



Integration of Artificial Intelligence in Visual Branding of Batik Tanah Like: A Visual Communication Design Perspective

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Abstract

Batik Tanah Liek, one of the cultural legacies of Minangkabau, is facing significant challenges in the era of globalization, particularly with the rise of modern visual products that are more responsive to digital market demands. This study focuses on the lack of effective visual communication strategies that can meaningfully represent cultural identity in ways that remain relevant to contemporary audiences. To address this, the research developed an artificial intelligence (AI)-based visual marketing strategy designed to both preserve cultural identity and improve product competitiveness. A qualitative-descriptive method was applied, involving the creation of AI-generated visual design prototypes, which were later reviewed and refined through collaborative brainstorming with store managers. The findings reveal that combining cultural values with AI technology can produce visual branding that is not only visually appealing but also reinforces the cultural narrative embedded in Batik Tanah Liek. In addition, the prototypes demonstrated adaptability to digital market trends, while the validation process provided practical insights into their relevance for consumers. In conclusion, AI-based visual strategies can be an innovative model for cultural preservation and local product marketing in the digital age.

Keywords: *batik tanah liek*, cultural identity, visual branding, visual communication design, artificial intelligence

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1. Introduction

Globalization and digital transformation present increasingly complex challenges to the sustainability of cultural heritage. Advances in digital technology, particularly within visual communication and social media marketing, have fundamentally altered the perception, consumption, and promotion of cultural products. While these developments offer significant potential for enhancing the accessibility and global visibility of such heritage, they also create a highly competitive visual landscape that often marginalizes traditional cultural expressions. A pertinent case in point is Batik Tanah Liek, a Minangkabau textile distinguished by its profound philosophical values and strong cultural identity, which now confronts significant challenges in adapting its visual marketing strategies to the digital era [1].

Batik Tanah Liek possesses a unique characteristic that distinguishes it from other regional batik: the application of clay as a natural dye, which symbolizes the intrinsic connection between humanity and the earth. This underlying philosophy elevates the textile beyond a mere commercial product, framing it as a

representation of Minangkabau cultural values, spirituality, and ecological principles [2]. However, this profound philosophical advantage has not been effectively communicated to a broader audience, particularly among younger generations who represent a key consumer demographic in the digital marketplace. This shortfall is intrinsically linked to an underdeveloped visual branding strategy that fails to translate this cultural identity into a visual communication format compatible with contemporary digital trends.

Previous research has underscored the critical role of visual communication strategies in the preservation of local culture. Studies focusing on branding rooted in local wisdom demonstrate that the effective visualization of cultural identity can enhance a product's market appeal while simultaneously reinforcing consumer consciousness of traditional values [3]. Within the digital realm, social media has established itself as an effective platform for promoting cultural products, particularly when leveraged alongside compelling and culturally relevant visual narratives. Nevertheless, a gap persists in the extant literature, as the majority of these studies

concentrate on either conventional or standard digital marketing approaches, lacking integration with advanced technologies such as Artificial Intelligence (AI) [4].

Concurrently, recent advancements in visual communication design indicate that Artificial Intelligence (AI) offers breakthrough potential in visual content production. AI transcends its role as a mere automation tool, functioning as a creative collaborator capable of generating adaptive designs that align with contemporary visual trends and audience preferences. Several contemporary studies substantiate that integrating AI into visual branding strategies can significantly enhance consumer engagement by facilitating more personalized, interactive, and contextual visual representations. Nonetheless, within the specific domain of local cultural products, research on the practical application of AI remains markedly limited. It is precisely this gap in the literature that the present study seeks to address [5].

The central research question of this study is how to formulate a visual marketing strategy that leverages the potential of Artificial Intelligence (AI) to reinforce the cultural identity of Batik Tanah Liek. This inquiry is driven by an identified gap: the current lack of a conceptual model or framework that specifically integrates local cultural values with AI technology for visual branding purposes. The integration of these two domains is, in fact, essential to simultaneously address the dual challenges of cultural preservation and effective adaptation to the digital marketplace [6].

