Critical Heritage Studies as a Lens to Understand Short Video Sharing of Intangible Cultural Heritage on Douyin

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ABSTRACT

Intangible Cultural Heritage (ICH) faces numerous threats that can lead to its destruction. While the emergence of short video platforms provides opportunities for fostering innovation and communication among ICH practitioners and viewers, it is still understudied how different stakeholders present, explain, and manage ICH via short videos. To address this, we conduct a mixed-method study of ICH-related videos on Douyin, a popular short video platform in China with an extensive user base and wealth of ICH content. By adopting the *Critical Heritage Studies* (CHS) framework, we propose a taxonomy of frames that construct the landscape of ICH short videos and then investigate the interactions among different groups regarding power, identity, and knowledge. Additionally, we analyze viewer responses to different frames and groups based on audience metrics (e.g., # of likes and comments) and comments. Our research reveals that government-affiliated and indigenous groups dominate the promotion and presentation of ICH on Douyin. Contrary to previous literature, viewer responses show a preference for videos from external ICH groups and ordinary individuals, suggesting a tendency to counter authority and exclusivity associated with ICH. Moreover, it highlights a lack of sustainable debates and negotiations among different groups involved in ICH discourse. Situated within CHS, we provide design implications for ICH safeguarding and sustainability through short videos and online media.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in collaborative and social computing**.

KEYWORDS

Intangible cultural heritage, critical theory, online video platforms

1 INTRODUCTION

Intangible cultural heritage (ICH), often referred to as a 'living heritage', is passed down through generations and plays a crucial role in preserving cultural diversity, facilitating intercultural dialogues, and enhancing social cohesion and human well-being [33, 89]. ICH is embodied in people's memories, skills, and lifestyles, encompassing various domains, such as oral traditions, performing arts, social practices, and traditional craftsmanship [33]. However, numerous threats, including insufficient documentation and inadequate safeguarding measures [47] have increasingly challenged the preservation of ICH, posing significant risks to the survival and continuity of ICH practices, especially among low-resourced communities [6].

The proliferation of short video platforms (e.g., Douyin[1]) has shown the potential to address the challenges faced by the preservation of ICH [74, 75]. These platforms with their enormous user bases and diverse ICH content [9, 44, 88], enable ICH practitioners and viewers to interact, learn, and innovate [13, 45]. Moreover, they offer a personalized viewing experience and user-friendly video creation features [54]. Short videos, compared to traditional text and images [15, 52], have the potential to effectively convey ICH-related information through multiple modalities, making them particularly appealing to engage younger generations [44, 84] — the prospective ICH practitioners of the future.

That being said, promoting ICH is not without its challenges, particularly the need to balance complex relations and power dynamics, such as implicit power relations inherent in cultural representation,

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[1] https://www.douyin.com/

and the balance between top-down and bottom-up heritage management. Scholars have argued that the preservation of cultural heritage extends beyond mere recording and transmission of the traditions; it involves navigating complex socio-cultural interactions among groups with varying *power dynamics*, *identities*, and *knowledge systems* [66]. These challenges reflected the concept of Critical Heritage Studies (CHS), articulated by Harrison and Linkman as an endeavor to "understand how heritage functions within societies and the interplay between heritage and power" [31, 46]. The shift to short videos as a new form for expressing and sharing ICH potentially complicates existing challenges, including the brevity of videos [40, 83], commercialization issues [5], and content attention inequality driven by recommendation algorithms [41, 54]. Meanwhile, there is still a lack of comprehensive investigations that frame an overview-level understanding of the complicated dynamic processes on short video platforms and their roles in addressing these challenges.

Although the CHS approach has been widely applied to investigate tangible heritage, such as heritage sites and monuments in existing works, few were related to ICH [4, 59]. Drawing on the CHS as a foundational theoretical lens, this study provides a deep and critical examination of ICH regarding "*how power, identity, and knowledge intersect with the practice, interpretation, display, and management of cultural heritage*" [8, 29, 30]. Utilizing the CHS framework, our study focuses on the promotional practices of ICH through short videos in a non-Western country, an area that has not been extensively explored [31]. Focusing on Douyin, a popular short video platform in China, our study examines the landscape of diverse ICH presentations, encompassing practices from different groups with diverse power, identity, and ICH knowledge, such as official institutions, local communities, and marginalized groups [5]. We also critically examine how the perspective of users relates to the content and diverse creators behind it.

Inspired by the CHS theories and the gap in the literature on the ICH community/ecology on Douyin, we aim to answer the following questions:

RQ1: What is the landscape (i.e., the frames) of ICH short videos and creators on Douyin?

RQ2: How do different groups interpret, present, and manage ICH through short videos on Douyin based on these frames?

RQ3: What are the different viewer responses to these different frames and factors of CHS on Douyin?

In order to contribute effectively to the preservation and promotion of ICH, it is crucial to capture the complexity and diversity of ICH content on Douyin and understand users' responses. The study adopts a mixed-method approach combining qualitative video analysis and machine learning techniques. We first collected a dataset of more than 25,000 ICH-related short videos from Douyin. Then, we sampled 200 videos for open coding to identify the frames (the features reflected in both content and social interactions) of ICH video content and different group factors (the attributes that described different groups in CHS framework) within each frame, referring to concepts in CHS, such as power, identity, and knowledge, to find how the videos interpret, and present these factors. Finally, we examined how the factors mentioned in CHS and frames of

ICH-related videos were associated with audience response using video metrics and comments data. Figure 1 illustrates our study.

Employing qualitative thematic analysis, we identified four dominant story frames, in ICH videos on Douyin: *Recording*, *Community*, *Innovation*, and *Commercialization*. These frames with diverse features indicated the dynamic and complex landscape of ICH short video on Douyin, echoing the previous studies [7, 67]. Besides, our investigation of interactions among different groups also uncovered that the government and indigenous communities separately dominated the promotion and presentation of ICH content based on their respective proportions in the taxonomy. Besides, both groups contributed to the monopolization of knowledge by selectively sharing content aligned with their interests or even blocking the dissemination of certain knowledge. Furthermore, viewer responses contradicted previous literature approval of indigenous predominant on ICH [39, 66]. They expressed a significant preference for learning about ICH from groups outside the community and ordinary people to defend against control over the presentation and interpretation of ICH by the authority and exclusivity. In sum, we critically examined and validated the frames presented by different groups in ICH short videos on Douyin, intending to offer a rational and sustainable approach for promoting and safeguarding ICH on the short video-sharing platform.

This paper makes major contributions to ICH preservation and CHS in HCI: 1) We created a comprehensive taxonomy of frames within the landscape of ICH short videos on Douyin; 2) We categorized the factors of different groups and uncovered the power dynamics, identity relation and knowledge sharing in ICH, as CHS concerned; 3) We found the correlation between viewers opinion and groups of ICH short videos; 4) We extended the literature of ICH and CHS and provided design implications for ICH promotion and safeguarding by short video-sharing platform.

Disclaimer. Note that some comments in the Douyin ICH community we study are likely to be considered offensive. Throughout the rest of this paper, we do not censor any comment, thus we warn the readers that content presented may be offensive and upsetting.

2 BACKGROUND AND RELATED WORK

We first reviewed previous research about ICH and its current challenges in promotion and safeguarding. We then focused on reviewing studies about CHS-related theories and frameworks to analyze the ICH. Finally, we examined the current development and problem of ICH on short video platforms with prior work under the CHS view.

2.1 Intangible Cultural Heritage

ICH encompasses cultural practices, knowledge, and skills, providing a sense of identity and promoting cultural diversity and human creativity [20]. It is "*continually recreated by communities and groups in response to their environment, history, and interactions, providing a sense of identity and promoting respect for cultural diversity and human creativity*" [72]. Unfortunately, the process of globalization and cultural hegemony has led to cultural homogenization and a decline in diversity [1, 54]. Urbanization-induced lifestyle changes can also negatively impact ICH [47], causing communities to lose their heritage [20].
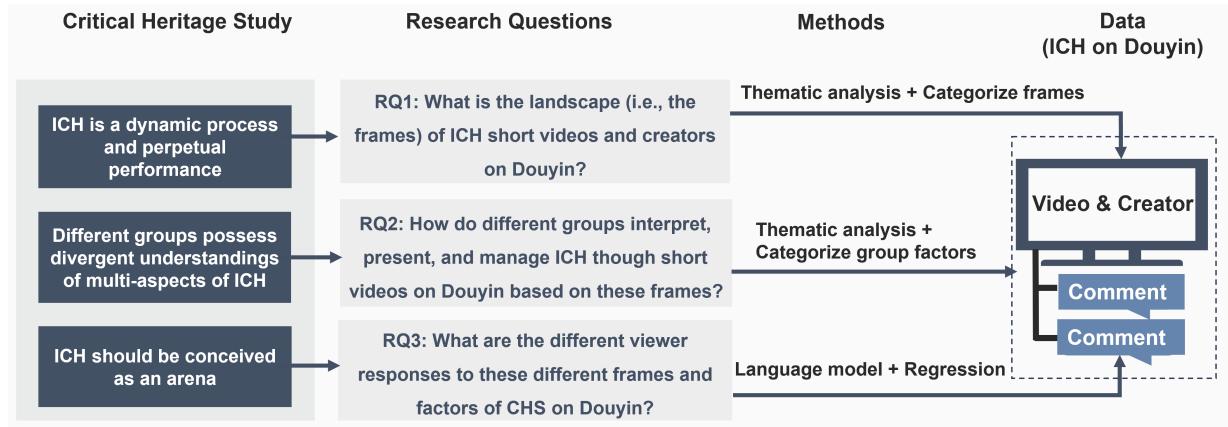
Figure 1: A Schematic Figure. It explained how Critical Heritage Studies drives our mixed-method study on the Douyin ICH short videos to understand the dynamics and intersection between these videos and creators.

To address these challenges, UNESCO adopted the 2003 Convention for the Safeguarding of ICH, the first international instrument dedicated to non-material cultural expressions and arouse awareness of ICH preservation and recognition [33]. Nonetheless, it raises questions about "*What ICH is worth protecting and preserving?*" [47]. The process of defining conventions and compiling lists is often led by officials, professionals, and scholars, neglecting the perspectives of local communities and marginalized groups [12, 27]. The issue of determining the dominant power behind the preservation and promotion of ICH [27, 57, 68], introduces complexities and challenges to definition of ICH [3]. This debate is further impeding the effective preservation of ICH.

Moreover, ICH is a resource for various stakeholders [32], including local communities, researchers, and fans [10]. The challenge of safeguarding ICH is aggravated by the diverse perspectives and biases of these groups [28], which can marginalize local knowledge and oversimplify traditions [17, 43]. Additionally, platforms like museums and digital media may distort the original context and meaning of ICH. Some forms of ICH are guarded within specific communities, making it difficult for outsiders to understand and appreciate them. Furthermore, certain forms of ICH are closely guarded within specific communities and limited by geography and language, making it challenging for outsiders to comprehend and appreciate them [2, 3, 61]. Such dynamics can lead to another form of knowledge monopoly, further complicating the dissemination and safeguarding of ICH. Consequently, our motivation is to analyze the current state, rationality, and sustainability of interaction between groups involving ICH. We seek to explore effective coordination and identify any new findings that deviate from previous research.

2.2 Critical Heritage Studies as a Lens to Understand ICH

Critical Theory seeks to analyze and challenge power structures in order to achieve social transformation and human emancipation [34]. Critical Heritage Studies is the adaption of it on heritage studies, whose scope is pithily defined by Harrison and Linkman:

"*understanding how heritage functions in societies and the relationship between heritage and power*" [66]. CHS aims to guide the analysis and critique of the inherent reason for series inquiry in contemporary ICH promotion and safeguarding [66]. In this work, we utilize the following arguments to steer analysis on each research question (Figure 1).

RQ1: **ICH is a dynamic process and also continually emergent in living like a perpetual performance.** On the one hand, ICH actively engages with the social, economic, and political aspects of the present, serves as a creative tool, and contributes to community resilience [5]. On the other hand, this intricate nature of ICH makes it challenging to fully comprehend and analyze its status [7]. Therefore, it is crucial to frame the overview of ICH content and practitioners within different communities, such as social media. This approach enables a comprehensive understanding and analysis of the complex and dynamic landscape of ICH, ultimately facilitating its promotion and preservation.

RQ2: **Different groups possess divergent understandings of the nature, ownership, value, significance, and importance of ICH, often exhibiting inherent contradictions.** A notable contradiction in understanding ICH lay between the perspective of CHS and the practical approaches taken. CHS asserts that cultural heritage can only thrive by being actively engaged in situ via the living practice of indigenous governance [28]. However, many ICH promotion and preservation efforts have predominantly followed top-down approaches [57]. These contradictions of ICH are typically reflected in the interpretation, presentation, and management of ICH by different groups, such as official and local stakeholders [66]. To explore the complex intersection and conflicts among ICH stakeholders for the sustainability of ICH, it is crucial to examine how different groups interpret, present, and manage ICH within the context of the aforementioned overview of ICH in extent community.

RQ3: ICH should be regarded as a dynamic arena where diverse issues are debated and negotiated by representatives [66, 70]. Preserving and promoting ICH requires collaboration with representatives including professionals, local communities, and the masses of the people, who possess boundless creative power [56]. Linking with and learning from them can tap into their boundless creative power for sustaining ICH communities [55]. Their perspectives provide essential insights into the intricate dynamics and outcomes of the ICH process, exposing the presence of communication, struggle, and manipulation. Hence, a comprehensive analysis of ICH needs to go beyond content and practitioners from different groups. It is vital to understand the participation and feedback of the wider population as stakeholders. This inclusive approach identifies and assesses the presence and context of debates and negotiations surrounding ICH among the broader population. It also helps prevent the marginalization of participants beyond researchers and practitioners of ICH [76].

