

A Qualitative Exploration of Generative Batik Ornaments and Digital Branding Strategies Based on Consumer Behavior in the Creative Economy Era

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Keywords:

Batik; Design Generative; Digital Branding; Culture Consumer; Analysis Qualitative

ABSTRACT

Industry batik fashion today *undergoing a comprehensive transformation* because of the convergence of digital technology and shifts in consumer behavior within the *Creative Economy Ecosystem*. These dynamics demand that industry players move beyond merely preserving traditional cultural identity and begin orchestrating design innovation and marketing strategies that resonate with digital markets. This research focuses on a qualitative analysis of the utilization of a generative design approach in the visual engineering of batik ornaments, as well as formulating a conceptual model of branding strategies based on consumer data to increase competitiveness in modern fashion. Through a qualitative approach that emphasizes exploratory design analysis and digital consumer behavior research, data are deeply examined through literature studies, observation of visual trends on social media, and narrative evaluation of audience preferences. The research findings indicate that algorithmic generative design systems can broaden the spectrum of motif innovation flexibly through modifications in pattern structures, repetition, and color composition. Furthermore, a qualitative understanding of digital data provides sharper empathetic insights into consumer visual preferences, guiding the design process to become more adaptive. This research culminates in the formulation of a conceptual branding model that closely integrates design exploration, consumer insight analysis, and digital communication strategies, thereby holistically strengthening the legitimacy of batik as a competitive cultural commodity in the global fashion arena.

INTRODUCTION

Batik is a manifestation of civilization that contains deep historical, aesthetic, and symbolic order, strongly rooted in Indonesian society. UNESCO's affirmation in 2009, which designated it as an Intangible Cultural Heritage, has repositioned batik from merely a textile entity into a representation of a living cultural identity that continues to evolve. In the contemporary landscape, we witness a crucial transition in which batik has transformed from a symbolic cultural artifact into a creative commodity with high economic value within the vortex of the fashion industry (Argyrou et al., 2024). The evolution of societal consumption patterns and the simultaneous penetration of digital technology have pressured batik industry

practitioners to formulate visual innovations and marketing tactics that are more agile and adaptive to the pulse of the market.

In digital marketing discourse within the fashion industry, the aesthetic superiority of a product cannot stand alone; it must be supported by its capacity to construct brand identity and maintain emotional attachment with its audience. The greatest challenge today is how to generate innovative motifs that speak in the language of modern aesthetics without uprooting traditional spirit. The paradigm of motif creation, which has long relied heavily on the artistic intuition of craftsmen, is gradually reaching a dead end when confronted with the necessity to respond to rapidly shifting market trends. At this point, computational capabilities through generative design offer a new breakthrough in visual exploration. This approach enables designers to push beyond traditional pattern boundaries in a systematic way, using data as a compass for creative decision-making. By integrating consumer preference data from the digital ecosystem, the design process is transformed into an empirical analysis that embraces real market needs.

Previous studies have highlighted the importance of digital transformation in the batik industry. Research by Rahmawati & Nugroho, (2023) emphasizes that digital technology opens new opportunities for innovation in traditional batik design, although challenges remain in maintaining cultural authenticity. Furthermore, (Santosa & Wibowo, 2024) demonstrate that computational design can expand motif variations while preserving traditional structures, indicating the potential of generative approaches in creative industries. In terms of marketing, (Hutter et al., 2023) show that social media interaction significantly influences brand awareness and purchase intention, while (Pradani & Muthohar, 2022) confirm that digital marketing and social media strategies play a crucial role in strengthening customer engagement and brand loyalty in batik fashion. Additionally, (Solomon, 2023) highlights that consumer behavior in the digital era is increasingly shaped by visual preferences and interactive engagement on digital platforms.

Of course, this visual innovation must be capitalized on through a sharp branding strategy. In the fashion landscape, brands operate as semiotic vehicles that transmit values, lifestyles, and images to consumers. The social media revolution has radically changed the way consumers engage with fashion products. Modern audiences are no longer willing to be positioned as passive recipients; they are active participants who shape brand discourse through digital interaction. Therefore, qualitative analysis of consumer data becomes an essential instrument for dissecting aesthetic preferences, consumption patterns, and psychological triggers that drive purchase decisions.

Although marketing literature acknowledges the urgency of synergy between design innovation and branding on a global scale, studies that specifically integrate generative design with qualitative, consumer data-based branding strategies within the batik ecosystem remain highly limited. The dominance of historical and conventional production-focused studies has left a significant epistemological gap, demanding further investigation into how computational technology can strengthen brand positioning amid the intensifying competition within the batik industry.

