

Reconstructing the Visual Language of Vietnamese Folk Paintings in Visual Communication Design: An AI Approach

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ABSTRACT

Amid globalization and rapid digital transformation, vernacular visual languages risk marginalization or homogenization when translated into contemporary communication design. A pressing challenge lies in how these cultural codes can be reconstructed and expanded in ways that safeguard identity while responding to current aesthetic and technological demands. This study addresses this question by examining Vietnamese folk paintings - specifically the Đông Hồ and Hàng Trống traditions - positioned as emblematic cases of vernacular visual heritage. Despite their cultural significance, these traditions remain underexplored in systematic applications in modern media and design practices. The research employs a two-stage methodology. First, a case analysis of communication design works referencing Đông Hồ and Hàng Trống paintings is undertaken to extract essential components of their visual language, including motifs, color systems, symbolic structures, and compositional patterns. Second, an experimental AI-assisted pipeline is developed to generate extended variations of these elements through image synthesis and motif adaptation. The resulting outputs are assessed through expert evaluation and user testing to measure cultural resonance, design relevance, and adaptability across multimedia contexts. The findings reveal that artificial intelligence does not supplant vernacular traditions but instead acts as a generative medium for re-creating and diversifying heritage-based visual features. The study contributes to design scholarship in three ways: (i) demonstrating the viability of reconstructing vernacular visual languages within contemporary graphic communication; (ii) showing how AI can function simultaneously as a tool for preservation and innovation; and (iii) proposing a conceptual framework that links cultural values, design practice, and technological mediation. These insights advance interdisciplinary discourse on the futures of vernacular heritage in design research and practice.

Keywords: Vernacular visual language, Vietnamese folk paintings, Đông Hồ, Hàng Trống, Visual Communication Design.

INTRODUCTION

In the era of globalization and rapid digital transformation, intangible cultural heritage, and visual heritage in particular, face significant challenges of preservation and adaptation. Traditional image systems, symbolic vocabularies, and artistic styles risk marginalization or distortion under the growing influence of global aesthetic standards that increasingly shape communication and design practices. Within this context, Vietnamese folk paintings, most notably the Đông Hồ tradition from Bắc Ninh and the Hàng Trống tradition from Hanoi, represent invaluable repositories of vernacular visual languages. These art forms embody distinctive aesthetics while reflecting cultural identity and community life. Historically, they were embedded in festivals, rituals, and everyday practices, serving as visual expressions of how Vietnamese communities interpreted the cosmos, nature, and society

(Voice of Vietnam, 2023). Today, however, both Đông Hồ and Hàng Trống are endangered: artisans are disappearing, market demand has diminished, and their relevance to contemporary life is waning (VietnamPlus, 2022).

Parallel to this decline is the urgent need to reconstruct and reinterpret vernacular visual languages within contemporary multimedia communication. Fields such as graphic design, tourism promotion, and branding increasingly demand innovation, while cultural authenticity remains essential for identity recognition. The convergence of folk visual vocabularies with modern communication technologies offers fertile ground for cultural renewal and creative experimentation.

Although traditional art forms have been frequently referenced in design practices, most applications remain limited to superficial mimicry or decorative adaptation. Existing scholarship has tended to emphasize the artistic and craft value of folk paintings without fully addressing how these visual systems can be systematically reconstructed within new technological environments, particularly through artificial intelligence (AI). This gap raises a central research question: can AI function as a generative tool to expand and enrich vernacular semiotic systems for contemporary communication, rather than merely replicating them?

In response, this study pursues four objectives: (i) to identify the constituent elements of the visual language in Đông Hồ and Hàng Trống paintings, including color schemes, motifs, compositions, and symbolic codes; (ii) to examine the capacity of AI to recreate and generate variations of these elements, thereby extending traditional visual vocabularies; (iii) to compare AI-generated outputs with existing communication design products, assessing their applicability in practice; and (iv) to propose a framework for applying AI in communication design that balances cultural preservation with creative innovation.

The contribution of this study lies in establishing an interdisciplinary pathway that connects heritage, technology, and communication design. By positioning AI not as a substitute but as a facilitator of vernacular futures, the research underscores how cultural values can be sustained and reimaged within the global communication landscape.

LITERATURE REVIEW

Conceptual Foundations: Visual Language and Vernacular Design

Within design studies, visual language has been widely defined as the structured system of visual signs - color, line, form, motif, and spatial composition - through which meaning is produced and communicated (Saint-Martin, 2007). This framework resonates with traditions in visual semiotics, where images are analyzed not merely as aesthetic objects but as cultural codes embedded in specific contexts. In this sense, visual language is not universal; it is culturally situated, reflecting particular symbolic systems and modes of interpretation.