To our knowledge, this is the first study that adopts CHS to understand ICH dynamics and challenges based on social media. Our work aims to provide empirical evidence for both support intervention strategies and social platform designs to trade off the groups for better effects of ICH promotion and safeguarding.

2.3 ICH Short Video on Douyin

Douyin is one of the most popular short video platforms in China, with over 600 million daily active users as of August 2020 [16]. To promote and safeguard ICH practices, Douyin launched a special project in April 2019. They endorse ICH practitioners and inheritors showcasing their skills, organize ICH events, and use ICH-related hashtags. Until June 2021, 1,557 ICH practices have been covered by more than 140 million videos on Douyin, accumulating 200 billion views and nearly 6.5 billion likes [77].

While Douyin has engaged young groups in disseminating ICH, previous studies highlight limited effective dissemination. Many inheritors lack the necessary knowledge for account management and content planning, resulting in low audience engagement [35, 50, 74, 79, 83, 87]. This raises inquiries regarding the landscape framing being constructed on Douyin [5, 7] and their alignment or divergence from traditional conceptions of ICH. However, this question has not been thoroughly solved in previous research. Based on this context, we aim to investigate the landscape of ICH short videos and creators on Douyin.

Simultaneously, some creators have commercialized ICH by extending their practices to e-commerce platforms, encouraging public consumption of ICH-related products [80, 83]. This trend concerns CHS due to its potential to distort the underlying values and principles of ICH safeguarding on digital platforms like Douyin [5]. Additionally, government-affiliated accounts with large followings adopt a top-down approach to promote ICH [36, 54]. Contrarily, local ICH practitioners, who are the main generators of ICH, have limited exposure on Douyin, limiting their reach [54]. Although this raises further CHS-related questions about "*who gets to define and benefit from ICH, and how to share knowledge and power*" on Douyin [3, 47], the existing literature has not fully delved into

this dimension. Thus, our research aims to comprehensively explore ICH expressions, encompassing preservation, management, promotion, and representations [39]. We will examine power dynamics, identity relations, and knowledge sharing within this exploration. Furthermore, we will analyze viewer responses to understand the rationality and sustainability of different groups involved in ICH promotion and preservation on Douyin. This aligns with the CHS framework's emphasis on the reflexive and dynamic nature of ICH [70].

3 DATA

In this research, we focused on ICH short videos on Douyin, the most popular short video-sharing platform in China. We used automation techniques to gather a large number of publicly accessible videos along with their metadata (e.g., description, tags, and number of likes). To ensure a comprehensive collection of ICH short videos on Douyin, we initially obtained information on 3,610 ICH items from the Intangible Culture Heritage Digital Museum in China[2]. To ensure diversity in terms of ethnicity and region, we preserved the raw text of each ICH item, including its name, minority group, and location. For instance, if there were variations in performance styles for a specific ICH item in different locations, such as *Mongolian folk songs in Urad Front Banner* and *Mongolian folk songs in Ordos*, we retained this information. This approach allows us to collect a wide range of ICH-related short videos uploaded on Douyin using search keywords derived from ICH items in China.

We collected over 26,000 videos on Douyin through keyword-based data crawling assisted by the TikTokDownloader [38] and DouyinTikTokDownloadAPI [25]. Next, we cleaned the irrelevant videos manually based on the video title and description (e.g., there is an ICH term called *Reba dance*, and a popular actress's name is also *Reba*). We further deleted duplicate videos and videos that were longer than 15 minutes, since the average video length on Douyin is less than 15 seconds and there is a video length limit imposed by Douyin for regular user uploads [14]. Also, longer videos exceeding 15 minutes make up a very small portion of short videos in both prior studies [15, 52] and our dataset (less than 3%). Therefore, we believe that excluding these longer videos would have minimal impact on the results.

After the data cleaning process, we first kept 25,501 videos. For each video, we collected the video, video creators' information (nickname, signature, verification status, IP, video lists), video description, video tags, video duration, and video audience metrics (number of likes, comments) (Table 1). To answer RQ1 and RQ2, we conducted a random sampling of 200 videos for qualitative analysis (see section 4 and section 5). The statistical analysis of the sampled videos in Appendix A.1 revealed a similar pattern to that of the total video dataset. To answer RQ3, we further implemented a web crawler to retrieve the comments of these 200 sample videos (section 6)

4 THE LANDSCAPE OF ICH SHORT VIDEOS AND CREATORS ON DOUYIN (RQ1)

To address RQ1, we developed a taxonomy for frames of videos and creators and utilized it as a codebook to further analyze and

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[2]http://www.ihchina.cn/

Table 1: Video Meta-information. For each video, we collected its description, tags, duration, comments, creator's information, and popularity metrics.

Feature	Definition	Mean	Median	Min	Max	Std.
description	Text provided by the creator that described the video, also as the title of video on Douyin	N/A -				
tags	A list of words or short phrases about the video	N/A -				
creator's profile information	The public information of the creator on Douyin, including nickname, signature, verification status, location	N/A -				
comments	A list of replies between users	N/A -				
duration	The duration of the video in seconds	143.71	85.50	3.20	899.96	149.76
# of like	The number of times the video has been liked by people	5530.14	106	0	2885442	66166.52
# of comments	The number of comments the video has obtained	230.14	9	0	143510	2455.47
# of shares	The number of times the video was shared by people	439.77	10	0	169862	3948.75

annotate the 200 sample videos. This investigation aimed to explore how these frames contribute to constructing the contemporary ICH landscape on Douyin.

4.1 Method: Categorizing the Frames of ICH Short Videos and Creators

We defined the frame for analyzing ICH short videos and creators on Douyin as *the features reflected in both content and social interactions, which collectively provide a comprehensive overview of the landscape of ICH representation on the platform.* The features are primarily derived from video thematic analysis, which can intuitively reflect how ICH is presented and for what purpose. Additionally, we consider the creators' social background vital as it can unveil potential and diverse features of the videos, enriching the description of the ICH short video landscape. Factors such as their level of professionalism, commercial certification, and video list on the homepage indicate their genuine intentions in producing these videos, which are not directly available in video content.

To identify the features of frames in the ICH short videos on Douyin, two co-authors conducted an iterative open coding process for 200 videos. Individually, we coded each video based on the primary features we identified. We watched the videos while checking the creators' public social information on Douyin to ensure that our identified features accurately represented both the video and its creator. Then, we resolved each conflict through a discussion between the two co-authors and merged the codes every 10 videos.

To ensure the validity of our taxonomy, we followed two criteria in its construction [62, 81]: (1) All taxonomy elements should be mutually exclusive, and (2) the taxonomy should cover everything. We convened sessions to discuss discovered features and determine their exclusivity. Ambiguous videos with multiple features were discussed, and the most representative feature was selected. In the discussion session, the video will be divided into 10 segments based on video duration. Two authors applied the frequency method [48] to scrutinize both the visual content and text subtitles within each segment, thereby identifying unique features of each segment. The feature that predominates (highest frequency) across segments will be designated as the representative feature of the video. And there was no scenario where two features exhibited equal dominance in our discussion session. If necessary, features were divided or

merged. We conducted a thorough examination to identify any missing features and added them to the taxonomy. After resolving conflicts and defining new features, the revised taxonomy was used to reassess the dataset of 200 videos.

We began with a subset of 10 videos and repeated the process until convergence, resulting in 9 identified features grouped into 4 frames. We analyzed 80 videos (40%) to construct the taxonomy. The categorizing results, including landscape frames, features, definitions, and descriptions of example videos, are presented in Table 2. The remaining 120 videos were coded by the first author. We validated that the taxonomy derived from the analysis of 80 videos represented the entire set of 200 videos (Figure 2).

4.2 Recording Frame

We identified *Recording* frame as an ICH short video type where creators primarily use a single storytelling line and rarely employ video retouching. These videos demonstrate original (even rough) content, providing an intuitive representation of ICH short video. Hence, the *Recording* frame covered the most proportion (103/200, 51.5% in Figure 2) of ICH short videos on Douyin, which can also reflect that the majority of ICH short video construction is simple but straightforward [79]. The videos under the *Recording* frames were incorporated with three content (i.e., *Presentation, Inheritance, and Knowledge Communication*) throughout the video.

4.2.1 Presentation. The *Presentation* videos (35/200, 17.5% in Figure 2) were the most coarse-grained feature among the *Recording* frame that was recorded to make the viewer directly watch the ICH-related content. The *Presentation* was characterized by two essential elements: the performers and accessories (e.g., props, instruments, and costumes). *Presentation* included the performance (e.g., dancing and singing) and production (i.e., the process of craft making). These *Presentations* effectively showcased the content of the ICH by utilizing a classic episode or theme. For example, in a video about *Chinese Shadow Puppetry* (Figure 3 (a) upper), the main content recorded the roles and responsibilities of the screen and the inheritors. In another case (Figure 3 (a) lower), the video creator recorded the creative process of a *Paper-cutting* craft, aiming to provide viewers with an understanding of the aesthetics and virtuosity involved in its creation.

Table 2: Taxonomy of Frame Constructing the Landscape of ICH Short Videos on Douyin. In this taxonomy, we categorized ICH short videos into four categories (i.e., frames): *Recording, Community, Innovation,* and *Commercialization. Recording* frame included presentation, inheritance, and knowledge communication. *Community* frame included local community and cross-community; For *Innovation* frame, dissemination and content innovation were included. *Commercialization* frame was comprised of popularity and business.

Frame	Features	Definition	Example Video Description (translated from Chinese)
Recording	Presentation	Presenting ICH content or performance itself, by inheritors (professionals), amateurs or ordinary users.	*The Tiermai singing by the Kazakh ethnic besides the Irtysh River.*
	Inheritance	Presenting the process of teaching between inheritors and their students across generations.	*Students from the Music Department of Baoding College are studying the Sheng and Guan music: "Ji Dao".*
	Knowledge Communication	Presenting the content of ICH knowledge or its historical development.	*The palace dance of Dongnu Ancient Kingdom is the essence of Jiarong Pottery and a surviving relic of Chinese dance culture.*
Community	Local Community	Indicates the ICH was managed by local community, such as local government, organizations and indigenous ICH group.	*The state of Guiju in our hometown of Guangxi is currently endangered.*
	Cross Community	Indicates people learning a specific ICH content distinct from their own cultural background (outside community).	*A young man from Xi'an genuinely appreciates Mongolian music after studying the Morin Khuur for three years.*
Innovation	Dissemination Innovation	Indicates the ICH were promoted adopting innovative promotion techniques and strategies.	*"Encounter Hubei in the Clouds" Program Episode 2: Tianmen Sugar Sculpture*
	Content Innovation	Indicates the ICH performances or crafts themselves were incorporated with contemporary elements.	*Performance of Huangzhong Xianxiao: Unwavering in Fighting the Virus.*
Commercialization	Popularity	Attracting attention and seeking popularity through ICH.	*Finally, Performing Zhuo Dance on Stage, Am I Beautiful on Stage?*
	Business	Indicates commercialization-driven video, promote and sell their products or services with ICH content.	*A Five Tiger Sticks Performance on the Yihe Company's Jingxi Rice Porridge Festival*

4.2.2 Inheritance. As the common understanding, inheritance plays multiple roles in the protection and sustainable development of ICH. It helps to protect and maintain the continuity of traditional skills and prevent them from disappearing or being distorted. It also helps to maintain community and cultural identity, promote social cohesion and interaction, as well as for ICH adaptation and innovation in response to changing environments [33, 90].

In contrast to the coarse-grained recording approach typically employed in *Presentation, Inheritance* recorded the process of teaching and transmission from ICH inheritors to the new generations.

To the *Inheritance* forms, it was similar to *Presentation* that encompassed the performance process and the production technique. For instance, the video (Figure 3 (b) lower) was related to the *Miao Ethnic Panhuang Dance in Hainan.* The visual presentation displayed *Miao ethnic* students rehearsing the dance while the accompanying voiceover provided instructions from the inheritor. Another video (Figure 3 (b) upper) demonstrated the process of intergenerational transmission, wherein the inheritor of *Wenxi Crispy Noodles* imparted her knowledge to her grandson, enabling him to create a complete product. Both of them went beyond merely recording
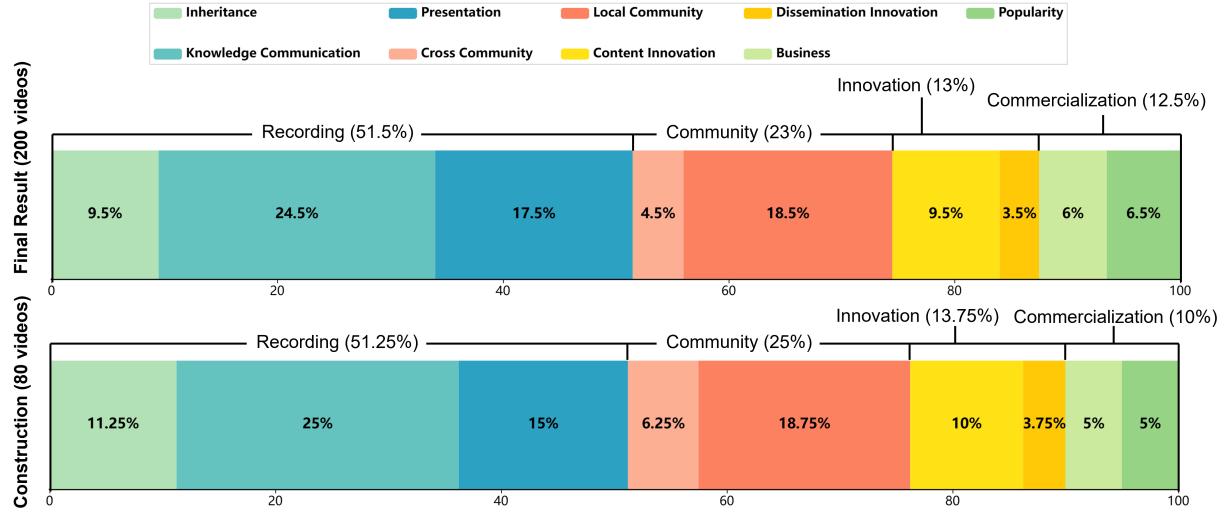
Figure 2: The Coding Distribution Results of Frames and Features for 80 Construction Videos and Results in 200 Videos. Categories are denoted above the features using group brackets. The differences between the corresponding features are less than 2.5% for all features, showing a similar distribution across both datasets.

