

Algorithmic Dissemination of Javanese Cultural Narrative Heritage: A Semiotic Study of TikTok's Cyberspace of the Museum Karaton Surakarta Hadiningrat for Enterprise Development

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ABSTRACT

This paper examines the semiotics of symbols and meanings in promoting Javanese cultural heritage and the historic architecture of the Museum Karaton Surakarta Hadiningrat through TikTok. While prior research has explored heritage communication in cyberspaces, few studies have investigated how algorithmic dynamics on short-form video platforms shape cultural visibility. Unlike previous work that has focused primarily on user-generated content or linear transmission models of digital heritage, the proposed “algorithmic cultural dissemination” model specifically captures how platform-specific logics (e.g., re-engagement loops, forced seriality, and trend adaptation) actively reconfigure the semiotic encoding of heritage symbols to optimize visibility. This model thus shifts the analytical focus from static representation to the recursive feedback between algorithmic ranking and cultural meaning-making. Employing a mixed-methods design combining content analysis, digital ethnography, and algorithm engagement tracking, this study applies a semiotic analytical model to evaluate cultural representation strategies. Findings demonstrate that heritage-focused videos achieve greater reach and audience retention when aligned with trending formats, participatory storytelling, and platform-specific concordances. Theoretically, this research introduces a model of algorithmic cultural dissemination; practically, it offers strategies for heritage institutions to strengthen cultural business and smart enterprise development. Ultimately, the study underscores the potential of media algorithms not only as entertainment mechanisms but also as powerful tools of narrative storytelling, museum management innovation, and the advancement of sustainable cultural practices with both national and global impact.

Keywords: Cultural Semiotic, Entrepreneurship, Museum Management, Smart Culture, TikTok's algorithms

INTRODUCTION

The way heritage is mediated, experienced, and shared in the twenty-first century has changed with the digitization of cultural communication. (Keightley, 2022). Once seen mainly as entertainment channels, social media platforms are becoming vital infrastructures for identity construction, public memory, and cultural storytelling (Merrill et al., 2020). Among these, short-form video platforms like



TikTok play a unique role: their trend-based aesthetics, algorithm-driven dissemination, and participatory structures allow cultural content to reach a wide range of audiences (Abidin, 2021). This development presents a dual imperative for heritage institutions: to adapt to the logics of platform visibility while simultaneously preserving the integrity of cultural traditions (Smith & Waterton, 2021).

Cultural semiotics scholars have long emphasized that narratives, symbols, and cultural codes play a fundamental role in shaping collective cultural understanding and meaning-making within society (Barthes, 1972; Eco, 1984). More recent research emphasizes how the concordances of digital media change these semiotic practices and encourage networked publics to participate in reinterpreting tradition (Giaccardi, 2012; Manovich, 2020). However, little attention has been paid to algorithmic mediation, especially in the ecology of short-form video, despite earlier studies examining cyberspaces such as institutional websites, digital archives, and social networking platforms (Gillespie, 2014). This gap is significant, as algorithms do not merely distribute content but also structure cultural visibility, privileging certain narratives while obscuring others (Bucher, 2018; Bishop, 2019).

The Indonesian context provides a compelling case for this inquiry. With its vast cultural diversity and dynamic digital adoption, Indonesia exemplifies the tensions and opportunities of cultural heritage in the algorithmic era (Lim, 2020). A historic Javanese palace and cultural archive, the Karaton Surakarta Hadiningrat Museum illustrates how traditional cultural institutions are navigating digital transformation while preserving court heritage and historical collections (Lindsay, 1992). This specific heritage institution was selected over other Indonesian museums or heritage sites that actively use TikTok (such as Museum Nasional Indonesia or Borobudur) for three key reasons: first, the Karaton remains a living palace with ongoing courtly traditions, offering a unique tension between restricted ritual knowledge and public digital dissemination; second, its official TikTok presence exhibits a high volume of platform-native experimentation (e.g., trending audio, participatory challenges), making it analytically rich for studying algorithmic cultural dissemination; third, as a centralized symbol of Javanese aristocracy, its semiotic density—where every object, pattern, and gesture carries layered meaning—provides an unusually clear case for observing how algorithmic dynamics reshape cultural representation. Although identity heritage, smart tourism, and preservation have been highlighted in studies on Indonesian heritage communication (Hitchcock & King, 1993), the dynamics of platform-driven heritage dissemination remain comparatively understudied. Comprehending these dynamics is crucial for promoting cultural sustainability as well as the business plans associated with smart tourism and the creative industries (Navarrete, 2019). In order to fill this vacuum, the current study analyzes heritage-focused TikTok material about the Karaton Surakarta Hadiningrat using a mixed-methods methodology that combines digital ethnography, content analysis, and algorithm engagement tracking (Gillespie, Boczkowski, & Foot, 2014).