The significance of this research is twofold, offering substantive contributions to both academic discourse and practical application. Academically, the study advances the field of visual communication design by proposing a novel conceptual model for integrating local wisdom with advanced technology. It further enriches scholarly debates on the culture-technology nexus by demonstrating how Artificial Intelligence (AI) can be leveraged not merely for commercial gain but as a viable tool for cultural preservation. Practically, the research delivers tangible benefits to Batik Tanah Liek artisans and enterprise managers by providing adaptable visual design prototypes. The relevance and market viability of these prototypes were ensured through validation via brainstorming sessions with store managers [7].

The primary objective of this research is to formulate an Artificial Intelligence (AI)-based visual marketing strategy for Batik Tanah Liek that simultaneously strengthens its cultural identity and enhances its competitiveness in the digital marketplace. To achieve this overarching aim, the study delineates three specific objectives: first, to develop a visual design prototype, leveraging AI, that authentically embodies the philosophical values and unique identity of Batik

Tanah Liek; second, to assess the relevance and potential effectiveness of the proposed designs through qualitative validation via brainstorming sessions with local stakeholders, including artisans and merchants; and third, to synthesize the findings into a replicable visual branding strategy model that can be adapted for the preservation and promotion of other Indonesian cultural products.

Grounded in this framework, the research offers both theoretical contributions and practical solutions to the pressing challenges faced by local cultural products in the digital era. It is anticipated that this study will establish a foundational model capable of being adapted and applied to other cultural contexts, thereby amplifying its academic and practical impact[8]. Ultimately, by integrating tradition with cutting-edge technology, this research posits that Artificial Intelligence can be strategically harnessed not merely as a tool for efficiency, but as a vital instrument for preserving, developing, and effectively communicating cultural identity in the face of an increasingly homogenizing visual globalization.

2. Methods

The research methodology provides the foundational framework to ensure all investigative steps are systematic and replicable. This methodological design was formulated to directly address the core research problem: the development of an AI-based visual marketing strategy to strengthen the cultural identity of Batik Tanah Liek. Consequently, the approach employs not only a qualitative-descriptive method, which is standard in visual communication design research, but also incorporates an experimental component. This involves creating AI-generated visual prototypes and validating them directly through brainstorming sessions with store managers.

This study was structured upon three foundational pillars: **the collection of visual and contextual data, the development of AI-based prototypes, and the validation of these designs through brainstorming sessions**. Each pillar was executed systematically to construct a visual strategy model that is not only technically adaptive but also culturally resonant and practically applicable.

The initial stage of this research involves the collection of both visual and contextual data. The visual data component comprises the documentation of Batik Tanah Liek motifs in their various forms. This includes archiving both historical motifs that are seldom reproduced in contemporary practice and those that remain actively used in current production. The documentation process employs high-resolution digital photography to guarantee the accurate capture of every motif detail. Concurrently, contextual data is gathered through informal interviews with batik artisans. These interviews focus on elucidating the philosophy

inherent in each motif, the traditional techniques for applying clay-based dyes, and the accompanying cultural narratives. This contextual layer is crucial, as it ensures that the subsequent AI-generated prototypes do not merely replicate the visual appearance of the motifs but are also imbued with their embedded cultural significance [9].

The second stage encompasses the development of AI-based prototypes. This phase employs text-to-image and image-to-image generative AI software to synthesize new visual designs. This synthesis is achieved by integrating the previously gathered visual data with textual instructions, or prompts, meticulously formulated by the researchers. These prompts are engineered based on an interpretative understanding of Batik Tanah Liek's philosophical foundations. This ensures the AI is guided to generate outputs that align with cultural identity, transcending mere aesthetic appeal. The prototype development follows an iterative process, wherein each AI-generated output is subjected to critical analysis, selection, and refinement to attain an optimal visual representation. Furthermore, this stage involves systematic experimentation with technical parameters—including image resolution, the degree of motif variation, and color palette settings—to ensure they accurately reflect the unique characteristics imparted by clay as a natural dye [10].

The third stage involved validation through brainstorming sessions. Brainstorming was selected over a more formal Focus Group Discussion (FGD) due to its greater flexibility and higher feasibility for implementation with the research partners, who were the managers of the Batik Tanah Liek store. In practice, these sessions were conducted in an open discussion format, during which the AI-generated prototypes were presented. The store managers were then invited to provide feedback on key aspects, including aesthetic appeal, the fidelity of cultural identity representation, and perceived market relevance. The qualitative data gathered comprising notes, comments, and suggestions was subsequently analyzed to refine and finalize the design prototypes. Consequently, the brainstorming process functioned dually as a validation mechanism for the designs and a participatory medium for engaging the partners in the co-creative research process [11].