(a)　　　　　(b)　　　　　(c)
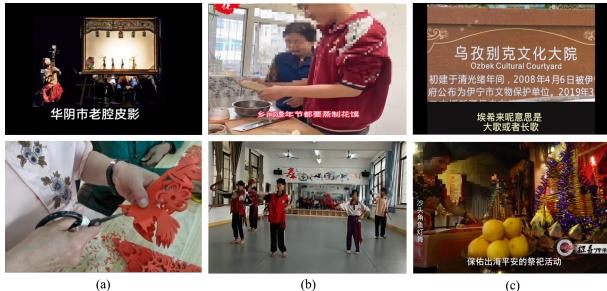
Figure 3: Examples of ICH Short Video *Recording* Frame. (a) Presentation: the ICH performance and the craft production of ICH inheritors (upper: a Chinese Shadow Puppetry Performance; lower: a Paper-cutting production), (b) Inheritance: the teaching process from the ICH inheritors to the next generations (upper: a step-by-step teaching on Crispy Noodles production. by a grandmother inheritor; lower: a Panhuang Dance rehearsing with professional instruction), and (c) Knowledge Communication: the ICH related knowledge introduction and history (upper: an introduction of Ashula related content; lower: the origin of Fish Lantern Dance).

the teaching process and instead endeavored to facilitate viewers to learn about the ICH through these videos. While the *Inheritance* videos accounted for a respectable proportion (19/200, 9.5% in Figure 2) of the total, further efforts are needed to expand their representation to continue the memory of ICH [5].

4.2.3 Knowledge Communication. Different from the *Presentation* and *Inheritance*, *Knowledge Communication* was similar to the knowledge communication videos in other fields but focused on

recording the historical aspects of ICH, such as its origin and development. These recordings also captured the personal experiences of ICH inheritors and communicated various forms, themes, and traditions associated with local communities and ethnic minorities to viewers. Based on our results of Frame taxonomy, we found that the *Knowledge Communication* (49/200, 24.5% in Figure 2) constituted the largest fraction of ICH short videos. The role of an ICH knowledge communicator can be various. Some ICH knowledge communicators were ordinary tourists (Figure 3 (c) upper), who introduced *Ashula* as the "big song" and recorded the history of a building for *Ashula* teaching. And others were the inheritors, who were interviewed to narrate the ICH origin and development, such as the Figure 3 (c) lower illustrated the *Fish Lantern Dance* originated from ritual activities that bless safe voyages at sea.

4.3 Community Frame

From the perspective of CHS, the community is the primary cultural stakeholder of ICH [66]. Hence, the *Community* Frame emphasized ICH short videos that aimed to evoke the collective memory of indigenous practices and foster cooperation within the local community. Additionally, this frame allowed the outside community to generate interest in learning about ICH content, which expanded the ICH community for development. The *Community* Frame (46/200, 23% in Figure 2) contained two features that were *Local Community* and *Cross Community*.

4.3.1 Local Community. The *Local Community*, as the primary participants and managers, was responsible for creating the majority of ICH short videos within the *Community* Frame (37/46 videos). One notable distinction of the videos with *Local Community* features was their consistent inclusion of various local community elements. These videos effectively incorporated multiple modalities, such as background music, local dialects in audio, and local landscapes

Huanchen Wang, Minzhu Zhao, Wanyang Hu, Yuxin Ma, and Zhicong Lu

(a)   (b)   (c)   (d)

Figure 4: Examples of ICH Short Video *Innovation* and *Commercialization* Frames. (a) Dissemination Innovation: the ICH innovation of promotion approach, (b) Content Innovation: the recreation of ICH by content innovation with contemporary factors, (c) Popularity: get popularity with ICH, and (d) Business: attract customers to make purchases with ICH content.

in visuals, which served to authentically represent and showcase the essence of the local community. In our observation, we discovered that many of these videos effectively conveyed deep affection and cherished memories of the hometown, aligning with the argument presented by CHS that memory and ICH are intricately intertwined [5]. One particularly representative video featured *a group of Guizhou Miao Ethnic workers in Zhejiang who frequently gathered to reminisce about their hometown through the "Lusheng Dance"*. This ritual not only helped them reconstruct their sense of belonging but also symbolized heartfelt nostalgia.

4.3.2 Cross Community. While the local community should lead the management of ICH [3], it faced the challenges of population and geography limitation [23], especially for the minority ethnic, which can result in the destruction of ICH during generational succession. Therefore, only the groups in the local community are not sufficient to promote the ICH content and transmit it to the limited next generation with willingness and favor. Hence, the *Cross Community* communication was also essential to sustain the ICH community. Most of the creators of videos with *Cross-community* features were enthusiasts or inheritors of other ICH items, who were not members of the local community but had an interest in learning and respected this ICH content. There were corresponding examples that can be found within our categorized dataset. We had come across cases such as *an enthusiast born in Xi'an who uploaded videos about his personal learning process of the "Mongolian Morin Khuur"*. Additionally, we encountered an inheritor of *Huangmei Opera* with some impact explored and learned about other forms of ICH, called *Dragon Dance and Ground Dragon Lantern*, who collaborate with another community to expand each ICH exposure.

4.4 Innovation Frame

The ICH preservation necessarily involves a whole series of *Innovations* [64], which have presented the status of *Innovation* in ICH. The *Innovation* means the diversity and the forms of innovation were also various. In the *Innovation* Frame, we summarize two features, which were *Dissemination* and *Content Innovation*.

4.4.1 Dissemination Innovation. The *Dissemination Innovation* referred to the utilization of innovative methods to promote the content of ICH through various forms of communication, such as TV programs and video productions. In some instances, *Dissemination*

Innovation leveraged popular events to attract attention and disseminate ICH-related content effectively. Events like the Chinese New Year and local ICH performance competitions serve as platforms for presenting ICH in novel and engaging ways. Such as the Figure 4 (a) exemplified a novel video program titled *Intangible Cultural Heritage Celebrate the Chinese New Year*. Within this program, the format of inheritors extending New Year's greetings to the viewers was employed as a vehicle to provide a succinct introduction to the *Qinhuai Lantern* while incorporating footage of the finished crafts. This utilization of innovative forms during the Chinese New Year period enabled heightened attention towards this specific ICH, thereby expanding the efficacy of its promotional impact.

Moreover, from our investigation, another form of *Dissemination Innovation* to promote ICH was the use of competition as a motivating factor. For example, a competition of some ICHs related to the Hakka culture, such as *Shifan Music* and *Hakka Qilin Dance*, had participated in performance competitions that displayed their skills and styles. These competitions, along with the videos that captured them, can generate more attention from the audience, as well as enhance the awareness and appreciation of the ICHs involved. Additionally, these short videos with *Dissemination Innovation* often separated the content into several series, allowing viewers to focus on them over an extended period, which was an adaption from the TV series. All of these *Dissemination Innovations* were aimed at providing a platform to facilitate the broad dissemination of ICH content.

4.4.2 Content Innovation. Diverging from *Dissemination Innovation*, *Content Innovation* focused on incorporating novel and contemporary elements into the original content of ICH to recreate it rather than altering the dissemination format itself. *Content Innovation* results in a revitalized and dynamic representation. This approach seeks to strike a balance between preserving the essence of the traditional ICH and embracing modern sensibilities. By integrating new elements, such as innovative storytelling techniques or relevant social themes, *Content Innovation* aims to engage a wider audience and make the ICH more relatable and appealing to contemporary society. For instance, the inheritor of Xining Xianxiao (Figure 4 (b)) embraced *Content Innovation* by incorporating a contemporary event, the defense against COVID-19, into their performance content. By doing so, they aimed to raise awareness among the masses about personal epidemic protection. Besides, *Content Innovation*

also involved the fusion of traditional ICH with popular intellectual property (IP). These innovative approaches within *Content Innovation* maintained the traditional forms of ICH, such as melody, action, or instrument, while presenting novel content through elements like lyrics and expressions of crafts. This amalgamation of tradition and innovation aimed to the creation of fresh and engaging experiences that resonate with diverse audiences.

4.5 Commercialization Frame

Previous research has shown a noticeable trend of commercialization in short videos showcasing ICH, especially with the growing presence of e-commerce platforms like Douyin. This integration has opened up new avenues for economic gains from ICH content. Although the inclusion of e-commerce platforms has not only provided a strong economic foundation for ICH but has also contributed to its preservation, dissemination, and increased recognition [75, 80, 83], there were instances where individuals created videos in the name of promoting and preserving ICH, thereby taking advantage of the activities and support for ICH on Douyin.

4.5.1 Popularity. It was observed that some videos with *Popularity* features tend to utilize ICH-related content, such as adding more ICH-related tags, with the intention of appealing to wider viewers and further promoting ICH content more effectively. However, some of them only treated ICH as a commodity and their primary focus lay in creating videos that can enhance their personal popularity and self-promotion rather than prioritizing the accurate representation of ICH. This approach may compromise the integrity and true essence of ICH, as the primary objective becomes maximizing their own success and appeal, often at the expense of the genuine preservation and promotion of ICH. For example, in Figure 4 (c), the members of the Cheongsam Association utilized a title called *The enchanting performance of the "Kunqu Shifan Music" orchestral ensemble is captivating*, but the main focus of the video was on the members themselves, dressed in Cheongsam attire and lively shaking, with only a brief performance and introduction of *Kunqu Shifan Music*.

Furthermore, there was an instance where a creator who had no prior history of uploading ICH-related content to a video list suddenly created a video featuring the performance of the *Wujia Drum and Trumpet Ensemble* at their neighbor's funeral. The video did not express condolences for the deceased and raised doubts among viewers regarding its true intention. It seemed to be created not out of a genuine desire to commemorate the neighbor or promote ICH, but rather to simply participate in a trend. These videos only focused on their own popularity rather than ICH promotion, which aligned with the argument that ICH has been reduced to a mere selling point and a source of nostalgia for consumption. This trend may further exacerbate the loss of heritage and collective memory [5].

4.5.2 Business. In contrast to the purpose of videos aimed at gaining *Popularity*, the focus of the *Business* approach was to strategically incorporate ICH-related content and elements to attract customers and boost sales of goods and services. This approach can serve to capture viewers' attention and generate interest in

ICH for its sustainable development [26]. For instance, the commodification of ICH crafts can appeal to viewers, allowing them to appreciate the beauty of these elegant crafts while simultaneously learning about ICH. However, in some cases, the primary objective of this approach was to utilize ICH as a marketing tool to drive consumer engagement and transactions, even in non-ICH related *Business* endeavors, such as ICH performances were added to mall opening ceremonies (Figure 4 (d)). These creators, backed by substantial capital, made considerable investments to incorporate ICH elements effectively, aiming to attract customers. Despite the commercial nature of these videos, it was important to note that they still presented and appreciated the valuable content of ICH.

5 INTERACTIONS AMONG DIFFERENT ICH GROUPS ON DOUYIN FROM CHS PERSPECTIVE (RQ2)

To answer RQ2, we created a group factor taxonomy in hybrid thematic analysis and took the taxonomy as a codebook to further analyze and annotate the 200 sample videos to investigate how different groups with different factors interact in different frames on Douyin.

5.1 Method: Categorizing the Group Factors in ICH Short Videos

Various factors, such as power, identity, and knowledge, play a role in the presentation, interpretation, and management of ICH. These factors represent the distinct resources held by different groups and contribute to defining each group. These resources can include social, political, and economic influence within the group, as well as cultural identity and knowledge systems associated with specific communities [66]. Our group factor taxonomy considered both existing literature on ICH and CHS for deductive coding and newly observed factors from ICH short videos for inductive coding.

In the deductive coding process, previous research found four group factors of ICH namely *Government* [5, 49, 78, 85], *Professionalism* [3, 66], *Indigenous* [28, 49, 73], and *Knowledge Sharing* [3, 66]. *Government* referred to whether the government played a leading role in the practice of ICH. *Professionalism* encompassed the varying levels of expertise and professionalism exhibited by different groups engaged in ICH. *Indigenous* highlighted the primary identity of the users or practitioners belonging to the local community of ICH, such as the residents living in Ning'an who constituted the indigenous group of *Ning'an Manchu Embroidery*. *Knowledge Sharing* referred to whether the group possessed ICH knowledge, and reflected the manner and attitude towards promoting ICH knowledge in different groups. In this research, we first followed the four factors to conduct a deductive codebook and integrated newly found factors into our group factor taxonomy by inductive coding.