Using a semiotic analytical model, the study investigates how narrative strategies, meanings, and symbols align with or depart from algorithmic logics and platform-specific affordances (Chandler, 2017). This framework highlights the strategic intersections of tradition and digital innovation by

enabling the identification of practices that improve audience reach, retention, and cultural resonance (D'Auria, Bifulco, Tregua, & Russo-Spena, 2022).

Furthermore, social media algorithms are increasingly understood not as neutral technological tools but as active mediators that shape the visibility and circulation of cultural content in digital environments. Cultural heritage institutions such as the Keraton Surakarta Hadiningrat museum can preserve traditions while also transforming how heritage is interpreted, shared, and sustained among both domestic and international audiences through strategic engagement with digital platforms.

By placing legacy communication within the larger discussions of platform studies and digital semiotics, this study theoretically expands the idea of algorithmic cultural diffusion (Berlanga-Fernández, 2022; Moschini, 2018). Practically, the findings offer actionable strategies for heritage institutions and cultural enterprises to optimize their engagement with algorithmic platforms (Parry & Throsby, 2021). These include embracing the affordances of short-form video for narrative innovation, aligning with popular formats, and utilizing participatory storytelling. (Wang & Suthers, 2022; Participatory Video Project, 2024). According to Xia, Liu, and Xu (2023) and Ismail (2025), this highlights the wider potential of digital platforms to bridge cultural preservation with economic development, smart tourism, and the advancement of cultural practices.

METHOD

This study used a mixed-methods design that combined algorithm engagement tracking, semiotic content analysis, and digital ethnography. In cultural communication research, mixed-methods approaches are well known for their capacity to capture both qualitative depth and quantitative rigor (Creswell & Poth, 2018). This museum was chosen to enable a systematic examination of the algorithmic distribution dynamics that influence the reach of heritage-related TikTok content, as well as the symbolic meanings encoded within it.

Between January and June 2024, information was gathered from TikTok. Purposive sampling was used to find videos based on hashtags linked to heritage (e.g., #KeratonSurakarta, #JavaneseCulture, #Museum). Two hundred movies that specifically mentioned the Keraton Surakarta Hadiningrat Museum were chosen. According to the inclusion requirements, videos had to (a) be on heritage content, (b) be in English or Bahasa Indonesia, and (c) receive at least 1,000 views to guarantee baseline visibility (Krippendorff, 2019).

Over the course of three months, user interactions (comments, duets, stitches, and shares) were observed as part of digital ethnography. Field notes revealed trends in audience response, cultural tradition reinterpretations, and interactive involvement, in line with Pink et al. (2016). View time, likes, shares, comments, reach, and impressions were tracked using TikTok analytics and third-party engagement-monitoring tools. Furthermore, in accordance with methods proposed by Bucher (2018) and Bishop (2019), controlled experimental uploads of short-form heritage content were carried out to assess algorithmic amplification under various conditions (e.g., trending audio vs. non-trending audio,