In addition to the three primary stages, this study incorporated an evaluative analysis to assess the efficacy of the resulting prototypes. The evaluation employed a set of straightforward yet pertinent metrics. These included the level of design acceptance among store managers—measured by the proportion of prototypes deemed suitable—the alignment of the visual narrative with the philosophical tenets of Batik Tanah Liek, gauged through qualitative assessment, and the potential for digital audience engagement, estimated by simulating prototype uploads on social

media platforms and analyzing initial feedback. While the study did not utilize large-scale quantitative measurements, the selected evaluative metrics provided a sufficient basis for gauging the preliminary effectiveness of the AI-driven visual strategy [12].

Methodologically, this research adopts a transdisciplinary framework. The visual communication design component provides the principles for crafting visual artifacts that effectively embody cultural identity. Concurrently, the lens of cultural anthropology informs the process by emphasizing the inherent narratives and philosophical meanings embedded within Batik Tanah Liek. From a technological standpoint, the methodology leverages the capabilities of generative AI as a core creative instrument for visual synthesis. The integration of these three distinct disciplines ensures that the research is not only conceptually robust but also possesses significant technical and practical relevance [13].

To elucidate the methodological sequence with greater clarity, the research process is delineated in a flowchart. The diagram outlines five primary stages: first, the documentation of Batik Tanah Liek motifs and the collection of associated cultural narratives; second, the interpretation of the underlying philosophy into textual instructions (prompts); third, the generation of design prototypes utilizing AI; fourth, an internal analysis conducted by the researchers; and fifth, a validation phase involving brainstorming sessions with store managers. This process is cyclical, as insights gained from the validation can be fed back to refine the textual instructions and generate improved prototypes. Consequently, the methodology underscores an iterative approach that facilitates continuous refinement [14].

The principal methodological contribution of this research resides in its integration of artificial intelligence (AI) technology with a participatory brainstorming framework. The novelty of this approach is characterized by the deployment of AI not simply as a technical instrument, but as a mediating tool to bridge deep-seated cultural values with the demands of contemporary visual communication. Concurrently, the brainstorming method elevates research partners from being passive objects of study to active subjects, directly involved in the co-creation of the visual strategy. Consequently, this methodological framework is designed for reproducibility, offering a transferable model for researchers investigating other cultural products, provided they adhere to the core sequence of visual documentation, AI-driven prototype development, and participatory validation [15].

A further advantage of this methodology is its inherent flexibility. The application of AI facilitates near-limitless visual exploration, while the integration of brainstorming sessions anchors this exploration in

practical reality, ensuring its relevance to market demands. The synergy of these two components establishes an essential equilibrium between avant-garde visual innovation and grounded cultural acceptance. Moreover, the methodological framework possesses significant potential for further development. Subsequent research could incorporate quantitative testing mechanisms, such as digital consumer surveys or in-depth analysis of social media interactions, to build upon these initial qualitative findings [16].

Through this structured methodological design, the research is positioned to yield findings that are valid, reliable, and replicable. Each procedural step is delineated with sufficient detail to facilitate its application by other researchers, both within the specific context of Batik Tanah Liek and for the study of other local cultural products. Consequently, the methodology transcends its role as a mere instrument for achieving the immediate objectives of this study, establishing itself as a substantive contribution to the broader discourse on culture-based visual communication design in the digital era [17].