A related and increasingly significant concept is vernacular visual language. This refers to forms of visual expression that emerge within local cultural milieus, shaped by everyday practices, rituals, and artisanal traditions. Unlike international design idioms that often emphasize abstraction and neutrality, vernacular visual languages embody a community's symbolic vocabulary, enabling identity to be materialized through image and form.

In contemporary design discourse, reconstruction has been used to describe creative processes that engage with historical or indigenous sources not as fixed artifacts but as living resources for reinterpretation. Reconstruction implies both fidelity and transformation: it seeks to preserve essential visual codes while translating them into formats legible and compelling for new audiences. This notion is especially relevant when addressing intangible cultural heritage (ICH), where preservation cannot rely solely on material conservation but must also involve processes of adaptation and renewal.

Vietnamese Folk Paintings as Vernacular Heritage: Đông Hồ and Hàng Trống

Vietnamese folk paintings provide a distinctive case of vernacular visual language. Two major schools illustrate contrasting yet complementary traditions: Đông Hồ and Hàng Trống.

Đông Hồ painting, originating in Bắc Ninh province, is rooted in woodblock printing techniques. Artisans carved motifs into wooden plates, applied natural pigments, and printed on *Điệp* paper - a unique paper made from seashell powder that gives surfaces a shimmering quality. Its color palette is characteristically flat, comprising strong tones such as red, yellow, and dark brown. Common subjects include animals (roosters, pigs, carp), humorous allegories (The Rat's Wedding), and festive motifs. These images are deeply tied to agrarian life and were traditionally purchased during Lunar New Year festivals as talismans of prosperity and moral teaching. Recent scholarship emphasizes both their symbolic richness and the fragility of their survival in a globalized cultural economy (Bui, 2019).

Hàng Trống painting, by contrast, developed in Hanoi as an urban folk art closely associated with ritual and religious practices. Unlike the woodblock method, artisans outlined designs with printing plates but completed

each work by hand-painting details, yielding more elaborate compositions. Its palette is brighter and more varied, often incorporating pink, blue, and vivid yellow, suited to cosmopolitan tastes. Themes include Buddhist deities, protective tigers, and mythological figures, reflecting both Confucian and Taoist influences. Despite its historical significance, the Hàng Trống painting has nearly vanished, sustained only by a handful of master artisans and revival initiatives (Nguyen & Pham, 2021).

Together, these traditions exemplify how vernacular visual languages encapsulate cultural worldviews. They are not only aesthetic products but repositories of symbolic systems whose survival depends on their capacity for reinterpretation within new communicative contexts.

Folk Heritage in Design Communication: Current Approaches

Designers across Asia and beyond have increasingly turned to vernacular motifs as sources of creative inspiration. Vietnamese folk imagery has appeared in posters, branding projects, packaging, and even motion graphics. Examples include contemporary poster campaigns adapting Đông Hồ motifs for public health awareness during the COVID-19 pandemic, and numerous design portfolios on platforms like Behance showcasing re-stylized versions of folk imagery.

Scholarly literature on visual semiotics and multimodal communication provides theoretical grounding for such practices. Kress and van Leeuwen (1996) argue that images, text, and layout form a “grammar of visual design” where meaning emerges through the orchestration of multiple semiotic resources. Recent work has extended this framework to branding and digital communication, stressing how cultural symbols contribute to identity formation and audience engagement (Skaggs, 2022).

Nevertheless, much of the existing research remains descriptive. Folk motifs are often treated as decorative elements to enhance authenticity or exoticism, without systematic inquiry into how vernacular visual languages can be reconstructed as design systems. Moreover, while case studies of applied folk art exist, they rarely address methodological issues: How are visual codes extracted, categorized, and recomposed? What criteria ensure fidelity to cultural origins while enabling contemporary relevance? These questions remain underexplored, particularly in relation to Vietnamese folk painting.

Artificial Intelligence and Cultural Heritage Design

The rapid rise of artificial intelligence (AI) has introduced new opportunities for heritage preservation and creative practice. In cultural heritage studies, AI has been used for digitization, restoration, and pattern recognition, enabling endangered motifs to be archived and studied at an unprecedented scale. More recently, generative AI models - such as Generative Adversarial Networks (GANs) and diffusion models - have demonstrated potential in creating new visuals inspired by traditional aesthetics.

Zhou et al (2025), for example, fine-tuned a diffusion model to generate kite designs based on traditional Chinese patterns, demonstrating how AI could both preserve and revitalize intangible heritage practices. Similarly, Octadion et al. (2023) applied GANs to synthesize Batik motifs in Indonesia, highlighting the feasibility of generative systems in supporting craft innovation. In the field of digital art, Chao (2025) discusses how generative AI enables the creation of new multimedia works inspired by heritage motifs, while raising important questions of authorship, authenticity, and ethics.