In the inductive coding process, to identify potential new factors from ICH short videos on Douyin, we analyzed 200 videos and social information of creators. Some social information about video creators on Douyin was public. It allowed the user to express their identity and interests, which supported us in judging their group belonging. In this paper, we only focused on social information including verified information (e.g., *Jinan Municipal Bureau of Culture and Tourism*), signature, nickname, and location. We started
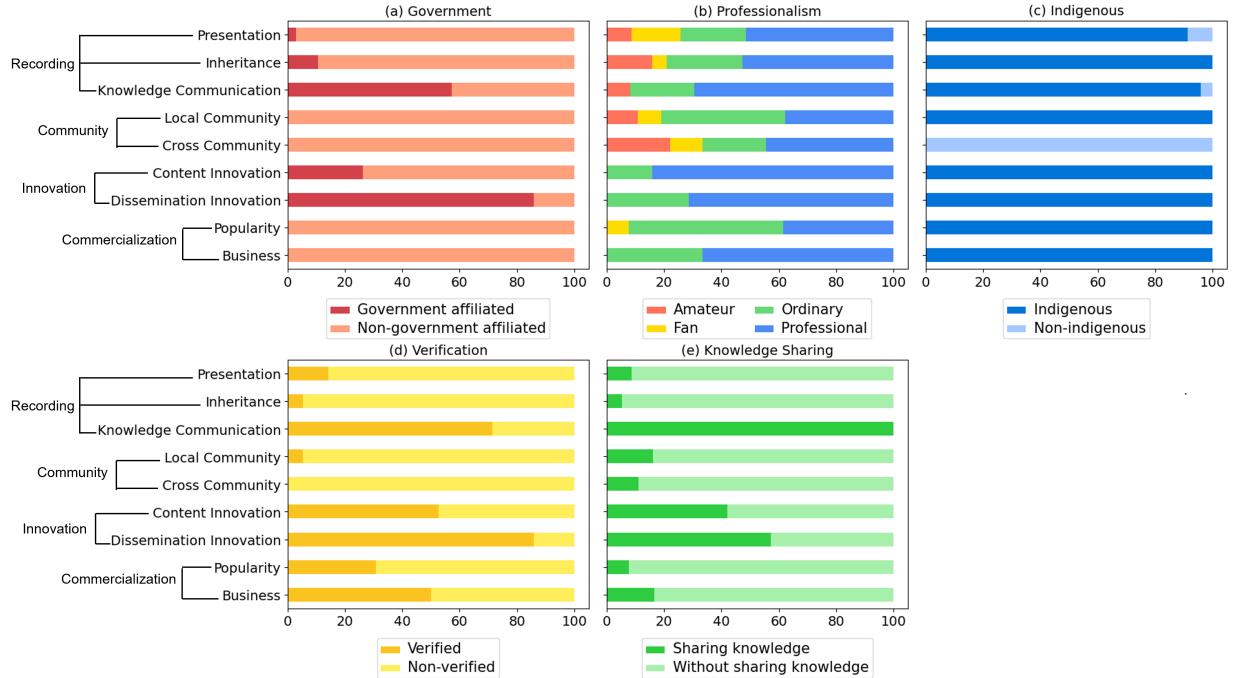
Figure 5: Proportion of Each Factor in Different Frames of 200 ICH Short Videos. One bar chart represented factors of the group of ICH short videos. In a bar chart, the Y dimension (vertical) indicated the 9 frames of constructing the landscape, and the X dimension (horizontal) indicated the percentage of the frame.

Table 3: Taxonomy of Factors of Group in ICH short videos on Douyin. We categorized the factors of ICH short video groups on Douyin into 5 categories: *Government, Professionalism, Indigenous, Verification,* and *Knowledge Sharing.*

Category	Definition	Possible Values	Related Work
Government	Indicates whether the group was officially affiliated with a government or not.	Government affiliated, Non-government affiliated	[5, 49, 78, 85]
Professionalism	Describes the level of expertise in ICH of the group.	Professional (formally trained or certified), Amateur (self-taught or hobbyist), Fan (enthusiast but with no formal training), Ordinary (no particular interest)	[3, 66]
Indigenous	Indicates whether the group belonged to an indigenous group or not.	Indigenous, Non-indigenous	[28, 49, 73]
Verification	Indicates whether the account gets verified or not on Douyin.	Verified, Non-verified	*
Knowledge Sharing	Indicates whether the group shared any ICH-related knowledge or not.	Sharing knowledge, Without sharing knowledge	[3, 66]

* Newly introduced in this research.

with classifying the creators based on intuitive context from social information in Appendix B, which served as a reference for the subsequent inductive codebook construction. Eventually, we summarized 13 classes of ICH short video creators on Douyin from the creators of sample videos in 9.

Based on the result of creator classification, two authors collaboratively open-coded 80 (40%) videos [42]. The open coding process was iterative, allowing for the consideration of multiple factors to describe each group of video creators. Two coders independently watched the videos, explored the classification of creators, and

Figure 6: Examples of ICH Short Video for Power Dynamics of Government. (a) an appeal for the inheritance of ICH by a Government-affiliated TV station, (b) an introduction of a Paper-cutting product to praise the national achievements and offer blessings for the rejuvenation of the nation, and (c) an interview expressing gratitude for the various assistance provided by supportive rural policies.

annotated the group factors observed, resulting in two independent codebooks. The two coders collaboratively produced a final codebook through three rounds of discussions and iterations. The inter-rater reliability of the open coding process was measured by Cohen's Kappa coefficient for each of the factors presented in the taxonomy. On average, the coefficient reached 0.899. The maximum score was 1.0 on *Verification*, whereas the minimum score was 0.761 on the *Professionalism*.

In our taxonomy (Table 3), a new factor of ICH groups on Douyin emerged. This factor is the verification status of video creators on social media. The creator can be either verified or not by platform and status is displayed to broad users. After the taxonomy was finalized, the first author coded the remaining 120 videos (Figure 5). According to our taxonomy, we conducted an analysis of the distribution of factors within each frame feature. This analysis aimed to uncover the relationship and interaction between different groups regarding power, identity, and knowledge.

5.2 Power Dynamics of ICH Short Videos

Power dynamics refer to the relationships, hierarchies, and inequalities that exist within the context of ICH practices, representation, and management. Different groups of stakeholders have different interests, values, and agendas regarding ICH, which may result in conflicts or collaborations. Our analysis revealed the power dynamics in different groups with the government and professionalism factors. These power dynamics affect the authenticity and diversity of ICH [28, 49].

5.2.1 Power Dynamics of Government. Our research indicated that the government's approach to handling ICH content on Douyin tended to follow a top-down methodology, which aligns with previous studies [36, 54, 57]. Furthermore, within this approach, their primary focus when **presenting** ICH on Douyin was on *Knowledge Communication* (28/49, 57.14%) and *Dissemination Innovation* (6/7, 85.71%) features (Figure 5 (a)), which can broaden the ICH promotion scale but may neglect the significance of fostering communication with the viewer. These videos employed a didactic tone to unilaterally transmit information to viewers. Regrettably, they seldom incorporated *Presentation* (1/35, 2.86%) and *Inheritance* (2/19, 10.53%) features (Figure 5 (a)) to **present** the essence of ICH. This tendency only led to superficial calls and appeals. For example

(Figure 6 (a)), there was a rigid call for the inheritance of ICH after a brief introduction: "*We should carry forward and promote the traditions passed down by our ancestors*".

Some government-affiliated groups relied on their authority to define and **interpret** ICH. While some interpretations were the result of collaboration between the state and local communities, aimed at promoting both national achievement and ICH, others limited independent thinking and judgment. These **interpretations** may only align with grand narratives and use memetic structures as a tool to expand their control over a wider online population [85] rather than being closely connected to the interests of the local ICH community [49]. For example, in the interview video of ICH (Figure 6 (b)), the main focus was on "*praising the national achievements in 13th Five-Year Plan and offering blessings for the nation through the product of Paper-cutting*".

Furthermore, these groups possessed abundant resources for ICH preservation and promotion, including material foundations, strong organizational capabilities, diverse communication channels, as well as inherent official nature. In order to effectively **manage** these resources related to ICH in videos to achieve their objectives, they tended to lead the total process and enact a series of policies, rather than completely delegating power to local communities. While under such management with policies, video content often achieved promotional effects and sustainable development of ICH, it often lacked emphasis on the efforts made by the local community in this process. As depicted in Figure 6 (c), during the interview, the representative of the ICH craft company highlighted that "*various assistance provided by supportive rural policies for the development of ICH*".

5.2.2 Power Dynamics of Professionalism. According to the taxonomy (Figure 5 (b)), we found that the main participants in ICH short videos were still ICH professionals (114/200, 57.00%). These professionals primarily presented their videos through four features: *Dissemination* (5/7, 71.43%) and *Content Innovation* (16/19, 84.21%), *Inheritance* (10/19, 52.63%), and *Knowledge Communication* (34/49, 64.39%). The dominance of these video features by professionals without considering the viewer potentially impacted the authenticity of ICH. For instance, the official account of *Changsha Huagu Opera* introduced an innovative form (Figure 7 (a)) that deviated from the original performance form, leading to questions among

(a)   (b)   (c)   (d)

Figure 7: Examples of ICH Short Video for Power Dynamics of Professionalism. (a) an innovative performance of *Huagu Opera* presented by the official account of *Changsha Huagu Opera*, (b) a class for teaching *Lishui Boatman's Work Song* with simplified form, (c) a performance of a *Huizhou Folk Song* by a renowned folk singer, and (d) A music video of *Midu Folk Song* produced by a video studio.

viewers. One viewer expressed their disappointment, stating, "*You sing Huagu Opera like you're singing a song, it's like singing without any emotions at all!*".

We also found that the professionals were more inclined to employ those frame features, which necessitated a certain level of expertise, in their videos to portray the essence of ICH with credible **interpretation**. For instance (Figure 7 (b)), a teacher simplified the performance form of *Lishui Boatman's Work Song* by focusing on arm movements as an introductory step for learning and inheritance. While this approach allowed professionals to convey and define their expertise in ICH, it is important to note that it was similar to the unilateral presentation and interpretation of ICH by government short videos and debates on the authenticity of ICH since the simplified form is easier for teaching.

In terms of **management**, on the one hand, professionals often facilitated their greater expertise, influence, and authority, enabling them to effectively **manage** ICH resources. This enabled them to reach broader viewers and engage influential figures in the creation of ICH short videos. By doing so, professionals aimed to capture viewers' attention and foster increased interest in ICH. On the other hand, their professionalism might influence viewer preferences, as viewers may be drawn to the professionals themselves rather than solely to the ICH being showcased. For instance (Figure 7 (c)), renowned folk singer *Gong Linna* shared a video of herself performing *Huizhou Folk Song*. Despite this song was recently learned from an ICH inheritor, and the video only depicted her in a recording studio, it garnered rich appreciation from viewers, like, "*The pronunciation of osmanthus as 'jue hua' and embroidered shoes as 'xiu ha' are both very authentic. It's truly moving*"; and "*The master and excellent inheritor of Chinese folk songs*".

Nevertheless, we also observed the active participation of non-professional users on Douyin in the promotion of ICH by *Recording* (41/103, 39.81% Figure 5 (b)). Users actively shared their acquired knowledge about ICH from their daily lives (Figure 3 (c) upper), as well as documented ICH-related performances they had witnessed. Video studios played a role in preserving ICH by capturing and producing videos that showcased various aspects of ICH (Figure 7 (d)). These practices enabled individuals to personally experience and evaluate ICH content, facilitating a bottom-up approach to promoting ICH through the ICH short videos.

5.3 Identity Relation of ICH Short Videos

We also focused on the relation between different identities in ICH short videos on Douyin, which referred to how different identity groups present, explain, and manage the ICH. We examined how these groups expressed and constructed their identity through ICH short videos. So we analyzed the identity relation between the local community and outside community, and the effect of identity verification.

5.3.1 Identity Relation between Local and Outside Community. The taxonomy indicated (Figure 5 (c)) that on the Douyin platform, local indigenous groups were the primary contributors to the **presentation** of ICH (186/200, 93%). They actively shared ICH content to maintain community memory, ensure its independence, and reduce the risk of cultural erosion. This finding aligned with Apaydin's perspective that "*the main protection of ICH comes from the local people*" [3].

The participation of external groups in the preservation of ICH can often be perceived as a threat by indigenous communities. This perception stemmed from concerns about the potential impact on the community's unique memory, identity, and authenticity of ICH [5, 49]. As a result, indigenous communities tended to adopt a conservative attitude towards **presentation** and **interpretation** of ICH. This was evident in the internal community's approach to the *Inheritance* of ICH (in Figure 3 (b) upper and 19/19 in Figure 5 (c)) where the transmission primarily occurred within the closed confines of the community, primarily among relatives or direct descendants. Besides, they also prioritized the *Innovation* of ICH based on their own definitions (26/26 in Figure 5 (c)).