3. Results and Discussions

3.1 Development of AI-Based Visual Design Prototypes

Initial Findings and Prototype Development

The initial research phase yielded a series of visual design prototypes for Batik Tanah Liek, generated using generative Artificial Intelligence (AI) models. The development of these prototypes followed an iterative process that synthesized textual prompts with a foundation of previously gathered visual data. Crucially, the prompts were culturally curated, incorporating narrative elements such as the philosophical significance of clay—symbolizing the connection between humanity and the earth—and cosmological representations inherent to Minangkabau batik motifs. This approach ensures that the resulting prototypes transcend the function of mere decorative ornamentation, instead serving as a communicative medium for cultural meaning. Technical Output and Analytical Reflection, From a technical standpoint, the AI produced prototypes with variations in motif, composition, and color palette. An internal analysis revealed that a number of outputs successfully aligned with the characteristic aesthetics of Batik Tanah Liek, particularly through the use of distinctive earth-tone colorations. Conversely, other outputs exhibited deviations from traditional philosophical principles, such as the incorporation of overly modern color gradations that conflict with conventional natural dyeing techniques. This divergence underscores a key finding: while AI acts as a potent creative partner in generating visual exploration, human oversight remains essential to curate its output and guarantee cultural fidelity.

From a visual communication design standpoint, the efficacy of these prototypes is demonstrated by their successful synthesis of traditional values with a contemporary aesthetic. Certain designs incorporate repetitive patterns that resonate with modern graphic design trends, thereby enhancing their suitability and potential impact within digital promotional media. These findings substantiate the role of Artificial Intelligence as a viable medium for cultural hybridization, effectively bridging traditional heritage and technological innovation within a visual branding framework.

3.2 Validation Through Brainstorming with Store Managers

Following the prototype development phase, the research proceeded to a brainstorming session with Batik Tanah Liek store managers. The objective of this session was to validate the extent to which the generated prototypes aligned with practical market demands while faithfully representing the product's cultural identity. The discussion yielded critical stakeholder feedback, highlighting a central tension: designs perceived as overly modern were seen to compromise the batik's authenticity, whereas those deemed too traditional were considered potentially less attractive to younger, contemporary consumers.

This feedback underscores a classic challenge in marketing cultural products: achieving an equilibrium between authenticity and contemporary adaptability. Furthermore, the brainstorming session revealed that certain motifs perceived as simplistic are, in fact, favored by customers due to their high recognizability and versatility for integration with modern apparel. This insight indicates that successful branding is contingent not solely on aesthetic complexity, but also on forging robust emotional and functional connections with the consumer base.

The validation process via brainstorming confirmed that the research extends beyond mere technological experimentation to incorporate critical social and market dimensions. The active involvement of store managers as collaborative partners ensured the resulting prototypes attained greater relevance and practical applicability. This approach substantiates the argument that participatory methodologies are indispensable in culture-based visual communication design research, as they are instrumental in establishing an essential equilibrium between innovative potential and tangible, real-world needs.

3.3 Integration of Cultural Identity in Visual Branding

The most significant finding of this study is the demonstrable capacity of Artificial Intelligence to generate designs that preserve embedded cultural narratives, provided it is guided by meticulously curated instructions. For instance, prompts explicitly emphasizing earth tones, symbols of local flora, and

the characteristic repetitive patterns of Minangkabau art yielded outputs with a markedly stronger alignment to Batik Tanah Liek's identity compared to generic instructions such as "traditional Indonesian batik." This outcome underscores the critical role of strategic prompt engineering, highlighting that deliberate curation is essential for leveraging AI as a culturally intelligent creative tool.

From a branding perspective, the study's findings demonstrate that AI-generated visuals offer significant potential for creating highly adaptive promotional materials tailored to various digital platforms. These designs can be specifically customized for social media, online catalogs, and even augmented reality applications. While cultural identity remains a fundamental element of branding strategy, it is communicated through formats that more effectively align with the expectations of contemporary digital audiences. Therefore, the study demonstrates that strengthening cultural identity need not involve a rigid adherence to traditional forms; rather, it can be successfully achieved through strategic and innovative visual adaptations.

These findings align with existing scholarships that underscores the criticality of cultural representation in visual communication. The novel contribution of this study, however, lies in its demonstration of Artificial Intelligence as a facilitative agent within this representational process. In essence, AI does not supplant cultural values; rather, it amplifies the potential for their expression through formats that possess greater relevance for contemporary markets.

3.4 Comparison with Previous Research and Theoretical Implications

In contrast to prior research, this study demonstrates a significant evolution in the application of digital technology for branding cultural products. Whereas earlier work has predominantly concentrated on utilizing social media as a channel for message dissemination, this research introduces a new dimension by positioning Artificial Intelligence as a core tool for the very production of culturally-grounded visual messages. Consequently, the primary theoretical contribution of this study is the proposition of a cultural-AI branding framework—a strategic model that integrates AI technology with local cultural narratives to forge a distinctive brand identity.