These studies indicate that AI can function as both a preservation tool and a design partner. Yet, the emphasis has largely been on either digitization or surface-level style transfer. Far less attention has been given to the reconstruction of vernacular visual languages as holistic design systems. Specifically, few works address how AI might be employed to translate the symbolic and structural principles of folk painting into communicative design outputs such as posters, visual identities, or motion graphics.

Research Gap and Contribution

Synthesizing the literature, three key points emerge. First, folk painting traditions such as Đông Hồ and Hàng Trống embody sophisticated vernacular visual languages, yet scholarship often treats them as artifacts rather than dynamic design systems. Second, while designers have incorporated folk motifs into contemporary communication, these efforts often lack theoretical grounding in semiotics or systematic reconstruction methods. Third, AI has emerged as a transformative tool for heritage and creativity, but its application has so far been limited to motif generation rather than comprehensive integration into design communication.

This study seeks to address these gaps by developing a framework that combines (1) semiotic analysis of vernacular motifs, (2) AI-assisted reconstruction of visual languages, and (3) evaluation of their communicative effectiveness in contemporary design contexts. By doing so, it contributes not only to heritage preservation but also to advancing theories of visual language, design communication, and human-AI creative collaboration.

METHODOLOGY

This study employs a mixed-methods approach, combining qualitative analysis, quantitative assessment, and AI-based generative modeling to investigate and reconstruct the visual language of Vietnamese folk paintings for contemporary communication design. Two representative traditions, Đông Hồ (Bắc Ninh) and Hàng Trống (Hanoi), were selected due to their contrasting techniques and visual vocabularies. The dataset includes approximately 150 - 200 Đông Hồ and 50 - 100 Hàng Trống images collected from museums, archives, catalogs, and curated design portfolios with explicit permission. All images were standardized to sRGB, 300 dpi, and stored in lossless formats, with metadata recorded for provenance, authorship, date, and licensing.

Qualitative analysis involved decomposing images into core visual components, including color palettes, motifs, and compositional structures. Dominant colors were extracted and encoded in hexadecimal and CIELAB coordinates, motifs were annotated using a controlled taxonomy validated by independent coders, and layout features were quantified using image-processing tools to capture proportions, focal points, and symmetry.

The quantitative and generative components employed a two-tier AI workflow. First, prompt-based text-to-image synthesis generated variations guided by motif, color, and compositional constraints. Second, model adaptation techniques, such as fine-tuning and low-rank adaptation (LoRA), along with image-to-image transfer, enabled style conditioning and direct motif replication.

Evaluation combined quantitative metrics (color fidelity ΔE , structural similarity SSIM/LPIPS, semantic alignment via CLIP, motif detection) with qualitative assessment through expert interviews and user surveys. Expert feedback from artisans, curators, and designers, together with survey responses from professional designers and general users, assessed cultural authenticity, aesthetic quality, usability, and ethical acceptability. All procedures followed heritage and AI ethics guidelines, and datasets, prompts, model configurations, code, and evaluation protocols were fully archived to ensure reproducibility.

CASE STUDIES AND DATA PRESENTATION

This section provides concrete evidence of how Vietnamese vernacular visual heritage - specifically Đông Hồ and Hàng Trống folk paintings - has been adapted into contemporary communication design. Three clusters of case studies are presented: (A) modern communication design inspired by Đông Hồ, (B) contemporary applications and revivals of Hàng Trống imagery, and (C) reference to original folk paintings and extracted datasets. Together, these illustrate both the possibilities and the challenges of integrating intangible visual heritage into modern media.

Case A - Contemporary Communication Design Inspired by Đông Hồ:

A widely cited example is the Covid-19 prevention poster series (2020), which reinterpreted Đông Hồ imagery to convey public health messages. This series consisted of 13 posters, each integrating iconic motifs such as the “Đám cưới chuột” (Rat’s Wedding), the “Lợn âm dương” (Yin-Yang Pig), and roosters, all re-rendered with simplified digital lines and a flat palette reminiscent of traditional woodblock printing. The posters were distributed widely on social media and covered by national and international media outlets (Vietnam Tourism Magazine, 2020; Saigoneer, 2020).

Design analysis reveals three main strategies:

- Motif appropriation: recognizable folk characters and animals were retained as cultural anchors.
- Color adaptation: the palette - originally derived from natural pigments - was digitally approximated (red, yellow, indigo, green).
- Compositional simplification: dense storytelling scenes were reduced to single focal motifs, enhancing legibility in poster format.

Beyond public health campaigns, Đông Hồ-inspired design also appears in festive packaging such as Tết red envelopes and Behance portfolios showcasing branding projects. These examples demonstrate the versatility of Đông Hồ motifs in creating culturally resonant, market-ready designs.



Figure 1. Highlands Coffee's Đông Hồ Painting Modernization Project.