5.3.2 Identity from the Verification of Douyin. There was an interesting finding emerged from the study, revealing that numerous inheritors of ICH on Douyin had not received verification (Figure 5 (b) 114 professional and (d) 69 verified). Moreover, the difference in the distribution of frame features between the *Professionalism* and *Verification* indicated a gap in the interaction of ICH. This disparity also revealed differences in identity between these two group factors. This was partly due to their failure to submit verification applications to the platform. Additionally, it was observed that many individuals, particularly ethnic minorities served as natural inheritors or professionals in the ICH domain, but did not get verified. Consequently, these individuals often emphasized their

identity in the titles or signatures of their videos, such as "*I am from Kongzhuang Village, Dengzhou, Henan who is currently a local member of the national ICH troupe, providing accompaniment on the Quhu for Luojuan Opera*". We further discussed this issue in subsection 7.3

5.4 Knowledge Sharing of ICH Short Videos

The ICH-related *Knowledge* was a vital resource for each group to be **managed**. *Knowledge Sharing* not only indicated whether a group possessed ICH knowledge but also encompassed the form of **presentation**, and attitude towards sharing that knowledge. Building on the *Knowledge Communication* Feature in section 4, we examined how different groups with ICH knowledge approach the **presentation**, **interpretation**, and **management** of that knowledge. We specifically focused on exploring the practices and challenges of *Knowledge Sharing* among various stakeholders. Additionally, our investigation delved into issues such as the monotonous presentation within groups possessing ICH knowledge, as well as the exclusivity and monopolization of knowledge observed in indigenous and professional groups, as highlighted in prior research [3].

5.4.1 The Monotony of Knowledge Sharing Presentation Forms on Douyin. Our findings indicated that on Douyin, groups possessing knowledge of ICH were more actively engaged in sharing knowledge merely through *Knowledge Communication* and *Innovation* videos (Figure 5 (e)). But in other specific video frame features such as *Inheritance* (1/19, 5.26%), these creators tended to share less ICH-related knowledge. In *Content Innovation* videos (8/19, 42.11%), these groups tended to highlight the contrasts between innovative elements and traditional content, thereby incorporating relevant knowledge. Moreover, the primary goal of *Dissemination Innovation* (4/7, 57.14%) videos was ICH promotion through *Knowledge Sharing*. These observations indicated that although Douyin offered diverse opportunities for video creation, the presence of groups with ICH-related knowledge is relatively small on the platform. Furthermore, these groups preferred creating dedicated videos specifically for *Knowledge Communication* rather than integrating their knowledge into other types of videos.

5.4.2 The Knowledge Monopolization on Douyin. We found that the existence of knowledge monopolization and exclusivity on Douyin was mainly manifested by indigenous and professional groups in two ways. First, we argued in subsubsection 5.2.1 that government-affiliated groups played a leading role in *Knowledge Communication*. However, taking a different perspective and examining the phenomenon (Figure 5 (a) and (e)), we can propose that the government's control over the power and management resources to promote ICH may not be the sole reason. Instead, it was possible that other indigenous groups in local community (6/37, 16.22% in Figure 5 (e)) were hesitant to share knowledge in-depth and preferred to remain at the surface level of presenting ICH content. This alignment with the exclusivity of ICH and the indigenous community highlighted their cautious approach [3] but discouraged the cooperation of ICH communities. In addition, they often used formal and academic language to communicate ICH knowledge, which may not be easily understood by the general public. Additionally, they collaborated with commercial companies

or media agencies (Figure 5 (e)), compromising the authenticity and diversity of ICH. This may hinder the knowledge-sharing and learning process among different groups of stakeholders and thus affect the vitality and innovation of ICH.

6 THE RELATIONSHIPS BETWEEN FRAMES FROM DIFFERENT GROUPS AND VIEWER RESPONSE (RQ3)

To comprehend the dynamics of how various representatives debate and negotiate ICH on Douyin, we analyzed viewers' responses to short videos through comments and popularity metrics (number of likes and comments), we first created a taxonomy that categorized comments of ICH short videos into four classes. With the application of a pre-trained language model, we fine-tuned our classification rules to all the comments of the 200 sample videos and applied sentiment analysis to these comments. Besides, we facilitated sentiment analysis to judge the context of debates and negotiations in comments. Furthermore, the regression analysis was established to examine the correlations between different groups within different frames and viewer responses respectively.

6.1 Method: Categorizing the ICH Short Video Comments

To analyze viewers' responses, we considered comments on the videos as the primary indicator, supplemented by audience metrics (i.e., the number of likes and comments) to provide insights into their thoughts. We collected a total of 28,744 raw comments from the previously sampled 200 videos for analysis.

During the data cleaning process, comments with duplicated comment IDs resulting from repeated requests for comments by the script were excluded, leaving us with 27,803 comments. We further refined the dataset by removing comments with specific content but meaningless character combinations, such as "*698923,H2ao*" or just a space. This filtering resulted in 27,651 remaining comments. The average length of these comments was 18.79 characters (standard error: 16.16), and most of them were written in Chinese.

To establish a taxonomy, two authors initially selected 1,000 comments randomly from the 200 videos, ensuring that each video had at least one comment included. Employing open coding similar to the previous process of frames in RQ1, the two co-authors first coded 500 comments. They subsequently discussed, merged, or separated their codes, iteratively refining the codebook until they reached a consensus without any disagreements. The first author then coded the remaining comments to validate the distribution consistency of the code results. Ultimately, We have identified four categories of comments for ICH short videos, as shown in Table 4.

6.2 Viewer Comments Classification by Language Model

To categorize left 26,651 comments from the 200 ICH short videos, we fine-tuned a Chinese-specialized version [18] of the language model RoBERTa [51]. The classifier generalized our comments taxonomy by automatically assigning a given comment to either of the four classes. Also, we applied the sentiment language model

Table 4: Taxonomy of ICH Short Video Comments. We categorized the comments of the ICH short videos on Douyin into four classes. In terms of the content, the four classes, *Communication* and *Question* were ICH-content related, *Attitude* and *Socialization* were not.

Category	Definition	Examples	Proportion
Communication	Experiences, opinions, or knowledge about the ICH-related content in videos	"*There has never been a performance scene where all three types of Lion Dance performances are combined together nationwide*"	19.1%
Attitude	Expression of emotions or sentiments towards the ICH-related content in videos.	"*I feel my blood boil when I hear the sound of Klong yao*", "👍👍👍"	69.6%
Question	Questions or requests for ICH-related information in videos	"*Which place is this song from?*", "*Where can I download Midu Travel*"	5.43%
Socialization	Comments involving interactions, greetings, or general conversations.	"*Thank you for everyone's support*"	5.24%

* The proportions of each class in the 1,000 coded sample comments.

[19], which has been trained on a multilingual dataset comprising of English and Chinese texts, to analyze the sentiment of each comment.

6.2.1 Training. We split the dataset into a set of 800 comments as the training set and left 200 comments for validation. During training, we fixed the constant random seed and tried tuning several hyper-parameters. Finally, our model reached an accuracy of 0.815 on the validation set, indicating its good performance in classifying the video comments.

6.2.2 Inference. In terms of the *Comment Type Classification*, the inference results (Appendix C.1) showed that *Attitude* was the most common class with 72.5% of comments in 200 sample videos. The 26.43% of comments were *Communication*. As for the other two classes, *Question* (4.09%) and *Socialization* (4.09%) were consistently rare among all frames. In terms of the *Sentiment Analysis*, the inference results (Appendix C.2) indicate that Douyin viewers tend to respond to video creators or other viewers with neutral (51.70%) or positive (40.25%) emotion, while negative (8.04%) responses were less common.

6.3 Comments on Debates and Negotiations

As the subsection 2.2 mentioned, it was crucial to analyze the debates and negotiations that occurred in the comments of ICH short videos between viewers and video creators. To explore them in the four classes of video comments, we considered *Communication* and *Question* to be ICH content-related *Discussion* comments. These comment types reflected the ongoing situation of debates and negotiations as they are closely associated with the ICH content presented in the videos, providing insights into viewers' understanding of the ICH content. Additionally, the *Attitude* comments primarily express sentiments through advice or critique, enabling us to judge the presence of debates or negotiations.

In the *Communication* comments, viewers communicated ICH-related information and exchanged knowledge about the ICH. These comments served as a means for viewers to communicate their thoughts, insights, and experiences related to the ICH content in

the videos. For instance, communication comments under the video introduce the *Ivory Carving*, these comments communicated the Alternative to ivory: "*Using antlers is also possible. Wood carvings are also very beautiful. What everyone likes is the craftsmanship*" and "*But a product made from mammoth ivory does indeed have better quality...*". The ICH information and knowledge in Communication that identified it from other comment types.

Furthermore, the *Question* comments were also considered ICH-related as they demonstrated that viewers desired to learn more about the ICH-related information. These comments often sought clarifications or requested additional information. For example, the *Question* was proposed in comments of Guozhuang Dance "*I'm also from Jiaren Town. What kind of Guozhuang dance is this?*". These users also had to establish some degree of understanding of the video content before asking.

As the *Attitude* comments, viewers expressed their sentiments through advice (positive or neutral) or critique (neutral or negative), providing valuable insights into their perspectives and reactions toward the ICH content. These comments offered a glimpse into viewers' attitudes and emotions, toward the ICH videos and creators. For example, there were the praising comments "*You sing so well, it's enjoyable to listen to you, and I never get tired of it.*" or "❤️❤️", and also blaming comments "*I suggest that some performers refrain from constantly asking for likes when they are not singing. It significantly affects the viewing experience of 'Huagu Opera'*" or "*It sounds so awkward to me*".

6.4 Method: Regression Analyses of Frames from Different Groups and Viewer Response

We conducted regression analyses on the annotated comments of 200 ICH short videos and the corresponding audience metrics to explore the correlation between frames from different groups and viewer responses. The analysis aimed to investigate the influence of power, identity, and knowledge on viewer responses. We utilized ordinary least squares (OLS) regression, a linear model, for both

Table 5: Linear Regression: The Number of Likes and Comments (Viewer Preference).

Feature or Factor	Number of Likes				Number of Comments			
	Coef.	Std.	t	P>|t|	Coef.	Std.	t	P>|t|
Cross Community	**0.2599***	0.136	1.976	0.049	**0.1612*****	0.0491	3.280	0.000
Knowledge Communication	**-0.1593***	0.0642	-2.481	0.014	**-0.0647****	0.0232	-2.789	0.006

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

comment types and audience metrics due to its simplicity and interpretability.

In terms of independent variables, we included all frame features (section 4) and group factors (section 5) as independent variables and validated their correlation and Variance Inflation Factor to avoid multi-collinearity (Appendix D). To accommodate the regression model, we converted these categorical values into dummy variables.

Regarding the dependent variable, we initially utilized the number of likes and comments as dependent variables to indicate viewer preference for ICH short videos within each frame from different groups. Additionally, we used the sum of the proportions of two types of ICH-related comments as the dependent variable. This approach allowed us to consider the relative magnitude of comments, irrespective of video popularity variations within the sample set. Furthermore, we used the proportion of *Attitude* comments to reflect viewer emotional responses and existence of debates and negotiations.

6.5 Results of Regression Analyses

This section reports the results of regression analyses on the correlations between frames from different groups and viewers' responses. The tables in this section only displayed independent variables that appeared to have significance.

6.5.1 Viewer Preference and Frame from Different Groups in Douyin. The regression results in Table 5 indicated that videos on Douyin featuring *Cross Community* can significantly receive larger number of likes and comments. On the other hand, the *Knowledge Communication* feature had the opposite effect, resulting in fewer preferences of viewers. Besides, the regression results were consistent with the findings from section 5. The *Knowledge Communication* feature, often led by government-affiliated groups, tended to employ a top-down approach. This approach created a distance between the viewers and ICH, resulting in a waste of effort and resources. On the other hand, *Cross Community* often shared their experiences, learning, and practices of unfamiliar ICH content in their videos. This approach allowed the viewers to better engage with the context and led to their appreciation. The regression results highlight that the *Cross Community*, who neither adopt a top-down approach nor from local groups, have gained popularity by demonstrating respect for the ICH.

6.5.2 ICH-related Discussion and Frame from Different Groups in Douyin. The results (Table 6) indicated that the involvement of *Indigenous* and *Cross Communities* and *Verified* or *Ordinary* identity

significantly stimulated discussions among viewers about ICH-related content. First, the findings in section 5 had revealed that the majority of ICH short videos on Douyin were created by indigenous groups. These videos, with their ICH-related content, can effectively evoke a sense of identification among local communities and further stimulate discussions in the comments. The presence of *Verification* indicated that viewers still exhibit a tendency to rely on authoritative sources, preferring to seek information about ICH from professionals or making specific requests. Interestingly, the positive correlations observed with *Cross Community* and *Ordinary* suggested that these types of videos create a relaxed atmosphere where there was no need to distinguish who was more knowledgeable on ICH. This inclusive approach facilitated open discussions about ICH knowledge, representing a breakthrough attempt to move beyond relying solely on authoritative interpretations and knowledge monopolization.

Table 6: Linear Regression: Proportion of ICH Related Comments (Discussion).

Feature or Factor	Coef.	Std.	t	P>|t|
Indigenous	**0.1345***	0.0677	1.989	0.048
Cross Community	**0.3527***	0.1582	2.229	0.027
Verification	**0.0828***	0.0339	2.445	0.016
(Professionalism) Ordinary	**0.0999****	0.0383	2.611	0.009

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

As the ICH-related Discussion, the *Communication* comment was the only type with more than 10% (1051/6395) negative comments (Appendix C.2). These comments can reflect there were not only ICH content discussions but some debates among them, such as a discussion about whether should change the material for the *Ivory Carving*: "*It is not appropriate to use ivory for carving. The carving skills can be fully utilized on other materials instead. This is a criminal act!*", or "*If the ivory required for this craft is prohibited from use, it effectively means that this art form has been lost*". And a debate concerning which target group *Beijing Opera*, as a national quintessence, should cater to: "*Cloud Brocade can indeed be used for costumes, but using it to make a complete outfit would cost at least 100,000 yuan, which is beyond the means of the average person*" or "*Originally, national quintessence was never meant to be affordable for everyone, and there was no expectation for it to cater to the general public*".