narrative vs. non-narrative framing). To ensure standardization and replicability, all experimental uploads adhered to the following parameters: (a) content duration was fixed at 15–18 seconds, a range identified during pilot observations as optimal for completion rates on heritage-focused videos; (b) posting times were randomized across three daily windows (07:00–08:00, 12:00–13:00, and 19:00–20:00 WIB) to control for time-of-day effects, with each condition repeated a minimum of five times per window; (c) all uploads were conducted from a single, newly created TikTok account with no prior posting history, no followers, and no cross-promotion on other social media platforms to eliminate account-age or existing-audience biases; (d) each video was published without paid promotion or hashtag manipulation, using only the same three standard heritage-related hashtags (#KaronSurakarta, #BudayaJawa, #HeritageTikTok) to isolate algorithmic responsiveness to content features alone.

Semiotic analysis followed Barthes' (1972) structuralist framework and subsequent digital semiotics approaches (Eco, 1984; Manovich, 2020). Videos were coded across three levels:

1. Denotation: literal representations of Javanese heritage (e.g., palace architecture, attire, rituals).
2. Connotation: symbolic meanings such as cultural identity, authenticity, and historical continuity.
3. Mythologies: broader ideological narratives related to nationhood, smart tourism, and global cultural diplomacy.

Content Analysis accrued by coding scheme was developed around three core categories: (a) narrative strategies (storytelling, humor, historical explanation, participatory formats), (b) aesthetic form (editing style, music choice, use of trending templates), and (c) engagement triggers (hashtags, challenges, duet/stitch participation). To ensure rigor, interrater reliability was assessed, yielding a Cohen's Kappa of 0.82, indicating substantial agreement (Landis & Koch, 1977). Quantitative Measures to examine relationships between content strategies and engagement metrics (views, retention rates, shares), regression analysis was used. Duets, stitching, and comment threads were utilized to create interaction chains that were mapped using social network analysis (Wasserman & Faust, 1994), demonstrating how user engagement spreads cultural narratives.

Because TikTok does not completely reveal its algorithmic rationale, platform opacity is the main drawback. Therefore, algorithmic effect was inferred using proxy measures (e.g., engagement analytics) (Gillespie, 2014). Furthermore, TikTok trends change quickly; thus, the results are a snapshot in time. The methodological triangulation, however, offers insights that can be applied to broader patterns of algorithmic cultural diffusion. cross-referencing findings from quantitative engagement measures, anthropological observation, and semiotic analysis (Flick, 2018). Coding consistency was validated by high intercoder reliability. For Ethical Considerations, experimental uploads lessened platform opacity bias. Only TikTok videos that were accessible to the general public were examined. In accordance with digital research ethics guidelines, user names were made anonymous (Markham & Buchanan, 2012).

RESULT AND DISCUSSION

The Legend of Babad Alas Prigi

The findings show that TikTok's participatory concordances and algorithmic logics serve as effective cultural visibility mediators. The algorithm favors content that is in line with platform-specific trends and interactive practices rather than being impartial (Bucher, 2018; Bishop, 2019). Echoing earlier research on algorithmic governance in cultural dissemination, legacy narratives that embrace popular digital aesthetics are therefore more likely to be broadly shared (Gillespie, 2014).

Three main symbolic registers were identified through a semiotic analysis of 200 TikTok short videos. These registers highlight the architectural legacy, traditional Javanese dress, and ceremonial practices of the Karaton Surakarta Hadiningrat Museum. To aid international readers in grasping the deeper cultural significance of these symbols, the following meanings are briefly explicated: (a) the *Surya Majapahit* (star-shaped sun motif) appearing on palace ceilings and royal pendopo structures symbolizes cosmic order and the legitimacy of the king as the center of the Javanese universe, representing the union of human, natural, and divine realms; (b) the *batik parang* motif worn in royal attire—characterized by diagonal knife-like patterns embodies the Javanese philosophy of "*ora dhaya ora rupa*" (power without direct violence), signifying resilience, spiritual authority, and the continuous pursuit of self-improvement, though traditionally restricted from everyday wear by non-royalty; (c) the *kris* (ceremonial dagger) featured in ritual processions carries both physical and metaphysical significance, believed to contain ancestral *kesaktian* (spiritual power) and to symbolize the connection between the ruler, the court, and the protective spirits of Mount Merapi and the Southern Sea; (d) the *jumenengan* ritual a coronation sequence reenacted in short-form videos—centers on the *Sungkeman* gesture (kneeling and bowing to the monarch's right knee), which philosophically represents complete submission to cosmic order and the reciprocal bond between leader and subjects. Narratives emphasized national unity, the worldwide significance of Indonesian heritage, and tourism branding in addition to connotative connotations that focused on authenticity, pride in Javanese cultural identity, and yearning for royal traditions (Moschini, 2018). These results are consistent with previous research demonstrating how heritage is transformed into performative cultural narrative through digital media (Barthes, 1972; Eco, 1984).

