measures*

Salivary amylase was also collected as a supplementary physiological measure but excluded from analysis due to sensitivity limitations.

For the evaluation measures, we assessed neurophysiological activity by recording EEG band power in the theta, alpha, and beta frequency ranges. We also obtained subjective reports of participants' mood and perceived relaxation. Although salivary amylase was collected as an additional physiological measure, it was not included in the analysis because of sensitivity constraints associated with the measurement method.

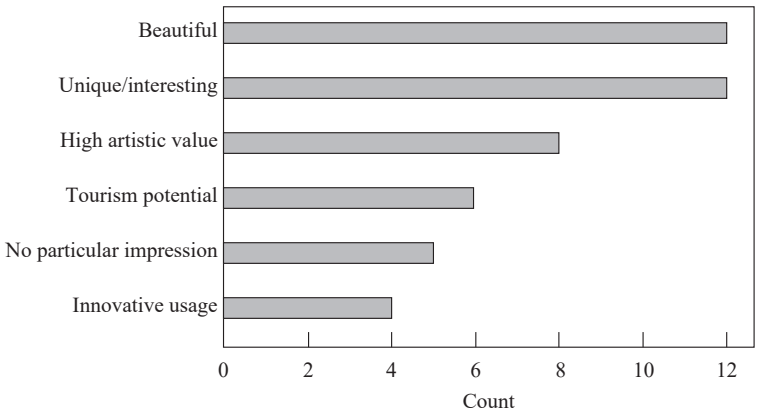


Figure 3: Impressions of 3D *washi* art: Survey responses

#### *4.2.3 Procedure*

The experimental procedure consisted of:

- Resting baseline normalization,
- Stress induction using the Kraepelin arithmetic task, and
- Counterbalanced viewing of three lighting conditions (bare bulb, standard *washi*, functional *washi*).

The experiment was conducted in two environments (open room and private booth).

#### *4.2.4 EEG acquisition and analysis*

EEG signals were recorded from the Fp2 electrode site following the international 10-20 system. Raw EEG data were transformed into the frequency domain using a Fast Fourier Transform (FFT) to compute power spectral density. Frequency bands were defined as $\theta$ = 4-7 Hz, $\alpha$ = 8-13 Hz, and $\beta$ = 14-30 Hz. All spectral power values were normalized to the resting baseline prior to statistical analysis.

### *4.3 Results*

To evaluate the relaxation effects of different lighting conditions, FFT-based power spectral density was compared across the $\alpha$, $\beta$, and $\theta$ bands. The analysis revealed the following patterns:

- Alpha ($\alpha$):
  Bare bulb < Standard *washi* ($p = 0.0043$)
  Standard *washi* < Functional *washi* ($p = 0.014$)
- Beta ($\beta$):
  Bare bulb > Standard *washi* ($p = 0.045$)
  Standard *washi* > Functional *washi* (*n.s.*, $p = 0.253$)
- Theta ($\theta$):
  No significant differences

The reported $p$-values were obtained from independent $t$-tests comparing the mean power spectral density of the $\alpha$ and $\beta$ bands across lighting conditions, determining whether the observed differences in neural activity were statistically meaningful. Subjective reports from participants indicated that the *washi* lighting provided softer illumination, reduced visual fatigue, and created a calm, comfortable atmosphere.

### *4.4 Interpretation*

The EEG results demonstrated that lighting filtered through Echizen *washi* produced a clear increase in alpha activity—indicating a relaxation response—and a decrease in beta activity, reflecting reduced mental tension. Functional *washi* generated the strongest relaxation effect among the tested conditions.

Subjective reports similarly indicated that the *washi* lighting provided softer illumination, reduced visual fatigue, and created a calm, comfortable atmosphere. These impressions were consistent with the EEG findings, reinforcing the physiological evidence of relaxation.

### *4.5 Summary*

This case demonstrates how empirical evidence strengthens the value of traditional crafts. The relaxation effects verified through EEG suggest that *washi* lighting can contribute meaningfully to multiple domains, including wellness tourism, interior design, hospitality environments, and broader cultural experience design. By positioning *washi* as a scientifically validated sensory material, these findings expand its applicability beyond conventional craft contexts and highlight its potential as an evidence-based wellbeing resource.

## 5. Discussion

Traditional crafts can be revitalized through two complementary approaches:

- Cultural-experiential value (Yanase Washi)
  Hands-on learning, cultural transmission, and design co-creation foster emotional attachment and deepen cultural engagement.
- Evidence-based wellbeing value (Igarashi Paper Co.)
  Neuro-physiological validation enhances credibility and supports positioning *washi* as a wellbeing-oriented material.

Together, these pathways illustrate how traditional crafts can diversify their value propositions while maintaining cultural authenticity.

## 6. Conclusion

Echizen *washi* demonstrates significant potential to serve as a wellbeing-enhancing cultural resource within the global tourism landscape. By integrating experiential learning, contemporary design innovation, and empirical validation through neuro-physiological measurement, this study highlights how traditional crafts can generate new forms of cultural, emotional, and functional value. The two case studies—Yanase Washi and Igarashi Paper Co.—illustrate complementary pathways: one grounded in cultural-experiential engagement and the other in scientifically verified relaxation effects.

Future work should expand the neuro-physiological experiment to a broader range of age groups, refine multilingual interpretation tools for international craft tourism, and deepen collaborations with artisans and regional stakeholders to co-develop wellbeing-oriented products and environments. These directions will help strengthen the positioning of Echizen *washi* as both a cultural heritage medium and a human-centered design material.

More broadly, the Hokuriku region—particularly Fukui Prefecture—offers an exceptional foundation for glocal value creation. It is characterized by a dense concentration of traditional industries, high-precision B2B manufacturing, strong educational institutions, and deeply rooted cultural heritage. Within this context, the Echizen area stands as one of Japan's most culturally integrated craft ecosystems, where everyday life, craftsmanship, and community identity are closely inter-

twined.

Building on these regional strengths, our aim is to use tourism as a starting point for creating new forms of value—not only by enhancing visitor engagement but also by fostering long-term research, product development, and community innovation. Through such tourism-initiated pathways, Echizen *washi* can contribute to regional revitalization, connect local heritage with global interest, and support sustainable cultural and economic development in the Hokuriku region.

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