6.5.3 Attitude and Frame from Different Groups in Douyin. The results (Table 7) disclosed that three factors of groups: *Professional, Verification,* and *Government-affiliated* had significant correlations with the proportion of *Attitude* comments. To the *Professional,* we believed that viewers were indeed more inclined to express their emotions, especially positive affirmations, to ICH professionals, possibly due to a certain level of reverence for authority (subsubsection 6.5.2). Certainly, this inclination was also partially attributed to the recognized expertise of these professionals. Non-verification, on the other hand, increases *Attitude* comments. The preference for expressing attitudes to the creators without verification once again highlighted the existing gap between verification and professionalism on Douyin. Viewers tended to express their attitudes more frequently in videos affiliated with the government.

Table 7: Linear Regression: Proportion of Attitude Comments.

Feature or Factor	Coef.	Std.	t	P>|t|
(Professionalism) Professional	**0.0702***	0.0355	1.978	0.049
Verification	**-0.1687*****	0.0320	-5.270	0.000
Government-affiliated	**0.1170****	0.0423	2.765	0.006

* p < 0.05; ** p < 0.01; *** p < 0.001

Regarding the *Attitude* comments, viewers expressed their agreement or disagreement. However, there were a limited number of negative (1040/19053, 5.46%) *Attitude* comments critiquing the content, while the positive (8743/19053, 45.89%) and neutral comments were more prevalent (Figure 11). Additionally, there was a significant number of abnormal and repetitive positive comments (6069/8743, 69.42%) instead of advice or negotiation, such as the only thumbs up or heart emojis to express appreciation. These observations suggested the presence of a superficial commenting phenomenon, with limited debates and effective negotiations in the realm of ICH videos on Douyin. Ideally, Douyin should provide a platform for diverse representatives to engage in debates and negotiations as an arena [70]. Nevertheless, the context described above was seldom observed in the analyzed comments. What's worse, there were some negative comments that displayed defensiveness and aggression, such as "*I do not communicate with people of low intelligence*" and "*Your singing like a pig slaughter*". These types of comments can escalate the intensity of arguments, further diminishing the potential for constructive debates and negotiations.

7 DISCUSSION

This research found diverse and complex frames that commonly form the landscape of ICH short videos on Douyin and then analyzed the interaction of ICH groups with different power, identity, and knowledge. We also analyzed video comments to investigate the correlations between these frames from different ICH groups and viewer response which was quantified by several types of comments. In this section, we situated our findings within the prior literature and provide design implications for ICH promotion and safeguarding via short video sharing.

7.1 Promoting and Safeguarding ICH through Practice and Experience

The traditional top-down approaches in CHS [3, 12, 67] have been criticized for excluding local communities who should be involved in the preservation and promotion of ICH [28, 60]. Our findings showed that government-affiliated and professional groups who tended to rely on preaching to present ICH, received fewer responses from viewers compared to outside community members and ordinary users. Therefore, we propose a shift towards practicing rather than preaching for ICH on short video-sharing platforms like Douyin.

To promote active user involvement, the platform can implement incentive plans to encourage the creation and sharing of ICH-related videos [82] by users who may not be familiar with ICH. This approach diversifies ICH content and fosters a sense of ownership among a broader user base. Additionally, the platform can guide knowledgeable ICH groups to include detailed narration in their *Presentation* videos, focusing on the performance and production aspects. It enhances viewers' understanding of ICH practices and encourages practical applications based on personal experiences, acquired knowledge, and purchased ICH products. The practice and experience of ICH in video content by ordinary individuals can challenge hegemonic expressions and discourses [58, 63], bridging the gap between theoretical knowledge and active engagement with ICH, thus facilitating its promotion. This approach encourages the active participation of diverse stakeholders [66], allowing them to experience the dynamic nature of ICH while effectively communicating and negotiating their identities and values with others. By embracing this inclusive and democratic perspective, ICH preservation and promotion can be enriched, empowering local communities and ensuring the continued vitality of heritage in the contemporary world [5, 20, 67].

7.2 Communication and Co-management of ICH

To ensure a comprehensive and inclusive approach to ICH, a bottom-up approach on short video platforms is necessary. It involves co-creating and co-managing ICH through debates and negotiations that consider the diverse interests and requirements of different groups. Furthermore, we argued that users on these platforms are not just consumers or producers of ICH content; they are active participants who can contribute to the evaluation, dissemination, and learning of ICH. We use the metaphor of making a soup to illustrate the cooperation between local and outside stakeholders in the co-creation and co-management of ICH [3]. Local communities lead the process, supported by other groups with cultural perspectives [66], while the sharing of ICH knowledge serves as the ingredient. The soup is consumed both by the local communities, who bring ICH back to their community and identity, and by a global audience interested in appreciating and learning from ICH. This metaphor suggests that platforms like Douyin should facilitate a participatory and respectful approach, giving local communities

more agency and voice while fostering understanding among outside stakeholders. This allows ICH to be exposed and recognized by a wider audience, promoting cross-cultural exchange and learning through resource integration from different groups [26, 49]. However, this communication and management approach faces the challenge of inadequate bottom-up approach [85, 86]. While users express their perspectives on ICH on the platform to contribute to co-management, their perspectives and the platform itself are disrupted or even stifled by the need to adhere to the policies of Government-affiliated groups and the views of authorities or institutions. [71, 85].

7.3 Recognizing ICH Professionals Beyond Official Certification and Navigating the Verification Gap

Our study highlighted a challenge in promoting ICH on short video platforms, namely the gap between ICH professionals and verification from the government or other authoritative bodies [83]. These professionals, often local ethnic minorities and natural inheritors of ICH, possess extensive knowledge and skills derived from their cultural and social contexts. However, our findings and prior work [53, 69] showed that the absence of official verification poses obstacles in establishing credibility, visibility, and accessing platform resources and support for their ICH content.

To address this issue, it is crucial for platforms to develop an inclusive and adaptable verification system that accommodates ICH professionals in diverse situations. One approach could involve automatically detecting and recognizing inheritors who hold certificates from local communities or organizations. Simultaneously, for those inheritors without official certification, a customized verification process could be implemented. This process would entail evaluation by both other verified users within the same community and platform administrators to assess their professionalism and expertise. On the other hand, the platform can educate users about the benefits of obtaining verification, such as increased credibility for their videos and better promotion [53]. It helps inheritors understand the necessity of verification and encourages active participation in the platform's verification process, thereby bridging the gap between professionalism and verification.

7.4 The Guidance and Moderation of Debates and Negotiations Matter

Based on our findings, the lack of critical communication and the repetitive parsing attitude in comments reflect the abnormal context of the ICH arena on Douyin. Thus, the platform should effectively encourage users to provide substantive comments with moderation on ICH-related videos, fostering dialogues among them [22]. Through these interactions, both users and the platform can gain a deeper understanding of the diverse requirements of each ICH stakeholder [66]. This collaborative approach can contribute to addressing existing challenges in the presentation, interpretation, and management of ICH for sustainable development within the ICH community [8].

Furthermore, according to our findings, the platform should guide discussions to facilitate in-depth *Communication* comments, rather than allowing repetitive and meaningless comments [24].

This implies that when evaluating videos, emphasis should be placed on their quality and content, rather than simply giving approval in *Attitude* comments based on their association with ICH. Avoiding indiscriminate praise ensures accurate differentiation between high-quality and low-quality ICH-related content. Simultaneously, the platform should regulate comments to prevent escalation of conflicts between different user groups [11, 65]. Users have the ability to engage in profound discussions but may require guidance from the platform, such as the trade-off between authenticity and the development of *Ivory Crafting* in subsection 6.5. It is practicable to encourage users to avoid simplistic and arbitrary content while using friendly language, which can promote constructive debates and maintain a positive community atmosphere. Besides, moderation is essential in promoting positive dialogues and maintaining a prosocial and inclusive community environment for all users. Without proper moderation, the ICH short video community runs the risk of becoming a "real arena for cruel debates and fights", which undermines its purpose and potential.

7.5 Limitations

There are a few limitations to consider in this study. Firstly, the findings are specific to the Douyin platform and may not be applicable to other platforms or contexts. Secondly, the data collected might be utilized insufficiently, as we did not employ suitable methods or models to process and understand the content of the videos directly using machine learning techniques. As a result, the classification of frames could not be extended to all 25,501 collected videos.

8 CONCLUSION

In this paper, we presented a mixed-method study from the CHS perspective about ICH short videos on Douyin. We first established a taxonomy to frame the landscape and provide an overview understanding of ICH short videos on Douyin. Then, we analyzed the different groups of ICH short videos by categorizing the group factors regarding their interaction from power, identity, and knowledge in ICH. Next, we analyzed the video comments of ICH short videos by categorizing the comments to reflect and critically judge the viewer's responses. Furthermore, using video comments as the proxy of viewers' responses, we uncovered the correlations between each frame from different groups and the effect of ICH short videos on viewers. Our findings highlight the complex and dynamic nature of ICH short videos on Douyin, considering the different groups involved. We contextualized our insights within existing research in ICH and CHS, offering design implications for ICH short video-sharing platforms that can address the interests and needs of various stakeholders, including the government, indigenous communities, and viewers.

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REFERENCES

[1] Janice Affleck and Thomas Kvan. 2008. A Virtual Community as the Context for Discursive Interpretation: A Role in Cultural Heritage Engagement. *International Journal of Heritage Studies* 14, 3 (2008), 268–280. https://doi.org/10.1080/13527250801953751

[2] Deming An. 2008. Reflection on the protection of intangible Cultural Heritage – Protection of intangible cultural heritage: a dilemma of folklore. *Henan Social Sciences* 1 (2008), 14–20.

[3] Veysel Apaydin (Ed.). 2017. *Shared Knowledge, Shared Power: Engaging Local and Indigenous Heritage.* Springer Cham. https://doi.org/10.1007/978-3-319-68652-3

[4] Veysel Apaydin. 2018. The Entanglement of the Heritage Paradigm: Values, Meanings and Uses. *International Journal of Heritage Studies* 24, 5 (2018), 491–507. https://doi.org/10.1080/13527258.2017.1390488 arXiv:https://doi.org/10.1080/13527258.2017.1390488

[5] Veysel Apaydin. 2020. *Critical Perspectives on Cultural Memory and Heritage: Construction, Transformation and Destruction.* UCL Press. https://doi.org/10.2307/j.ctv13xpsfp

[6] Antonio Arantes. 2012. Challenges and Perspectives in Safeguarding Endangered Intangible Cultural Heritage in Developing Countries. In *Artigo apresentado na conferência: Creative Value of ICH for Sustainable Development. Dangjin City, Coréia: International Information and Networking Centre for Intangible Cultural Heritage in the Asia-Pacific Region, ICHCAP-UNESCO.* 61–69.

[7] G. J. Ashworth, Brian Graham, and J. E. Tunbridge. 2007. *Pluralising Pasts: Heritage, Identity and Place in Multicultural Societies.* Pluto Press. http://www.jstor.org/stable/j.ctt18mvnhw

[8] M Baird. 2010. Critical Heritage Studies: Knowledge Identity and Power. Introductory Remarks to the Eponymous Session. In *109th Annual Meeting of the American Anthropological Association, New Orleans.*

[9] Kristen Barta and Nazanin Andalibi. 2021. Constructing Authenticity on TikTok: Social Norms and Social Support on the "Fun" Platform. *In Proceedings of the ACM on Human-Computer Interaction* 5, Article 430 (Oct 2021), 29 pages. https://doi.org/10.1145/3479574

[10] Regina Bendix. 2008. Heritage between Economy and Politics: an Assessment from the Perspective of Cultural Anthropology. In *Intangible Heritage.* Routledge, 267–283.

[11] Alex Beutel, Wanhong Xu, Venkatesan Guruswami, Christopher Palow, and Christos Faloutsos. 2013. CopyCatch: Stopping Group Attacks by Spotting Lockstep Behavior in Social Networks. In *Proceedings of the 22nd International Conference on World Wide Web* (Rio de Janeiro, Brazil) *(WWW '13).* ACM, New York, NY, USA, 119–130. https://doi.org/10.1145/2488388.2488400

[12] Denis Byrne. 2011. Archaeological Heritage and Cultural Intimacy: An Interview with Michael Herzfeld. *Journal of Social Archaeology* 11, 2 (2011), 144–157. https://doi.org/10.1177/1469605311402571 arXiv:https://doi.org/10.1177/1469605311402571

[13] Meeyoung Cha, Haewoon Kwak, Pablo Rodriguez, Yong-Yeol Ahn, and Sue Moon. 2007. I Tube, You Tube, Everybody Tubes: Analyzing the World's Largest User Generated Content Video System. In *Proceedings of the 7th ACM SIGCOMM Conference on Internet Measurement* (San Diego, California, USA) *(IMC '07).* ACM, New York, NY, USA, 1–14. https://doi.org/10.1145/1298306.1298309

[14] Zhuang Chen, Qian He, Zhifei Mao, Hwei-Ming Chung, and Sabita Maharjan. 2019. A Study on the Characteristics of Douyin Short Videos and Implications for Edge Caching. In *Proceedings of the ACM Turing Celebration Conference - China* (Chengdu, China) *(ACM TURC '19).* ACM, New York, NY, USA, Article 13, 6 pages. https://doi.org/10.1145/3321408.3323082

[15] Xu Cheng, Jiangchuan Liu, and Cameron Dale. 2013. Understanding the Characteristics of Internet Short Video Sharing: A YouTube-Based Measurement Study. *IEEE Transactions on Multimedia* 15, 5 (2013), 1184–1194. https://doi.org/10.1109/TMM.2013.2265531

[16] CNNIC. 2021. *The 47th Statistical Report on China's Internet Development.* Retrieved January 9, 2022 from https://www.cnnic.com.cn/IDR/ReportDownloads/202104/P020210420557302172744.pdf

[17] John L Comaroff and Jean Comaroff. 2009. *Ethnicity, Inc.* University of Chicago Press. 236 book pages.