Table 1. Summary of Content Strategies and Engagement Outcomes

No	Narrative Strategy	Average Views	Average Shares	Audience Retention (%)
1	Participatory Storytelling (Duet/Stitch)	12.432	1.560	78
2	Documentary-Style (Historical Explanation)	4.965	740	52
3	Humor-Based Formats	10.320	1.325	68

4	Trend-aligned aesthetics (Music videos)	11.285	1.410	73
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As shown in Table 1, participatory storytelling (duet and stitch collaborations) generated the highest engagement, with an average of 12,432 views and 1,560 shares, alongside audience retention rates of 78%. By contrast, documentary-style videos achieved the lowest engagement, averaging only 4,965 views and 52% retention. Humor-based formats and trend-aligned aesthetics performed comparably well, underscoring the role of platform-specific concordances in shaping audience response.

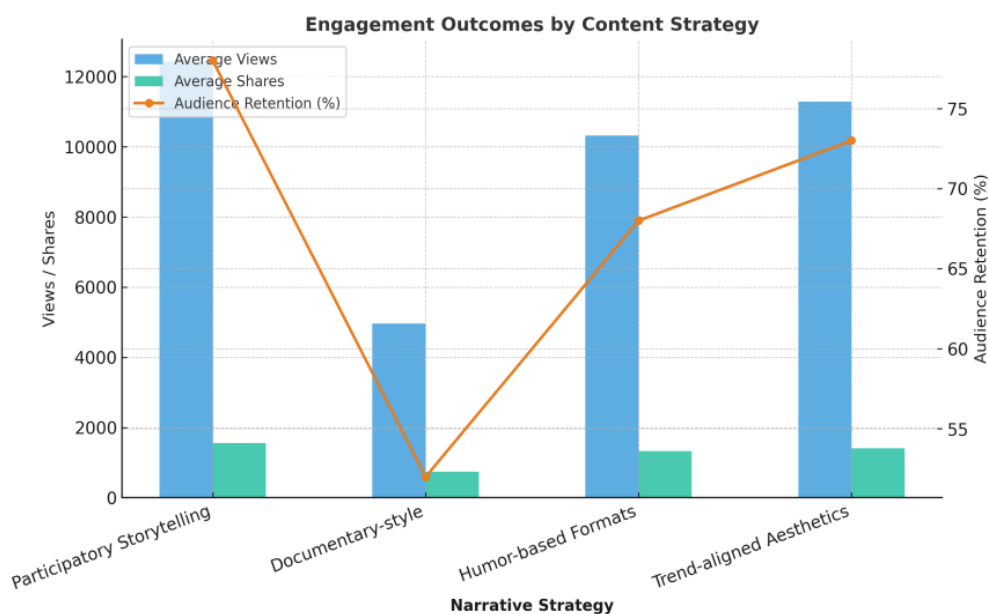


Figure 1. The figure illustrates comparative engagement patterns across narrative strategies.

Note: Data derived from the authors' TikTok dataset (January–June 2024).

Figure 1 illustrates the comparative engagement outcomes across narrative strategies. The figure highlights that participatory and trend-aligned content significantly outperformed static documentary styles in both views and shares, while also achieving higher retention rates. (Bishop, 2019). This suggests that algorithmic amplification favors content aligned with participatory and trend-based aesthetics, reinforcing earlier findings on the role of platform logics in cultural dissemination (Bucher, 2018).