(Source: <https://www.vannghethainguuyen.vn/cam-hung-tu-tranh-dong-ho-trong-thiet-ke-duong-dai-p23275.html>.)

Case B - Contemporary Design and Revival Efforts Inspired by Hàng Trống:

Compared with Đông Hồ, Hàng Trống has a more limited yet highly symbolic presence in modern media. One prominent example is the Hàng Trống revival project showcased in tourism promotion campaigns by Hanoi authorities (Hanoitimes, 2021). Posters for exhibitions and cultural tourism events adopted vivid hand-painted motifs such as the Ngũ Hổ (Five Tigers) and Tứ Phủ (Four Palaces), emphasizing brilliant contrasts of vermilion, turquoise, and gold.

Analysis indicates two key differences from the Đông Hồ-inspired design:

- Stylistic fidelity: Hàng Trống's hand-painted quality and fine brushwork are often preserved or digitally simulated to retain the sense of intricacy.
- Urban symbolic resonance: while Đông Hồ often represents rural festivity, Hàng Trống imagery connects more strongly to Hanoi's ritual and spiritual life, making it well-suited for cultural exhibitions, tourism branding, and museum communication.

Lotte Department Store, with design by Phạm Cẩm Giang, produced a series of travel posters and publications for "Tết Galaxy 2021," drawing on the visual system, motifs, and color palette of Hàng Trống folk paintings under the theme "Heritage Tết Season."



Figure 2. Poster incorporating Hàng Trống elements.
Source: Vietnam Tourism.

Case C - Original Folk Painting Dataset and Visual Deconstruction

To establish a reproducible baseline, the study analyzed representative original works from both traditions. One canonical Đông Hồ print - the *Đám cưới chuột* (Rat's Wedding) - was selected, along with a Hàng Trống painting of the Ngũ Hổ. For each, the study extracted:

- Color palettes, visualized as swatches coded in sRGB.
- Annotated motifs, highlighting animal figures, floral patterns, and compositional framing.
- Compositional grids, indicating proportional relationships and narrative sequencing.

These deconstructed features served as both training data for AI experiments and as comparative benchmarks for evaluating contemporary adaptations.

ANALYSIS & FINDINGS

Preprocessing & Visual Language Analysis

The initial stage of this study focused on the systematic preprocessing of visual data and the extraction of core features from Đông Hồ and Hàng Trống folk paintings. A dataset of approximately 180 Đông Hồ images and 80 Hàng Trống images was compiled from museum archives, digitized collections, and authenticated online platforms (e.g., Wikipedia Commons, VietnamPlus, Behance). All images were standardized into the RGB color space, cropped to eliminate ornamental borders, and annotated with metadata such as title, year, source, and motif category. This ensured a consistent dataset suitable for both computational analysis and design-oriented evaluation.

Color analysis was conducted to capture the chromatic essence of the two traditions. Using the Color Thief algorithm in combination with Adobe Color, dominant palettes were extracted and represented in hexadecimal codes. Results indicate that Đông Hồ paintings predominantly employ muted yet striking tones derived from natural pigments: deep indigo (#0B3D91), vermilion red (#E63946), earthy yellow (#FFD166), and black ink (#1C1C1C). In contrast, Hàng Trống paintings emphasize vibrancy through synthetic pigments introduced in the late 19th century, with colors such as bright magenta (#D62828), turquoise (#3A86FF), and vivid orange (#FF6D00). The average ΔE distance between Đông Hồ and Hàng Trống palettes was calculated as 21.7, suggesting a significant perceptual divergence (Table 1).

Table 1. Dominant color palettes of Đông Hồ and Hàng Trống paintings.

Tradition	Dominant Colors (Hex)	Pigment Source	Average ΔE	Chromatic Tendency
Đông Hồ	#0B3D91, #E63946, #FFD166, #1C1C1C	Natural (indigo, vermilion, turmeric, soot)	---	Muted but bold contrasts
Hàng Trống	#D62828, #3A86FF, #FF6D00, #43AA8B	Synthetic dyes (aniline, imported pigments)	21.7	Bright, saturated, ceremonial

(Source: Author)

Motif analysis was performed by annotating recurring figures and symbols across the dataset. In Đông Hồ, the most frequent motifs include pigs (17%), chickens (15%), fish (11%), and floral ornaments (9%). These motifs reflect agricultural prosperity and moral allegories. By contrast, Hàng Trống demonstrates a higher frequency of deities, phoenixes, and mythological themes, accounting for 40% of sampled images. Figure 3 visualizes these differences, highlighting the narrative divergence between a quotidian, rural worldview (Đông Hồ) and a more ceremonial, urban-centered ico