A further theoretical implication arising from this study is the necessity for developing more interdisciplinary methodological frameworks in visual communication design research. Historically, the field has predominantly emphasized aesthetic and semiotic analyses. This research, however, demonstrates that effective branding strategies necessitate an integrated approach that encompasses technological proficiency, social participation, and market literacy. Therefore,

prevailing theoretical frameworks in visual communication must be expanded to simultaneously accommodate the intertwined dynamics of technological innovation and cultural expression.

Furthermore, the findings concerning the critical role of prompt engineering in generating culturally resonant AI designs unveil a new avenue for inquiry within visual communication design. In this context, prompts can be conceptualized as a novel form of "design language" that mediates between human cultural values and computational systems. Consequently, subsequent research dedicated to the semiotics of prompts holds significant potential to enrich scholarly discourse on the complex interplay between language, technology, and culture.

3.4 Practical Implications, Limitations, and Future Research Directions

From a practical standpoint, this research offers direct, actionable contributions to Batik Tanah Liek artisans and enterprise managers. The resulting AI-generated prototypes are readily applicable as digital promotional assets for use in online catalogs and social media campaigns. Furthermore, the participatory brainstorming methodology facilitates a vital exchange of knowledge between researchers and practitioners, ensuring the developed visual strategies are deeply aligned with the local cultural and market context. In the long term, the adoption of this approach is poised to enhance the competitiveness of Batik Tanah Liek in both domestic and international markets.

Despite its contributions, the study acknowledges several limitations. First, the scope of the prototype was limited, and the designs were not extensively tested with a broader consumer audience. Second, the evaluation of the design performance relied largely on qualitative assessments, without incorporating comprehensive quantitative metrics—such as measurable social media engagement data or sales—to corroborate the findings. Third, the application of AI in this creative context presents ongoing ethical challenges, particularly regarding copyright issues and the definitive originality of the resulting designs.

However, these limitations open up productive opportunities for future research. Future research could expand on this study by generating a larger prototype corpus and using consumer surveys to quantitatively measure the effectiveness of AI-based visual branding. Furthermore, research could explore the integration of immersive technologies, such as augmented reality (AR) or virtual reality (VR), to create richer consumer experiences. This evolution would shift visual marketing strategies from a reliance on static imagery to dynamic, interactive, and immersive formats.

In conclusion, the findings of this study demonstrate that the integration of tradition and technology represents a strategic synergy, rather than a paradox.

Artificial Intelligence can serve as an innovative medium to strengthen the cultural identity of Tanah Liek Batik while increasing its relevance in the digital age. These findings significantly contribute to the advancement of visual communication theory and, at the same time, offer a practical framework for protecting local cultural heritage in an increasingly globalized context.

4. Conclusions

This study establishes that reinforcing the cultural identity of Batik Tanah Liek is achievable through visual marketing strategies that synthesize Artificial Intelligence (AI) with indigenous traditional values. The methodology—Involving the development of AI-based design prototypes validated via collaborative brainstorming with practitioners—successfully demonstrates technology's capacity to function as a creative instrument. This tool preserves authentic cultural narratives while simultaneously generating visual innovations adaptable to the digital marketplace. The findings reveal that AI transcends its role as a mere automation utility, acting instead as a medium for expanding cultural representation through contextual and generationally relevant visual formats. Consequently, this research addresses its central question by illustrating how AI-driven visual strategies can mediate between tradition and modernity, proposing the "cultural-AI branding" framework as a novel theoretical contribution to visual communication design.

From a practical perspective, the study delivers tangible assets to Batik Tanah Liek artisans and merchants in the form of readily implementable branding materials for social media and digital catalogs. Academically, it pioneers a new trajectory for discipline by highlighting technology's integral role in cultural preservation and by advocating for future research that incorporates quantitative methods to empirically gauge prototype impact on a broader scale. Ultimately, this research corroborates the premise that the integration of tradition and technology constitutes a vital strategy for ensuring cultural sustainability within the context of intensifying global competition.

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