[18] Yiming Cui, Wanxiang Che, Ting Liu, Bing Qin, and Ziqing Yang. 2021. Pre-Training With Whole Word Masking for Chinese BERT. *IEEE/ACM Transactions on Audio, Speech, and Language Processing* 29 (2021), 3504–3514. https://doi.org/10.1109/TASLP.2021.3124365

[19] Dorottya Demszky, Dana Movshovitz-Attias, Jeongwoo Ko, Alan Cowen, Gaurav Nemade, and Sujith Ravi. 2020. GoEmotions: A Dataset of Fine-Grained Emotions. In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics,* Dan Jurafsky, Joyce Chai, Natalie Schluter, and Joel Tetreault (Eds.). Association for Computational Linguistics, Online, 4040–4054. https://doi.org/10.18653/v1/2020.acl-main.372

[20] Kosmas Dimitropoulos, Sotiris Manitsaris, Filareti Tsalakanidou, Spiros Nikolopoulos, Bruce Denby, Samer Al Kork, Lise Crevier-Buchman, Claire Pillot-Loiseau, Martine Adda-Decker, Stephane Dupont, Joelle Tilmanne, Michela Ott, Marilena Alivizatou, Erdal Yilmaz, Leontios Hadjileontiadis, Vassilios Charisis, Olivier Deroo, Athanasios Manitsaris, Ioannis Kompatsiaris, and Nikos Grammalidis. 2014. Capturing the Intangible an Introduction to the i-Treasures Project. In *2014 International Conference on Computer Vision Theory and Applications (VISAPP),* Vol. 2. IEEE, 773–781.

[21] Carsten F Dormann, Jane Elith, Sven Bacher, Carsten Buchmann, Gudrun Carl, Gabriel Carré, Jaime R García Marquéz, Bernd Gruber, Bruno Lafourcade, Pedro J Leitão, et al. 2013. Collinearity: a Review of Methods to Deal with it And a Simulation Study Evaluating Their Performance. *Ecography* 36, 1 (2013), 27–46.

[22] Hans D'ORVILLE. 2005. Intangible Cultural Heritage: A Global Public Good of a Special Kind. *Globalization and Intangible Cultural Heritage* (2005), 142–151.

[23] Jessika Eichler. 2021. Intangible Cultural Heritage, Inequalities and Participation: Who Decides on Heritage? *The International Journal of Human Rights* 25, 5 (2021), 793–814. https://doi.org/10.1080/13642987.2020.1822821 arXiv:https://doi.org/10.1080/13642987.2020.1822821

[24] Katherine M Engelke. 2020. Enriching the Conversation: Audience Perspectives on the Deliberative Nature and Potential of User Comments for News Media. *Digital journalism* 8, 4 (2020), 447–466.

[25] Evil0ctal. 2023. *Douyin_TikTok_Download_API.* https://github.com/Evil0ctal/Douyin_TikTok_Download_API

[26] Yang Gao, Mengmeng Li, Qingning Li, Keji Huang, and Shiwei Shen. 2022. Inheritors' Happiness and Its Relevant Factors in Intangible Cultural Heritage. *Sustainability* 14, 21 (2022). https://doi.org/10.3390/su142114084

[27] Alfredo González-Ruibal. 2008. Time to Destroy: An Archaeology of Supermodernity. *Current Anthropology* 49, 2 (2008), 247–279. https://doi.org/10.1086/526099

[28] Sam Grey and Rauna Kuokkanen. 2020. Indigenous Governance of Cultural Heritage: Searching for Alternatives to Co-management. *International Journal of Heritage Studies* 26, 10 (2020), 919–941. https://doi.org/10.1080/13527258.2019.1703202 arXiv:https://doi.org/10.1080/13527258.2019.1703202

[29] Rodney Harrison. 2010. Heritage as Social Action. *Understanding Heritage in Practice* (2010), 240–276.

[30] Rodney Harrison. 2010. What is Heritage. *Understanding the Politics of Heritage* 9 (2010).

[31] Rodney Harrison. 2012. *Heritage: Critical Approaches.* Routledge. 288 book pages. https://doi.org/10.4324/9780203108857

[32] David C Harvey. 2016. The History of Heritage. In *The Routledge Research Companion to Heritage and Identity.* Routledge, 19–36.

[33] UNESCO Intangible Cultural Heritage. 2003. Text of the Convention for the Safeguarding of the Intangible Cultural Heritage. In *Tillgänglig på Internet: https://ich. unesco. org/en/convention [hämtad Mars 2, 2020] J White, W. et al.(2018) Tabletop role-playing games. I Deterding, S. Zagal, J.(red.) Role-Playing Game Studies: Transmedia Foundations. Routledge Taylor & Francis Group Østbye, H. et al.(2003) Metodbok för medievetenskap. Malmö: Liber AB.*

[34] Max Horkheimer. 1972. Traditional and Critical Theory. *Critical Theory: Selected Essays* 188, 243 (1972), 1–11.

[35] Jia Hu. 2020. The Status Quo and Strategy of Intangible Cultural Heritage Short Video Dissemination—take Douyin as a Study Case. *Audiovisual* 10 (2020), 2.

[36] Muhammad Zaffwan Idris, Norsimaa Binti Mustaffa, and Syed Osman Syed Yusoff. 2016. Preservation of Intangible Cultural Heritage Using Advance Digital Technology: Issues and Challenges. *Harmonia: Journal Of Arts Research And Education* 16, 1 (2016), 1–13.

[37] Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, et al. 2013. *An Introduction to Statistical Learning.* Springer Texts in Statistics, Vol. 112. Springer, New York, NY, USA. 426 book pages. https://doi.org/10.1007/978-1-4614-7138-7

[38] JoeanAmier. 2023. *TikTokDownloader.* https://github.com/JoeanAmier/TikTokDownloader

[39] Anna Karlström. 2005. Spiritual Materiality: Heritage Preservation in a Buddhist World? *Journal of Social Archaeology* 5, 3 (2005), 338–355. https://doi.org/10.1177/1469605305057571 arXiv:https://doi.org/10.1177/1469605305057571

[40] D Bondy Valdovinos Kaye, Jing Zeng, and Patrik Wikstrom. 2022. *TikTok: Creativity and Culture in Short Video.* Polity Press. 240 book pages.

[41] Md Saifuddin Khalid and Md Saiful Alam Chowdhury. 2018. Representation of Intangible Cultural Heritage of Bangladesh through Social Media. *Anatolia* 29, 2 (2018), 194–203. https://doi.org/10.1080/13032917.2017.1414438 arXiv:https://doi.org/10.1080/13032917.2017.1414438

[42] Shahedul Huq Khandkar. 2009. Open Coding. *University of Calgary* 23, 2009 (2009).

[43] Barbara Kirshenblatt-Gimblett. 1998. *Destination Culture: Tourism, Museums, and Heritage.* Vol. 10. Univ of California Press.

[44] Jan Willem Kleinrouweler, Fabijan Bajo, Britta Meixner, Sergio Cabrero, and Pablo Cesar. 2017. Mobile Instant Video Sharing: Does More Information Help?. In *Proceedings of the on Thematic Workshops of ACM Multimedia 2017* (Mountain

View, California, USA) *(Thematic Workshops '17)*. ACM, New York, NY, USA, 153–160. https://doi.org/10.1145/3126686.3126709

[45] Daniel Klug, Yiluo Qin, Morgan Evans, and Geoff Kaufman. 2021. Trick and Please. A Mixed-Method Study On User Assumptions About the TikTok Algorithm. In *Proceedings of the 13th ACM Web Science Conference 2021* (Virtual Event, United Kingdom) *(WebSci '21)*. ACM, New York, NY, USA, 84–92. https://doi.org/10.1145/3447535.3462512

[46] Alexandra Kolesnik and Aleksandr Rusanov. 2020. Heritage-As-Process and its Agency: Perspectives of (Critical) Heritage Studies. *Higher School of Economics Research Paper No. WP BRP 198* (2020). https://doi.org/10.2139/ssrn.3746304

[47] Khun Eng Kuah and Zhaohui Liu (Eds.). 2016. *Intangible Cultural Heritage in Contemporary China: The Participation of Local Communities*. Taylor & Francis. 152 book pages. https://doi.org/10.4324/9781315628974

[48] Udo Kuckartz. 2019. *Qualitative Text Analysis: A Systematic Approach*. Springer International Publishing, Cham, 181–197. https://doi.org/10.1007/978-3-030-15636-7_8

[49] Federico Lenzerini. 2011. Intangible Cultural Heritage: The Living Culture of Peoples. *European Journal of International Law* 22, 1 (2011), 101–120. https://doi.org/10.1093/ejil/chr006

[50] Guangyu Liu and Chengli Wang. 2021. Research on the Creation and Dissemination of Intangible Cultural Heritage in the Context of Short Video—Sharing Douyin and Kuaishou as examples. *Contemporary television* 2 (2021), 95–98. https://doi.org/10.16531/j.cnki.1000-8977.2021.02.025

[51] Yinhan Liu, Myle Ott, Naman Goyal, Jingfei Du, Mandar Joshi, Danqi Chen, Omer Levy, Mike Lewis, Luke Zettlemoyer, and Veselin Stoyanov. 2019. Roberta: A Robustly Optimized Bert Pretraining Approach. *arXiv preprint arXiv:1907.11692* (2019).

[52] Xing Lu and Zhicong Lu. 2019. Fifteen Seconds of Fame: A Qualitative Study of Douyin, A Short Video Sharing Mobile Application in China. In *Social Computing and Social Media. Design, Human Behavior and Analytics*, Gabriele Meiselwitz (Ed.). Springer International Publishing, Cham, 233–244.

[53] Zhicong Lu. 2019. Live Streaming in China for Sharing Knowledge and Promoting Intangible Cultural Heritage. *Interactions* 27, 1 (2019), 58–63.

[54] Zhicong Lu, Michelle Annett, Mingming Fan, and Daniel Wigdor. 2019. "I feel it is my responsibility to stream": Streaming and Engaging with Intangible Cultural Heritage through Livestreaming. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (Glasgow, Scotland Uk) *(CHI '19)*. ACM, New York, NY, USA, 1–14. https://doi.org/10.1145/3290605.3300459

[55] Zedong Mao. 1965. Talks at the Yenan Forum on Literature and Art. *Selected Works of Mao Tse-Tung* 3 (1965).

[56] Zedong Mao. 1965. The United Front in Cultural Work. *Selected Works of Mao Tse-Tung* 3 (1965).

[57] Randall H McGuire. 2008. *Archaeology as Political Action*. California Series in Public Anthropology, Vol. 17. Univ of California Press. 312 book pages. https://doi.org/10.1525/9780520941588

[58] Hamzah Muzaini and Claudio Minca. 2018. *After Heritage: Critical Perspectives on Heritage from Below*. Edward Elgar Publishing. 187 book pages. https://doi.org/10.4337/9781788110747

[59] Paul Newson and Ruth Young. 2017. Conflict: People, Heritage, and Archaeology. In *Post-Conflict Archaeology and Cultural Heritage*. Routledge, 3–19. https://doi.org/10.4324/9781315472737

[60] Michael Pearson and Sharon Sullivan. 2013. *Looking after Heritage Places: The Basics of Heritage Planning for Managers, Landowners and Administrators*. Melbourne Univ. Publishing.

[61] Su-pei LING Qian CHENG. 2013. Geographical Distribution and Affecting Factors of the Intangible Cultural Heritage in China. *SCIENTIA GEOGRAPHICA SINICA* 33, 10, Article 1166 (2013), 6 pages. https://doi.org/10.13249/j.cnki.sgs.2013.010.1166

[62] Upkar Varshney Robert C Nickerson and Jan Muntermann. 2013. A Method for Taxonomy Development and Its Application in Information Systems. *European Journal of Information Systems* 22, 3 (2013), 336–359. https://doi.org/10.1057/ejis.2012.26 arXiv:https://doi.org/10.1057/ejis.2012.26

[63] Iain JM Robertson (Ed.). 2016. *Heritage from Below*. Routledge. https://doi.org/10.4324/9781315586632

[64] Raphael Samuel. 2012. *Theatres of Memory: Past and Present in Contemporary Culture*. Verso Books.

[65] Joseph Seering, Robert Kraut, and Laura Dabbish. 2017. Shaping Pro and Anti-Social Behavior on Twitch Through Moderation and Example-Setting. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing* (Portland, Oregon, USA) *(CSCW '17)*. ACM, New York, NY, USA, 111–125. https://doi.org/10.1145/2998181.2998277

[66] Helaine Silverman. 2014. *Heritage Theory*. Springer New York, New York, NY, 3332–3337. https://doi.org/10.1007/978-1-4419-0465-2_287

[67] Laurajane Smith. 2006. *Uses of Heritage*. Routledge. 368 book pages. https://doi.org/10.4324/9780203602263

[68] Laurajane Smith. 2010. Ethics or Social Justice?: Heritage and the Politics of Recognition. *Australian Aboriginal Studies* 2 (2010), 60–68.