According to a viewpoint, the Karaton Surakarta Hadiningrat Museum is re-signified within TikTok's participatory culture rather than just represented. To place Javanese history inside global discourses of authenticity, nostalgia, and clever developing business, users co-create symbolic meanings. This is in line with Giaccardi's (2012) observation that audiences might re-imagine traditions through collaborative practices thanks to digital media. Additionally, the coding of narrative methods revealed that, in comparison to static documentary-style movies ($M = 4,965$ views), participatory

storytelling formats (such as duet and stitch collaborations) produced noticeably higher engagement (M = 12,432 views). Higher share rates were also favourably connected with trend-based and humorous editing methods. This lends credence to the claim made by Wang and Suthers (2022) that participatory aesthetics enhance group meaning making in digital contexts.

Consequently, regression analysis showed that narrative-driven content predicted greater audience retention rates ($\beta = .37, p < .01$) and longer watch times ($\beta = .42, p < .001$). In a similar vein, using popular music enhanced algorithmic amplification, expanding the audience beyond Indonesian locals. Clusters of comment interaction that served as "interpretive communities" (Fish, 1980) were also identified by network analysis. In these communities, users contested the meaning of Javanese heritage in international contexts (Table 2).

Table 2. Semiotic Coding Framework of TikTok Heritage Content

No	Semiotic Level	Examples from TikTok Videos	Interpretive themes
1	Denotation	Visuals of Karaton architecture, royal attire, traditional dance	Tangible cultural heritage; preservation of visible traditions
2	Connotation	Narratives of authenticity, nostalgia, and pride in Javanese identity	Cultural memory; emotional attachment; identity construction
3	Mythology	TikTok framing heritage as national unity, global tourism asset, or symbol of diplomacy	Heritage as cultural branding; smart tourism; global cultural diplomacy

Note: Table 2 Created by the authors from qualitative semiotic coding of TikTok dataset (January–June)

As summarized in Table 2, the semiotic analysis identified three levels of meaning-making in heritage-related TikTok videos. At the denotative level, videos foregrounded tangible elements of the Karaton Surakarta Hadiningrat, such as palace architecture and ceremonial attire. (Moschini, 2018). At the connotative level, users attach symbolic meanings of authenticity, nostalgia, and cultural pride to these representations. Finally, at the mythological level, content frequently framed the Karaton as a marker of national unity, a tool for smart branding, and even a symbol of Indonesia's cultural diplomacy. (Eco, 1984). These layered meanings reflect how semiotics operate within algorithmic dissemination, echoing prior research on the reinterpretation of tradition in digital platforms (Barthes, 1972).

That emphasizes that these findings are significant because they show TikTok's potential for

innovative tourism and astute cultural business. Heritage organizations can protect cultural integrity and improve cultural economic models at the same time by matching content strategies with algorithmic affordances (D'Auria et al., 2022; Parry & Throsby, 2021). Algorithmic visibility, however, runs the risk of promoting entertainment-focused depictions while ignoring more intricate or less trend-compatible facets of heritage, which is concerning (Smith & Waterton, 2021; Lim, 2020). Extending this concern, a deeper reflection on the cultural consequences of simplifying Javanese heritage into entertaining short-form content reveals several risks beyond mere omission. First, the compression of multi-hour rituals such as the *Sekaten* ceremony—originally a meditative Islamic-Javanese commemoration—into 15-second clips risks *desacralization*, where embodied spiritual practices become consumable visual spectacles detached from their required mental and physical preparations (e.g., fasting, prayer, or courtly etiquette). Second, the algorithmic preference for visually striking but conceptually shallow content encourages *semiotic flattening*: the *kris*, which Javanese tradition holds contains specific spiritual energies (*kesaktian*) tied to its forge date, materials, and blessings, is often reduced to a mere "cool ancient weapon" in trending formats. Third, the promotion of *cultural tourism performance* over genuine transmission may lead to *heritage bifurcation*—where an "internal" version of tradition is preserved for court and family lineages, while an "external," gamified version circulates on platforms, potentially eroding intergenerational knowledge transfer. Fourth, the emphasis on aestheticized royalty (palace interiors, gold-embroidered *kebaya*) over less glamorous but equally vital aspects (e.g., court farming rituals, *abdi dalem* [court servant] daily labor) risks constructing an elite, tourist-oriented narrative that obscures the socio-economic diversity within Javanese heritage. These consequences do not necessitate abandoning digital platforms but demand deliberate curation strategies, including longer-form contextual videos, split-screen educational overlays, and explicit disclaimers about sacred restrictions on certain symbols. The necessity of viewing social media algorithms as cultural agents is finally shown by this study. They influence not just visibility but also the remembrance, reinterpretation, and commercialization of traditions in digital economies. According to Rivero et al. (2025), digital platforms have the potential to connect economic development with preservation; yet their impact necessitates critical awareness to avoid homogenized or reduced cultural representations.