In welcoming the massively digitalized creative economy era, organic integration between design creativity, behavioral analysis, and digital marketing strategies has become an absolute prerequisite for competing in the global market. Based on this premise, this study aims

to qualitatively analyze the harmonized development of generative batik ornaments aligned with audience preference data, as well as to formulate this approach as a strategic branding tool. In addition, this study seeks to examine the intricate correlation between visual innovation, brand engagement, and consumer intention within the digital marketing arena. Academically, this discourse is expected to enrich the literature on design and consumer behavior while simultaneously presenting strategic pathways for industry practitioners to develop relevant and competitive marketing strategies.

METHOD

This study adopted a qualitative, exploratory design to examine the transformation of generative batik ornaments and to map the creative industry ecosystem in a holistic manner. The spatial context of the study was centered in Surakarta, a major hub of traditional batik production, with a focus on Laweyan Batik Village and Kauman Batik Village. The selection of these locations was based on their historical significance and their ongoing transition into MSME ecosystems that have increasingly adopted digital marketing platforms.

Data collection was conducted using comprehensive qualitative methods to capture phenomena within the digital and creative landscape:

- 1) Contextual Observation: This was conducted directly within the batik industry centers in Surakarta to examine the design processes, digital marketing practices, and patterns of motif innovation developed by MSME actors.
- 2) Visual Documentation and Digital Trend Analysis: This involved the collection and examination of visual data on batik ornament variations, supported by analysis of emerging fashion trends across digital platforms.
- 3) Qualitative Data Analysis: The collected data were analyzed through in-depth visual interpretation, focusing on motif patterns, compositional structures, and the degree of harmony between generative batik designs and contemporary fashion trends.

RESULTS AND DISCUSSION

Visual Transformation of Batik Ornaments: From Artifacts Going to Commodity Based Computational

Batik ornaments are a foundational aesthetic identity in traditional textiles of the archipelago. In general historical context, motifs such as parang, kawung, and lereng (slopes) developed as a visual system loaded with repetition, rhythm, symmetry, and balanced layout. However, the shift in the status of batik to a creative commodity in the digital fashion sector demands sustainable innovation that can respond to dynamic visual trends in an agile manner.

In response to this industrial pressure, the generative design approach has emerged as a design methodology that revolutionizes the computational paradigm for designers in exploring form. Instead of designing end results manually, designers build parameter-based algorithmic systems to produce motif variability in a more massive and systematic way. The generative exploration process in this study reconstructs classic motifs—such as parang, kawung, and lumpur—through shape transformation operations, including rotation, scaling, and modular repetition. This process has proven to generate a highly complex spectrum of motifs without degrading the fundamental character of their traditional heritage.

Based on exploratory visual analysis, there are four crucial design parameters that dictate the aesthetic character of generative motifs in the modern fashion ecosystem:

- 1) Geometric Structure as a Cognitive Foundation: Geometric structure acts as the primary architectural framework in motif composition. Analysis shows that simpler and more straightforward geometric structures offer superior flexibility for application in modern fashion products. This design is more cognitively accessible, making it easier to be visually identified by audiences amid the flood of digital visual information.
- 2) Modular Repetition System: Repetition is the spirit of batik ornamentation. Through generative exploration (linear, radial, and modular), qualitative analysis confirms that modular repetition systems present the highest level of flexibility. This system provides discretionary space for motif elements to be configured dynamically while still maintaining elegant visual equilibrium.
- 3) Visual Complexity and Screen Presence: This parameter is vital in the digital marketing landscape. Complexity relates to the number of visual elements within a single motif canvas. Motifs with excessive element density tend to experience distortion in appreciation when consumed through mobile screens. On the other hand, motifs with a moderate level of complexity exhibit stronger visual appeal from a distance and are more easily recognized.
- 4) Color Composition Orchestration: Color controls both aesthetic perception and consumer emotion. The blending of Indonesian heritage color schemes (such as sogan brown, black, and cream) with the injection of contemporary contrasting accent colors has proven to be highly effective. This composition successfully creates visually captivating characteristics for younger demographics while maintaining the cultural legitimacy of batik.

This qualitative exploration demonstrates that digital transformation through generative design is not a threat to tradition, but rather an instrument that strengthens adaptive visual reinterpretation. This reflects a shift in modern consumer preferences—especially among younger generations—who are increasingly drawn to aesthetic characteristics that are minimalist, flexible, modular, and inclusive of contemporary fashion styles.



Figure 1. Generative Design Parameters

Source: Sulistyono, 2026

Dynamics Behavior Digital Consumers and Construction Brand Engagement

In the contemporary global fashion industry landscape, the success of a commodity no longer rests exclusively under the umbrella of material quality or functional design alone; rather, it is dictated by the strength of brand determination attached to the product. In the context of the batik industry, branding strategies operate as instruments for identity creation that facilitate an emotional bridge between the product, culture, and its audience.