[69] Michelle L Stefano. 2021. *Practical Considerations for Safeguarding Intangible Cultural Heritage*. Routledge. 234 book pages.

[70] Anselm L Strauss. 1991. *Creating Sociological Awareness: Collective Images and Symbolic Representations*. Routledge. 504 book pages. https://doi.org/10.4324/9780203794487

[71] Joel Taylor and Laura Kate Gibson. 2017. Digitisation, Digital Interaction and Social Media: Embedded Barriers to Democratic Heritage. *International Journal of Heritage Studies* 23, 5 (2017), 408–420. https://doi.org/10.1080/13527258.2016.1171245

[72] UNESCO. 2003. Convention of the Safeguarding of Intangible Cultural Heritage of UNESCO. http://www.unesco.org/culture/ich/index.php?lg=EN&pg=00022

[73] Wan Juliana Emeih Wahed, Noorhayati Saad, Saiful Bahari Mohd Yusoff, and Patricia Pawa Pitil. 2021. Please Stay, Don't Leave!": A Systematic Literature Review of Safeguarding Intangible Cultural Heritage in the Fourth Industrial Revolution. *Pertanika J. Soc. Sci. Humanit* 29 (2021), 1723–1744.

[74] Siqi Wang and Rongrong Fu. 2020. Research on the Influencing Factors of the Communication Effect of Tik Tok Short Videos About Intangible Cultural Heritage. In *Advances in Creativity, Innovation, Entrepreneurship and Communication of Design*. Springer International Publishing, Cham, 275–282. https://doi.org/10.1007/978-3-030-51626-0_35

[75] Xue Wang and Gino Yu. 2022. Intangible Cultural Heritage and We-Media: The Strategic Design of Chinese Shadow Puppetry Dissemination via Tik Tok. In *With Design: Reinventing Design Modes*, Gerhard Bruyns and Huaxin Wei (Eds.). Springer Nature Singapore, Singapore, 1288–1304.

[76] Tim Winter. 2013. Clarifying the Critical in Critical Heritage Studies. *International Journal of Heritage Studies* 19, 6 (2013), 532–545.

[77] Xinhuanet. 2021. *Tiktok Releases Data Report on Intangible Cultural Heritage: 188% Increase in the Number of Related Videos in the Past Year*. Retrieved January 9, 2022 from http://www.xinhuanet.com/tech/2021-06/11/c_1127555044.htm

[78] Haiming Yan. 2018. *World Heritage Craze in China: Universal Discourse, National Culture, and Local Memory*. Berghahn Books. 242 book pages. https://doi.org/10.2307/j.ctvw04gwp

[79] Yiting Yan and Hanlong Lin. 2021. The Current Situation and Path Optimization of the Intangible Cultural Heritage Digital Content on Douyin. *News Dissemination* (2021).

[80] Bao Yang and Wang Wen. 2019. The Dissemination Status and Development of Intangible Cultural Heritage on the Douyin APP. *Movie Review* (2019). https://doi.org/10.16583/j.cnki.52-1014/j.2019.14.028

[81] Saelyne Yang, Sangkyung Kwak, Juhoon Lee, and Juho Kim. 2023. Beyond Instructions: A Taxonomy of Information Types in How-to Videos. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg, Germany) *(CHI '23)*. ACM, New York, NY, USA, Article 797, 21 pages. https://doi.org/10.1145/3544548.3581126

[82] Xiaolin Yang, Qinglong Gou, Xin Wang, and Juzhi Zhang. 2022. Does Bonus Motivate Streamers to Perform Better? An Analysis of Compensation Mechanisms for Live Streaming Platforms. *Transportation Research Part E: Logistics and Transportation Review* 164 (2022), 102758. https://doi.org/10.1016/j.tre.2022.102758

[83] Ying Yao and Na Fan. 2021. Thoughts on the Development of 'Intangible Cultural Heritage' Industrialization Based on Short Video. *Cooperative economy and technology* (2021).

[84] Svetlana Yarosh, Elizabeth Bonsignore, Sarah McRoberts, and Tamara Peyton. 2016. YouthTube: Youth Video Authorship on YouTube and Vine. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (San Francisco, California, USA) *(CSCW '16)*. ACM, New York, NY, USA, 1423–1437. https://doi.org/10.1145/2818048.2819961

[85] Yinzi Yi. 2023. Negotiating Performance between Policy and Platform—heritage Practice of a Chinese Craftsperson on Douyin (TikTok). *International Journal of Heritage Studies* 29, 10 (2023), 1089–1109.

[86] Sung-Won Yoon and Sae Won Chung. 2018. Promoting a World Heritage Site through Social Media: Suwon City's Facebook Promotion Strategy on Hwaseong Fortress (in South Korea). *Sustainability* 10, 7 (2018). https://doi.org/10.3390/su10072189

[87] Mingzhu Yu, Shijian Cang, and Mengmeng Qian. 2020. Innovation Analysis of Traditional Crafts Spread Mode From the Perspective of Tik Tok APP. In *Proceedings of the 2020 3rd International Conference on Humanities Education and Social Sciences (ICHESS 2020)*. Atlantis Press, 645–648. https://doi.org/10.2991/assehr.k.201214.580

[88] Lei Zhang, Feng Wang, and Jiangchuan Liu. 2014. Understand Instant Video Clip Sharing on Mobile Platforms: Twitter's Vine as a Case Study. In *Proceedings of Network and Operating System Support on Digital Audio and Video Workshop* (Singapore, Singapore) *(NOSSDAV '14)*. ACM, New York, NY, USA, 85–90. https://doi.org/10.1145/2597176.2578278

[89] Yanislav Zhelev, Mariya Monova-Zheleva, and Radovesta Stewart. 2021. The Digital Future of Intangible Cultural Heritage – Challenges and Initiatives. *Digital Presentation and Preservation of Cultural and Scientific Heritage* 11 (Sep. 2021), 41–50. https://doi.org/10.55630/dipp.2021.11.3

[90] Shujun Zheng. 2021. The Living Inheritance and Protection of Intangible Cultural Heritage Lingnan Tide Embroidery in the Context of New Media. In *Cross-Cultural*

Design. Applications in Cultural Heritage, Tourism, Autonomous Vehicles, and Intelligent Agents, Pei-Luen Patrick Rau (Ed.). Springer International Publishing, Cham, 155–167.

A ANALYSIS OF ICH VIDEO DATASET

A.1 Validating the Representativeness of 200 Sampled Videos

To validate the representativeness of 200 sampled videos, we compared their duration and popularity metrics with the total videos by calculating the meta-information distribution (Table 8) and visualizing two datasets for distribution pattern comparison (Figure 8).
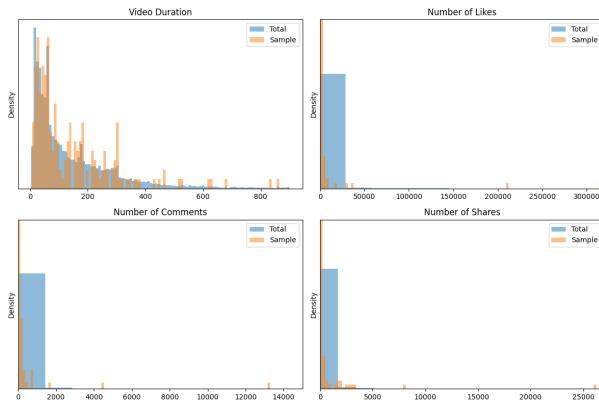
Figure 8: The Distribution Patterns Between Total and 200 Sampled Videos. Each subplot supported validating the representativeness of sampled video on duration and popularity metrics. In order to ensure the effectiveness of visualization, each X-axis maximum range was chosen as the maximum value of the sampled videos. In each bar chart, the Y dimension (vertical) indicated the density of each discrete value, and the X dimension (horizontal) indicated each discrete value of metrics.

B CLASSIFICATION OF ICH SHORT VIDEO CREATORS

The first author initially classified the short video creators into 13 classes based on their social public information on Douyin as the reference for the subsequent categorizing of factors of different groups (Figure 9).
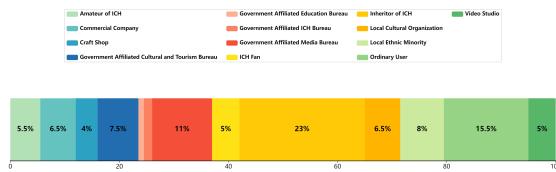

Figure 9: Label Distribution of 200 Sample Videos across 13 Classes of Creators. Only proportions greater than 2% shown in the text.

C ANALYSIS RESULTS OF TYPE AND SENTIMENT CLASSIFICATION

C.1 Prediction of Comment Type

As the inference result of comment via fine-tuned language model, there was the distribution of comments on each frame feature (Figure 10). *Attitude* was the most popular type of comment. In terms of ICH-related comments, *Communication* was the most popular type in nine frames.
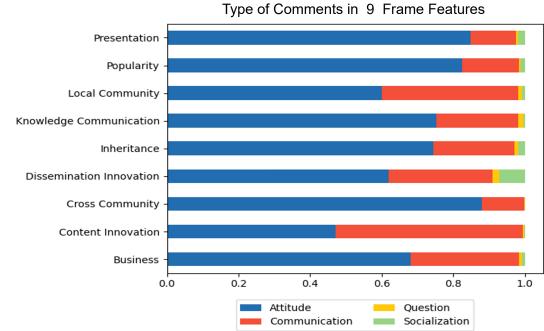

Figure 10: Inference of Comments via Fine-tuned Language Model. Among all nine frames, *Attitude* was the most popular type of comment. In terms of ICH-related comments, *Communication* was the most popular type in nine frame features.

C.2 Emotion of Each Comment Type

As the inference result of comment via pre-trained sentiment language model, there was the distribution of sentiment comments on each comment type (Figure 11). Regardless of the comment type, it appeared that viewers tend to express neutral or positive emotions towards the video creators or other viewers.
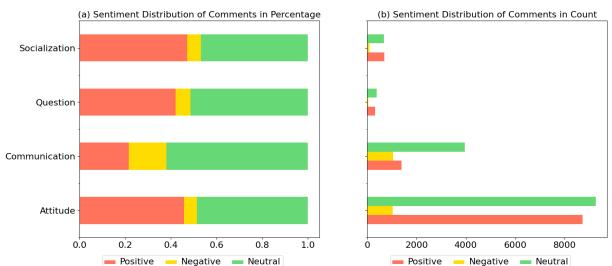

Figure 11: Inference of Comments Emotion via Pre-trained Sentiment Language Model. Regardless of the comment type, it appeared that viewers tend to express neutral or positive emotions towards the video creators or other viewers.

Table 8: Meta-information of 200 Sampled Videos. To validate the representativeness of sampled videos, we compared their duration and popularity metrics with the total.

Feature	Description	Mean	Median	Min	Max	Std.
duration	The duration of the video in seconds	141.73	85.50	6.27	864.06	146.50
# of like	The number of times the video has been liked by people	3616.67	112	4	316932	26996.19
# of comments	The number of comments the video has obtained	145.66	11	0	13289	996.82
# of shares	The number of times the video was shared by people	323.405	12	0	26238	1982.25

D   VALIDATE THE POTENTIAL MULTI-COLLINEARITY ISSUES.

Before conducting regression analysis, we first tested the pair-wise Pearson correlation coefficients among the input variables to address potential multi-collinearity issues (Figure 12). The maximum absolute value of the correlation coefficient was generated by (Verification and Government-affiliated) as 0.6374. The second-highest absolute value was generated by (Knowledge Communication and Knowledge Sharing) at 0.6279. For all other variable pairs, the absolute values of the correlation coefficient were less than 0.50. According to previous research, a reasonable threshold can be set to 0.7 [21].

The Variance Inflation Factor (VIF) was also employed to examine the presence of multi-collinearity among the independent variables. Among these variables, Knowledge Communication exhibited the highest VIF value of 4.8573, while all other variables demonstrated values below 4. It was worth noting that a normal rule of 5 was employed to validate the regression model based on previous studies [37]. Therefore, no variable was eliminated in our analysis.
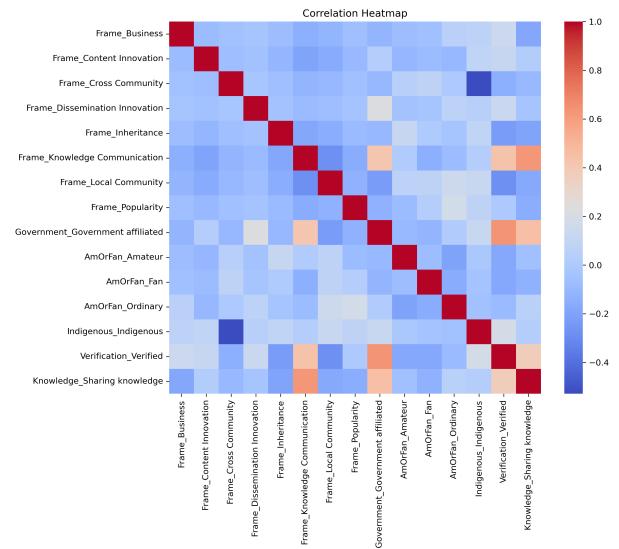
Figure 12: The Correlation Matrix of Independent Variable (Frame of Videos and Factors of Groups) Pairs