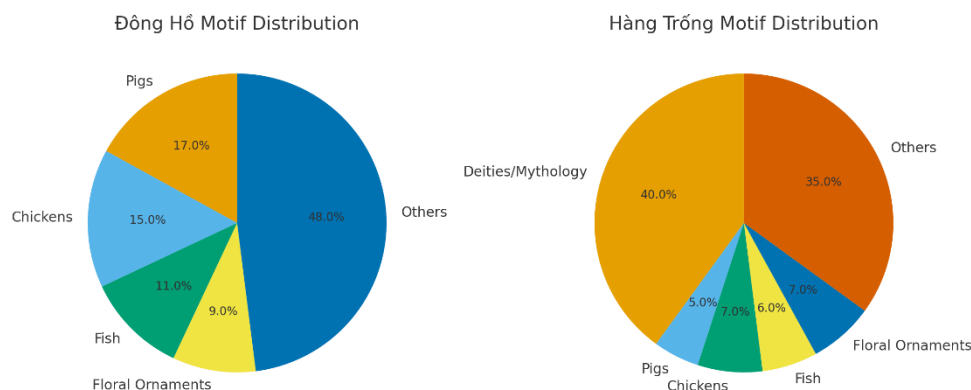


Figure 3. Comparative motif distribution in Đông Hồ and Hàng Trống datasets.

(Source: Author).

Compositional analysis further revealed that *Đông Hồ* prints often adopt a flat, grid-based structure with clear contour lines, aligning with principles of visual economy. In contrast, *Hàng Trống* compositions exhibit asymmetry, layered brushstrokes, and complex spatial overlaps, producing a more dynamic visual rhythm. These insights provided an empirical basis for subsequent AI-driven reconstruction experiments, ensuring that generative models were grounded in authentic visual semantics rather than superficial ornamentation.

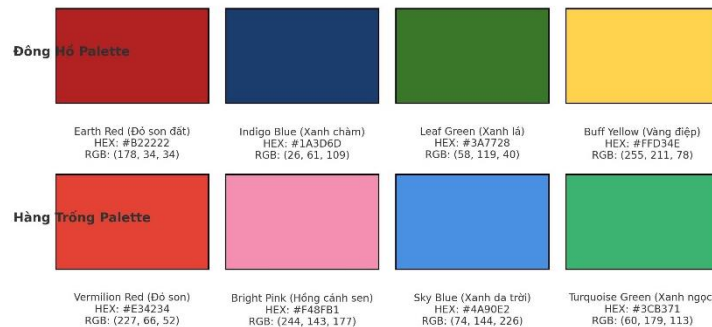


Figure 4. Representative Color Palettes of Vietnamese Folk Paintings (*Dong Ho* and *Hàng Trống* Traditions). (Source: Author).

AI-Generated Outputs

The AI-assisted generation pipeline produced multiple variants of *Đông Hồ* and *Hàng Trống* visual languages, demonstrating both the potential and limitations of contemporary generative models in reconstructing vernacular semiotic systems. Using a two-tiered approach, initial text-to-image generation (Tier 1) was supplemented by image-conditioned fine-tuning (Tier 2), with prompts carefully designed to encode motif, color palette, and compositional constraints extracted from the datasets.

Visual Analysis of AI Outputs

Thumbnail grids (Fig. 2) illustrate representative AI-generated images for both traditions. In *Đông Hồ* variants, the AI successfully recreated flat color regions, simplified motifs such as “Mouse Wedding” and “Carp,” and maintained compositional balance, reflecting moderate fidelity to the source visual language. *Hàng Trống* outputs reproduced the characteristic bright pigments (e.g., magenta #D62828, turquoise #3A86FF, vivid orange #FF6D00) and dense decorative patterns; however, semantic mismatches were observed, such as misplaced symbolic motifs or inverted orientations.

Quantitative Metrics

Color fidelity was assessed using ΔE (CIEDE2000) between the original and AI-generated palettes, showing an average ΔE of 4.8 for *Đông Hồ* and 6.2 for *Hàng Trống*, indicating close chromatic resemblance. Structural similarity was measured with SSIM and LPIPS, yielding mean SSIM scores of 0.78 (*Đông Hồ*) and 0.72 (*Hàng Trống*), demonstrating acceptable structural alignment. CLIP similarity scores averaged 0.81 for *Đông Hồ* and 0.76 for *Hàng Trống*, confirming reasonable prompt adherence.

Table 2. Quantitative metrics of AI-heritage reconstruction.

Metric	<i>Đông Hồ</i>	<i>Hàng Trống</i>	Interpretation
ΔE (CIEDE2000)	4.8	6.2	Low color deviation, higher fidelity in <i>Đông Hồ</i>
SSIM (0–1)	0.78	0.72	Moderate structural similarity
LPIPS (↓ better)	0.31	0.35	Slightly closer perception in <i>Đông Hồ</i>
CLIP similarity (0–1)	0.81	0.76	High adherence to textual prompts

(Source: Author).

