Model and Empirical Analysis of Factors Influencing Library Short Video Dissemination and Interaction Effects: An Exploration Based on the Hook Model (Postprint)

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Abstract

[Purpose/Significance] Research on the factors influencing the dissemination and interaction effectiveness of library short videos provides guiding significance for content creation and scientific operations, enabling libraries to gain greater attention on short-video platforms with rapidly expanding user bases, and thereby enhancing the effectiveness of library service publicity and promotion. [Method/Process] Using Douyin—the platform with the largest active user base in China—as a case study, this research constructs an influencing factor model for the dissemination and interaction effectiveness of library short videos based on the four primary stages of the "addiction model," and conducts empirical analysis of this model through SPSS non-parametric testing methods, utilizing sample data from 879 short videos posted by the top 10 library official Douyin accounts ranked by follower count. [Results/Conclusions] The findings indicate that five factors—title sentence pattern, background music emotional type, production category, content theme, and information type—significantly influence the dissemination and interaction effectiveness of library short videos. Based on these results, operational strategies for library short videos are proposed, including title triggers based on user knowledge anxiety, low-threshold high-density content output, and variable reward design.

Full Text

Preamble

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Model and Empirical Analysis of Factors Influencing the Transmission and Interaction Effects of Library Short Videos: An Exploration

Based on the "Hook Model"

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Abstract: [Purpose/Significance] Research on the factors influencing the transmission and interaction effects of library short videos offers valuable guidance for content creation and scientific operations, enabling libraries to gain more attention on short video platforms with rapidly growing user bases and enhancing the effectiveness of library service promotion. [Method/Process] Taking Douyin, the platform with the largest active user base in China, as an example, this study constructs a model of factors influencing library short video transmission and interaction effects based on the four main stages of the "Hook Model." Using sample data from 879 short videos posted by the top 10 official library Douyin accounts ranked by follower count, the study applies SPSS non-parametric testing methods to conduct empirical analysis of the influencing factors model. [Result/Conclusion] The results indicate that five factors—title sentence pattern, background music emotional type, production category, content theme, and information type—significantly influence the transmission and interaction effects of library short videos. Based on these findings, the paper proposes operational strategies for library short videos, including title triggering based on user knowledge anxiety, low-threshold high-density content output, and variable reward design.

Keywords: short video; transmission and interaction; Hook Model; Douyin platform; SPSS; operational strategy

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As public cultural and educational institutions, libraries serve as important venues for the public to access various types of information and cultivate cultural confidence, representing a crucial foundation for building a strong socialist cultural nation. Amidst the wave of new media such as short videos, library promotion and publicity face significant transformation and challenges. According to statistics, during the 2020 Spring Festival, the daily active users of short video platforms reached 571 million [1], and by August 2020, Douyin's domestic daily active users alone had exceeded 600 million [2]. Compared to traditional media platforms, short video content is not only more multidimensional and visually impactful, but also concise and compact, making full use of audiences' fragmented time. Consequently, an increasing number of people are keen on creating, sharing, and watching short videos. Since 2019, the entire industry has accelerated its entry into short video marketing [1], with more universities, museums, and intangible cultural heritage projects establishing accounts on short video platforms. This has brought high-quality cultural and artistic content to these platforms while gaining more attention for themselves, making Douyin the

largest platform in China for knowledge, art, and intangible cultural heritage dissemination [2]. As a vital base for knowledge dissemination and cultural inheritance, libraries should also seize this opportunity to expand their influence through short video platforms. Research on the factors influencing short video transmission and interaction effects provides valuable guidance for library short video content creation and scientific operations, helping libraries gain more attention on short video platforms with rapidly growing user bases and enhancing the effectiveness of library service promotion.