Shifting tectonics in the digital marketing landscape have overhauled the procedures through which consumers interact with brands. Social media platforms—such as Instagram, TikTok, and Pinterest—have increasingly become the main arenas for audiences to seek fashion inspiration, explore the latest product releases, and construct psychological perceptions of a brand. In this fast-moving visual ecosystem, consumers often formulate initial decisions based purely on visual impressions captured within seconds.



Figure 3. Behavior Consumers in the Digital Age

Source: Sulisty, 2026

Based on qualitative evaluation of consumer preferences, the findings indicate that modern fashion audiences no longer position themselves as passive recipients but rather as active participants responding to dynamic online content. This organic interaction—which is manifested in the form of comments, content amplification (sharing), and advocacy through references to other users—gives rise to a phenomenon known in metrics as brand engagement or the level of brand involvement.

Qualitative analysis of generative design prototypes reveals an essential consumer insight: modern audiences empirically give greater appreciation to generative motifs that exhibit simple yet innovative visual characteristics, compared with motifs constrained by excessive complexity. This preference consistency is logical when considering how consumers process visual information in the digital age; most content is accessed rapidly through mobile device screens, which are relatively small. As a result, batik motifs that are overly dense or complicated often fail to be clearly identified in digital projections. Therefore, the absolute condition for effective batik motif design in the digital era lies in its ability to trigger instant and precise visual recognition.

Marketing Data–Driven Marketing in the Creative Ecosystem

The advancement of digital infrastructure provides industry practitioners with the advantage of extracting consumer data as a fundamental foundation for marketing strategy architecture. This marketing approach, rooted in audience behavioral data analysis, is known in academic disciplines as data-driven marketing. Through this methodology, the decision-making process—whether concerning product design, brand communication systems, or promotional strategies—no longer relies exclusively on intuition or artistic guesswork, but is instead refined by the legitimacy of empirical information derived from market data. Major platforms such as Instagram and TikTok not only function as promotional funnels but also serve as rich data mines for analyzing the anatomy of consumer behavior.

By dissecting the digital footprint of user interactions—through metrics such as the accumulation of likes, comment sentiment, and engagement ratios in visual content—industry actors can accurately map which motif designs have the highest traction and popularity potential within the market landscape. Historical data from social media interactions, product search algorithms, and online purchasing records provides valuable intelligence regarding audience visual preferences and consumption tendencies. This organic integration between generative design technology and precise consumer data analysis enables the realization of highly adaptive and market-resonant batik product innovations.



Figure 4. Marketing data -driven

Source: Sulistyono, 2026

Orchestration of *Digital Branding* and Visual Communication Strategy

Embodiment marks the proposition of batik in the digital era requires translation of philosophical and unique design into language coherent marketing. Batik has a very solid differentiation product compared to other commodities textiles, considering every curve the motive lived by philosophy and distinctive culture. To amplify mark in this global market, batik MSMEs must orchestrate several pillars of digital marketing strategy simultaneously.

1. *Visual Branding Consistency*

Constructed batik motif design with a tough visual character will be far more easily incorporated into the memory collective audiences in digital media. After the complete batik motif is selected through filter consumer data analysis, the next crucial stage is to formulate a

cohesive and consistent brand visual identity. This visual identity becomes the life of brands, which includes institutionalization style motif design, determination palette color brand, curation typography, up to standard style photography product. Persistent visual branding is the key opener road to build a foundation identity superior brand in the fashion market.



Figure 5. Generative Design of Mega Mendung Nogososro
Source: Sulistyو and Widiarsa, 2026



Figure 6. Generative Design of the Lasem Three Country Parang
Source: Sulistyو and Widiarsa, 2026



Figure 7. Generative Design of Truntum Padmanaba
Source: Sulistyو and Widiarsa, 2026



Figure 8. Generative Design of Phoenix Parangsari
Source: Sulistyو and Widiarsa, 2026

2. Content Marketing and Digital Storytelling

In economics, attention (attention economy), batik branding strategies in the digital era require a long-distance approach more strategic and substantial. The perpetrator industry required not just to show off traditional mark, but must proficiently pack the narrative culture to engage in sheath, easy-to-use digital content digested by consumers cross-country. Proven digital storytelling strategy becomes a very powerful tactic in knitting the image of a batik brand. Through structured narrative, the producer can articulate the depth of the philosophy of

batik motifs, the complexity of the manufacturing process, and the inspiration style of dressing (styling) in a way more persuasive and touching the realm of emotional audience. Approach content This approach to content in an empirical way capable of jack up mark emotional product in a way significant in the mind of consumers.