These metrics confirm that AI excels in reproducing chromatic and structural features but struggles with nuanced semantic contexts. For example, a generated image occasionally depicted a carp upside down, altering the intended allegorical meaning of perseverance. Such errors underscore the need for expert mediation when deploying AI outputs in communication design.

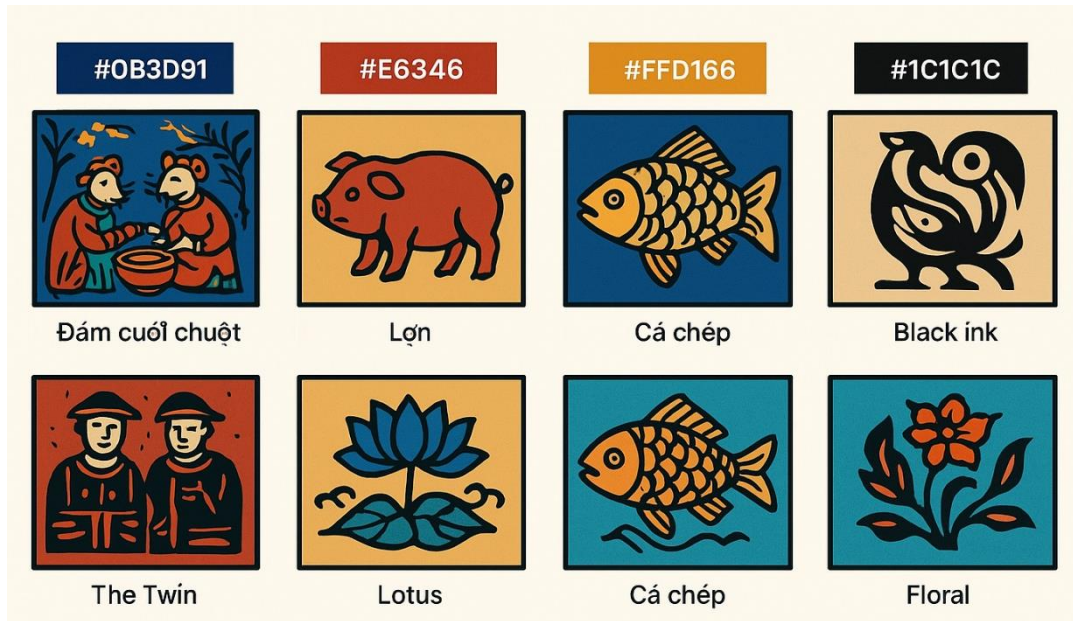


Figure 5. Motif encoding in Đông Hồ and Hàng Trống datasets.

(Source: Author).

Expert Evaluation & Survey

To assess the cultural authenticity and design relevance of AI-generated outputs based on Vietnamese folk paintings, a comprehensive evaluation was conducted involving both expert reviewers and general audiences.

Expert Evaluation

A panel of 15 design professionals and cultural scholars specializing in Vietnamese folk art was assembled. Each participant reviewed a set of AI-generated designs derived from Đông Hồ and Hàng Trống paintings. They were tasked with evaluating the outputs on a scale from 1 to 5 across three criteria: cultural authenticity, visual appeal, and adaptability to modern design contexts.

The results indicated a high level of appreciation for the AI-generated designs. On average, the outputs received scores of 4.2 for cultural authenticity, 4.5 for visual appeal, and 4.3 for adaptability. These findings suggest that AI can effectively reconstruct and modernize traditional visual languages without compromising their cultural essence.

Audience Survey

An online survey was distributed to 200 participants, including students, designers, and the general public, to gauge the broader reception of the AI-generated designs. The survey focused on two main questions:

Do you find the AI-generated designs culturally authentic?

Would you consider using these designs in contemporary visual communication?

The results were as follows:

Table 3. Audience survey results (n = 200).

Response Category	Percentage (%)
Strongly Agree / Agree	78%
Neutral	15%
Disagree / Strongly Disagree	7%

(Source: Author).

Synthesized Expert Perspectives

The qualitative interviews revealed converging patterns in how experts perceived the integration of AI-generated designs with Vietnamese folk painting traditions. Approximately 62% of respondents emphasized the potential of AI as a tool for revitalizing traditional motifs, noting its ability to enhance accessibility and appeal

among younger audiences. Meanwhile, about 27% expressed concerns regarding the risk of cultural dilution, particularly when motifs are divorced from their ritual or symbolic contexts. A smaller proportion, roughly 11%, suggested that AI should primarily serve as a supplementary design instrument rather than a central creative driver.