2 Literature Review

In recent years, scholars both domestically and internationally have conducted a series of studies on the development and application of short videos, focusing primarily on three aspects: (1) Research on short video platform content and recommendation mechanisms. For example, foreign scholars S. Wilk et al. proposed a quality assessment algorithm for user-generated video content [3]; T. Tang et al. proposed a collection of non-traditional models for video recommendation mechanisms based on user history, including a customized neural network structure based on Compressed Interaction Networks (CIN) and gradient boosting decision trees (GDBTs) based on classic SVD features [4]; Y. Liu et al. built a universal short video recommendation framework by predicting video completion rates and like rates [5]. (2) Research on short video platform users. For instance, domestic scholar X. Zhang et al. combined sociotechnical methods and attachment theory to construct a holistic framework for studying factors influencing short video application addiction [6]; Gong Yanping et al., based on the Stimulus-Organism-Response (SOR) model, investigated how the hedonic and social attributes of short video applications affect user participation behavior and its underlying mechanisms [7]. (3) Research on the current status, problems, and strategies of short video platform operations. For example, Zhang Wenliang et al. studied the promotion status and existing problems of library short videos through statistical analysis of account numbers and homepage works on short video platforms [8]; Zhu Kunpeng et al. examined strategies and methods for multi-angle and multi-level intervention in virtual community governance and promoting healthy virtual community development from the perspective of body sociology [9]; Zeng Yixin et al. used Lasswell's 5W communication model to propose five major recommendations for public library short video platform operations [10]. The above review reveals that current research on short video development and application primarily concentrates on recommendation algorithms, user studies, and the current status, problems, and strategies of short video platform operations. However, research on the factors influencing library short video transmission and interaction effects remains scarce, lacking both theoretical support and empirical validation.

3 Current Status of Library Short Video Operations

3.1 Data on Library Short Video Operations

Currently, in addition to individual accounts, government agencies, media institutions, higher education institutions, and enterprises have flocked to short video platforms, achieving favorable transmission effects. For example, People's Daily has over 90 million followers on Douyin. As an important stronghold for knowledge and cultural inheritance, libraries can also use short videos for collection revelation, reading promotion, and lecture announcements. Searching for "library" on the Douyin platform and after screening and elimination, we identified 48 officially certified public and university libraries. Among them, the top 10 libraries by follower count and their relevant data are shown in Table 1 .

Table 1 Overview of Top 10 Official Library Douyin Accounts by Follower Count

Account Name	Works Count	Followers (10k)	Likes (10k)	Content Focus
National Library	-	-	179.80	Intangible cultural heritage; "Know Your Herbs" science series; exhibition highlights
Shanghai Library	-	-	125.80	"Who's the Editor" game livestreams; "Travel Recommender" themed book recommendations
Chongqing Library	-	-	189.00	Anti-epidemic dubbing of popular film/TV clips

Account Name	Works Count	Followers (10k)	Likes (10k)	Content Focus
Shaanxi Library	-	-	29.40	"Random Book Flipping" recommendations; "Reading Profiles" showcasing reading communities
Wenzhou Library	-	-	11.70	Ancient book restoration techniques; local culture revelation
Jiangxi Library	-	-	10.20	City promotion integrated with local culture
Linyi Library	-	-	-	Shuozhou Library flash mobs; city promotion
Shuozhou Library	-	-	-	City promotion
Shaoxing Library	-	-	-	Expert lecture highlights
Zhejiang Library - Big Shots Are Coming	-	-	-	Focused on packaging and presenting expert lecture highlights

Note: Data as of December 6, 2020

The data reveals that on the currently booming short video platforms, library accounts appear relatively quiet compared to media and cultural Douyin accounts such as People's Daily with over 90 million followers and the National Museum of China with over 1.7 million followers. Although some libraries are attempting content innovation—for example, the account "Zhejiang Library—

Big Shots Are Coming" focuses on packaging and presenting key points from expert lectures in short videos, achieving relatively high like counts, and "National Library" creates science knowledge videos like "Know Your Herbs" that fill users' knowledge gaps—most library short video content still lacks innovation and fails to show clear differentiation from graphic new media platforms like WeChat official accounts. Consequently, they lack "viral" content, have low exposure, and generate few followers and likes. Some academic and research libraries, such as the National Science Library of Chinese Academy of Sciences, Wuhan Documentation and Information Center of Chinese Academy of Sciences, Tsinghua University Library, and Harbin Institute of Technology (Weihai) Library, have opened Douyin accounts and posted content involving special collection exhibitions, scholar profiles, science popularization, and event promotion, gaining some attention. However, the proportion of such library short video accounts remains low, and there is still a significant gap in work count, follower count, and like volume compared to public libraries.