CONCLUSION

TikTok serves as an active infrastructure for the distribution and reinterpretation of cultural assets in addition to being a platform for pleasure (Bucher, 2018). Through an analysis of heritage-focused content from the Karaton Surakarta Hadiningrat Museum, the study verified that algorithmic dynamics like popular music, interactive storytelling, and visual templates have a big impact on audience engagement and cultural visibility (Bishop, 2019). These results support the claim that algorithms function as cultural mediators rather than impartial distribution mechanisms, influencing the telling of stories and the reimagining of traditions in online communities (Giaccardi, 2012).

By conceptualizing algorithmic cultural diffusion, the study theoretically advances digital semiotics and platform studies by emphasizing how algorithms function as semiotic actors that co-construct interpretive communities and meaning (Eco, 1984; Fish, 1980; Manovich, 2020). In practice, the findings offer heritage organizations doable tactics to improve cultural entrepreneurship and audience reach by incorporating platform affordances into communication strategies (Parry & Throsby, 2021). Looking toward future preservation of Javanese heritage specifically, this study carries several broader cultural implications for maintaining depth and authenticity as traditions migrate to popular digital media. First, preservation must move beyond digitization toward *curated vernacular transmission*-a strategy where heritage practitioners actively co-design short-form content to embed contextual anchors (e.g., pinned comments explaining sacred restrictions, linked longer videos, or QR codes to digital archives) that prevent semiotic flattening. Second, authenticity in algorithm-driven environments should be reconceptualized not as static fidelity to original forms but as *transparency of provenance*: audiences can be informed whether a depicted ritual is the actual ceremony, a stylized reenactment, or a tourist-oriented performance, allowing for multiple authenticities without deception. Third, for living heritage such as Karaton Surakarta, institutions are encouraged to establish *platform-specific cultural protocols*-internal guidelines specifying which symbols, chants, or movements may be freely edited (e.g., batik patterns) versus those requiring full, unedited presentation (e.g., the *Sungkeman* gesture) or those restricted from short-form circulation altogether (e.g., certain esoteric court incantations). Fourth, future preservation efforts should integrate *algorithmic literacy training* for cultural custodians, enabling them to negotiate platform logics without surrendering narrative authority. Ultimately, sustaining Javanese heritage's philosophical depth in digital media does not require rejecting algorithmic visibility but rather demanding that visibility be paired with *interpretive layering*-where entertainment serves as an entry point, not an endpoint, for cultural learning. All things considered, this highlights the need for integrated digital-culture policies that uphold institutional capacity, promote collaboration between technology and heritage actors, and safeguard the authenticity of cultural practices in algorithm-driven environments (Lim, 2020). According to Smith and Waterton (2021), this study demonstrates that TikTok and other platforms have two functions in heritage management. In addition to promoting innovation in smart tourism, worldwide cultural museum management, and cultural growth businesses, they also protect cultural memory.

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