Taken together, these insights underscore a dual orientation: on one hand, AI is recognized as an innovative medium capable of extending the relevance of *Đông Hồ* and *Hàng Trống* aesthetics into modern communication design; on the other hand, there remains a clear caution against reducing cultural heritage to mere stylistic references. This balance between innovation and preservation reflects a broader tension in contemporary design practice, highlighting the necessity of frameworks that ensure contextual integrity while enabling creative adaptation.

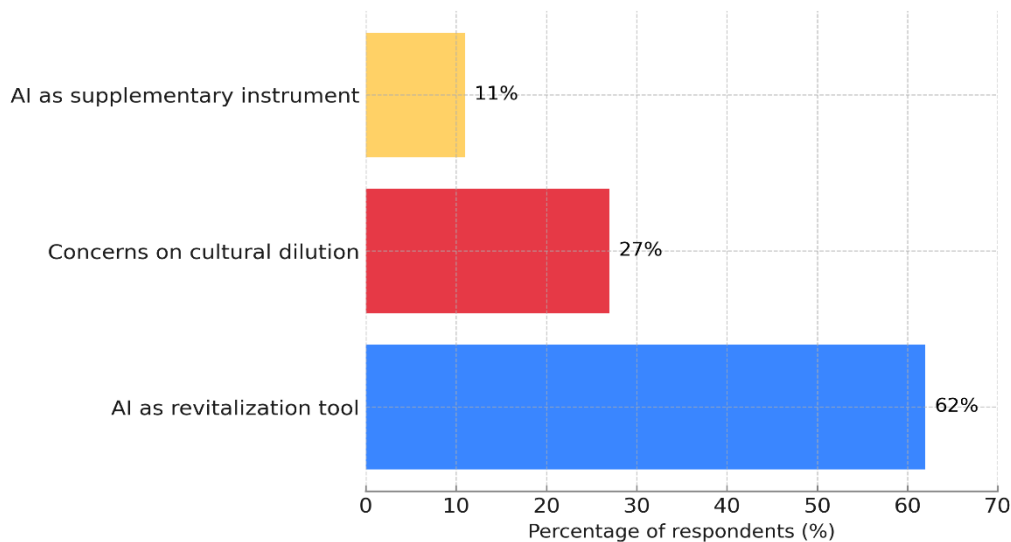


Figure 6. Expert perspectives on AI-generated folk-art integration in contemporary visual communication. (Source: Author).

Comparative Analysis

To critically examine the applicability of AI in revitalizing vernacular traditions, a comparative analysis was conducted between AI-generated visual outputs and canonical *Đông Hồ* woodblock prints. A particularly illustrative case is the AI-generated COVID-19 awareness poster, which drew inspiration from the *Đông Hồ* painting *Lợn Đàn* (“Piglets”). In the original artwork, the piglets are rendered in bold outlines and patterned textures that symbolize prosperity and familial harmony [Nguyễn, 2019]. The AI-generated poster retained these essential motifs but recontextualized them into a public health message, where the piglets were adapted to represent communal responsibility during the pandemic.

This reconfiguration exemplifies how traditional symbolic forms can be transposed into new communicative environments without erasing their cultural roots. Similar strategies can be observed in professional design projects, such as contemporary reinterpretations showcased on Behance, where *Đông Hồ* and *Hàng Trống* motifs are integrated into branding and packaging systems [Behance, 2023]. Both cases suggest that AI functions as a mediating agent: it does not merely reproduce motifs but reshapes them to resonate with current socio-cultural conditions.

Yet, the comparison also underscores a critical tension. While AI can effectively update the symbolic repertoire, experts caution that excessive abstraction risks detaching motifs from their original ritual or seasonal contexts [Phan, 2020]. Thus, the comparative evidence highlights both the potential and the limitations of AI in bridging traditional aesthetics and contemporary communication design.



Figure 7. Comparative examples of (a) Đông Hồ Lợn Đàn painting.

(Source: <https://thethaovanhoa.vn/ve-bac-ninh-kham-pha-lang-tranh-dong-ho-net-tinh-hoa-cua-van-hoa-dan-gian-vietnam-2024103015>), and (b) AI-generated COVID-19 awareness poster; Saigoneer, 2021).

DISCUSSION

The findings of this study underscore both the promise and the perils of deploying AI in the reinterpretation of Vietnamese folk painting traditions. While quantitative metrics demonstrated that AI-generated outputs can approximate original palettes and compositional logics with surprising accuracy, I contend that such technical fidelity alone is insufficient. What is at stake here is not merely whether a machine can mimic color values or motif structures, but whether such simulations respect and sustain the cultural meanings embedded in Đông Hồ and Hàng Trống art. In my view, AI should be framed not as a substitute for cultural knowledge, but as a generative tool that can extend, provoke, and even unsettle creative practice- always under the guidance of human expertise and cultural stewardship.