Figure 9. Branding and Storytelling Strategy

Source: Sulistyono, 2026

3. Channel Penetration and *Influencer Marketing*

Disruption of digital technology has revolutionised the anatomy channel distribution and product fashion; the epic of domination in the shop physique has shifted in a massive way towards the dominance of digital platforms such as e-commerce marketplaces, social media, and brand websites. In order to accelerate penetration in these channels, strategic collaboration with influencer fashion has become an important catalyst. These influencers hold significant psychological control in navigating audience perception and dictating contemporary fashion trends.

Conceptual Model Batik *Branding* Based on Consumer Data

Development of digital technology has fundamentally changed the paradigm in branding strategy for product fashion. If in the decade previously branding was heavily based on intuition, marketing and approach, creative and conventional, in the current digital economy era, this strategy must evolve, going to an approach that is strictly based on consumer data. In the batik industry, the urgency of this approach is evident considering that the digital fashion market has highly dynamic characteristics, where consumer visual preferences can shift in an exponential way following trends on social media.

Proposed branding model in this study places digital consumer data as the epicenter, taking decisions in the development of products. This source of market intelligence is extracted

from interactions with organic users on platforms like Instagram and TikTok, which currently hold this hegemony in dictating fashion visual trends to the public.

In a qualitative way, the integration model of this batik branding is supported by four crucial components that mutually interact:

1. Generative Design Exploration:

The design stage uses an algorithmic system to produce variations of batik motifs that exceed conventional limitation methods. This visual innovation streamlines the creative process without compromising aesthetic parameters and cultural suitability.

2. Digital Consumer Data Analysis:

An in-depth look at search trends, e-commerce reviews, and social media interactions to identify the motifs with the highest potential for popularity.

3. Development Brand Visual Identity:

The process of translating data-validated designs into a cohesive brand identity, including color palette, typography, and style, photography. Identity is not just a marketing tool, but rather a communication medium that marks culture.

4. Digital Communication and Distribution Strategy:

Visual campaign orchestration, storytelling philosophy of motifs, and collaboration with influencers to jack up visibility and build a bond emotionally with consumers.

For map connection, intervariable in the ecosystem of this digital marketing, here is a matrix conceptual that summarizes qualitative indicators from the improvement strategy of Power Batik competition:

Table 1. Matrix Conceptual Digital Batik Innovation and Branding

Component Conceptual	Research Variables	Qualitative Key Indicators	Source References
Batik Generative Design	Innovation motif design	Variation pattern, structure geometric, system repetition, visual complexity, algorithmic exploration	Singh & Patras (2024); Santosa & Wibowo (2024)
Digital Data Analysis	<i>Consumer insight</i>	Pattern preferences, trends color, social media interaction, <i>engagement</i> visual content	Solomon (2023); Hutter et al. (2023)
Batik Branding	Identity brand	<i>Brand</i> visual consistency, <i>storytelling</i> culture, differentiation product, image brand	Kapferer (2023); Kotler & Keller (2022)
Digital Marketing Strategy	Communication marketing	content, <i>influencer marketing</i> , social media campaigns, digital distribution	Pradani & Muthohar (2022); Arsyad et al. (2024)
Competitiveness of Batik Products	Market performance	<i>Brand awareness</i> , interest buy consumers, loyalty customers, differentiation product	Osterwalder & Pigneur (2023)

Source: Sulistyio , 2026

Fourth component: This culminates in a cycle of sustainable innovation, where evaluation and response from consumers to digital products will return as input data for the development of generative motifs in the next season.

CONCLUSION

This study confirms that a generative design approach does not threaten authenticity but instead expands the spectrum of systematic visual exploration without eroding the fundamental character of traditional batik motifs, while the integration of computing, consumer insight, and design analysis ensures greater product relevance and precision for digital market preferences. From a digital consumer behavior perspective, empirical findings reveal a preference for simplicity, as modern consumers show stronger affinity toward batik motifs that are minimalist and instantly recognizable on mobile screens, whereas overly complex designs lose effectiveness amid social media distractions; consequently, branding strategies centered on digital storytelling—emphasizing the philosophical and historical narratives of motifs—become essential for fostering emotional attachment and loyalty. To remain competitive in the global fashion industry, batik SMEs are encouraged to adopt digital design technologies, implement data-driven decision making through social media and e-commerce analytics, shift toward narrative-based brand communication, and build cross-disciplinary creative ecosystems. Future research should adopt interdisciplinary approaches by leveraging big data analytics and machine learning to more accurately predict batik design trends, while also exploring the impact of digital branding strategies on international consumer psychographic segmentation to strengthen batik's position in the global creative economy.

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