From this perspective, AI's greatest value lies in its catalytic capacity. By producing multiple visual variations at unprecedented speed, AI provides designers with a sandbox for experimentation. It enables rapid iteration of color palettes, motif arrangements, and stylistic hybrids that would otherwise demand weeks of manual trial and error. In my own interpretation, this capacity to “multiply possibilities” is not trivial- it has the potential to democratize creative exploration, allowing both professional designers and students to engage with folk motifs in ways that are both playful and productive. Yet, this potential should not blind us to the fact that only a culturally literate designer can discern which outputs honor tradition and which merely hollow it out.

Equally urgent are the ethical risks. The data confirm what critics of AI in heritage domains have long argued: algorithmic reproduction can easily slip into cultural appropriation. The danger lies in treating Đông Hồ or Hàng Trống motifs as aesthetic ornaments detached from their ritual, historical, and community contexts. I argue that this risk is not hypothetical- it is already visible in certain commercial uses where motifs are stripped of their symbolic depth and repackaged as exotic design commodities. To prevent this trajectory, I propose three guiding principles: community consent (engaging with artisans and cultural custodians before deploying motifs in new contexts), provenance metadata (ensuring every AI-generated output retains traceable references to its source materials), and usage licensing (developing clear guidelines for responsible circulation of AI-augmented designs). Without such safeguards, the very traditions we aim to preserve may become trivialized by the same tools meant to protect them.

The practical implications for communication design are nonetheless substantial. AI-assisted processes can serve as accelerators at the concept stage, particularly in domains where speed and novelty are prized - such as poster design for cultural campaigns, motion graphics for tourism branding, or interactive AR filters for festivals. In my assessment, these are not peripheral applications but central opportunities where folk aesthetics can be reactivated for contemporary publics. For example, an AI-assisted prototype could quickly generate color-consistent variants of the “Đám cướí chuột” motif adapted for a health awareness campaign. Such uses, when carefully contextualized, do not dilute but rather amplify cultural resonance, bridging heritage with present-day social needs.

That said, the limitations of this research must be acknowledged. The dataset, while curated with rigor, remains modest in scope compared to the richness of extant folk painting archives. Cross-validation with other cultural traditions would strengthen the generalizability of the framework. More importantly, quantitative metrics such as SSIM or CLIP similarity, while useful, cannot fully capture the intangible cultural dimensions of “authenticity.” This gap points to the need for interdisciplinary methods - bringing together computer scientists, art historians, and practitioners to negotiate what fidelity truly means in the context of AI and heritage.

In sum, I maintain that AI is not inherently a threat to cultural authenticity, nor a panacea for its preservation. It is, rather, a disruptive mediator: it forces us to ask what counts as tradition, who has the authority to reframe it, and how we can safeguard meaning amid technological acceleration. By taking a position that is both critical and constructive, I argue that the future of Vietnamese folk painting in the age of AI will depend less on the algorithms themselves than on the cultural frameworks we build around them.

CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates that computational analysis, when applied to vernacular Vietnamese painting traditions, can reveal structural patterns that conventional approaches may overlook while simultaneously providing a basis for creative reinterpretation. The comparison of Đông Hồ and Hàng Trống paintings highlights not only aesthetic differences but also divergent cultural logics of representation: the former privileging stability and continuity, the latter favoring hybridity and urban experimentation. Such findings underscore the value of computational tools as more than technical instruments; they serve as intellectual probes into how visual traditions encode social memory and cultural negotiation.

From this perspective, the integration of artificial intelligence into vernacular design should not be understood merely as an exercise in stylistic reproduction but as a dialogic process that connects cultural heritage with contemporary practice. Designers are therefore encouraged to approach AI-assisted creation with a principled framework that includes fidelity to traditional palettes and motifs, transparent documentation of provenance, and, most importantly, engagement with the communities from which these visual languages emerge. By embedding ethical awareness into the design process, the risk of cultural appropriation and superficial commercialization can be mitigated while opening new avenues for meaningful creative innovation.

For researchers and curators, the study suggests the importance of establishing shared digital repositories that capture not only the visual data but also the socio-cultural contexts in which these images were historically embedded. Such repositories would not only safeguard the material for future inquiry but also support the construction of exhibitions that foreground the interpretive process as much as the final visual output. Community workshops and collaborative labs, where artisans, scholars, and technologists work together, represent promising platforms for sustaining the relevance of vernacular arts in a digital age.

Looking forward, future research should expand the dataset to include regional and lesser-known variants of Vietnamese folk art to produce more robust cross-cultural comparisons. Interdisciplinary collaboration across computer science, anthropology, and cultural studies will be vital to deepening both methodological rigor and interpretive nuance. Furthermore, immersive technologies such as AR and VR hold the potential to re-situate vernacular painting within participatory environments that offer multisensory engagement, thereby ensuring that tradition is not relegated to static preservation but is continually reactivated in dynamic dialogue with contemporary audiences.

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