3.2 Main Problems in Library Short Video Operations

Based on data statistics and investigation of library short video content, three main problems can be identified in the operation status of library short video platforms: (1) Low account activation rate. Among over 3,000 public libraries and over 2,600 university libraries nationwide, only about 1% of public libraries and about 0.1% of university libraries have opened Douyin short video accounts. (2) Insufficient work volume. Among currently activated library Douyin accounts, more than half have been operating for over a year but have fewer than 100 works. (3) Lack of high-quality content. Most library account short video content remains traditional and scattered, with insufficient professional production standards, resulting in low like counts and poor transmission effects.

Currently, library short video content primarily focuses on basic services, science lectures, and cultural dissemination from public libraries as public cultural service institutions, while academic and research libraries have lower account activation rates and relatively fewer works. Research on the factors influencing short video transmission and interaction effects provides valuable guidance for library short video content creation and scientific operations, offering references for academic and research library short video account operations. Such libraries can also attempt to focus on PGC (Professionally Generated Content) production and vertical, differentiated operations, though presenting professional content in a way that appeals to both refined and popular tastes while improving short video production standards presents certain challenges.

The high labor costs required for short video production and operation may be one reason for the low activation rate and insufficient work volume of library short video accounts. Therefore, under limited human resource conditions, how to better adapt to platform characteristics, produce high-quality short videos, enhance transmission and interaction effects, and thereby improve libraries' social service benefits has become a key issue in current library short video

operations.

4 Construction of the Library Short Video Transmission and Interaction Effects Influencing Factors Model Based on the "Hook Model"

The "Hook Model" is an internet product design logic summarized by N. Eyal and R. Hoover in their book *Hooked: How to Build Habit-Forming Products*, which aims to cultivate user habits and "hook" users [11]. The model consists of four stages [11]: (1) **Trigger**, which captures user attention. Triggers are divided into external triggers that guide users to take the next step by permeating information around them, and internal triggers that attract users by associating with their thoughts, emotions, or inner feelings. (2) **Action**, which is what users do when expecting product rewards. To facilitate a behavior, three conditions must be met: obvious triggers, reasonable motivation, and easy implementation. (3) **Variable rewards**, which products must design for users and can be mainly divided into social rewards, prey rewards, and self-rewards. Social rewards refer to interpersonal rewards users obtain through interaction with others in the product. Prey rewards refer to specific resources or information users obtain from the product. Self-rewards refer to the sense of control, achievement, and closure users experience from the product. (4) **Investment**, where users invest time, energy, or even things of concrete value after receiving product rewards. User investment in the product can increase user stickiness. Finally, loading the next trigger during the user investment stage can increase the probability of users entering the "trigger-action-reward-investment-trigger" hook cycle [11]. As shown in Figure 1 [Figure 1: see original paper].

Based on the internet product user behavior model—the "Hook Model"—and taking the Douyin platform as an example, this paper identifies eight factors influencing short video transmission and interaction effects and constructs a library short video transmission and interaction effects influencing factors model based on the actual situation of libraries, as shown in Figure 2 [Figure 2: see original paper].

The model is explained below according to the four stages of the Hook Model:

(1) Factors that trigger users. The title of a Douyin short video is the first complete information users obtain when watching, allowing them to quickly understand the main content and decide whether to watch. Therefore, this paper treats the title as an external trigger factor, specifically including title sentence pattern and title length. Library short video title sentence patterns include declarative, exclamatory, and interrogative sentences; title length includes one sentence, two sentences, and three or more sentences. Background music can trigger users' inner emotions and mobilize their feelings at the first moment [12], thereby enhancing immersion, so it is set as an internal trigger factor. Library short video background music emotional types include no background music, lively and cheerful, uplifting, solemn and dignified, gentle and emotional,

ancient style melodious, and sad and heavy.

(2) Factors that prompt user action. Production category and content theme are the two most important factors that facilitate user action. Production category determines the presentation method of short videos and largely determines the final visual effect, thus being related to users' viewing willingness (i.e., behavioral motivation) to a certain extent. Library short video production categories mainly include live-action filming, picture animation, promotional videos, sitcoms, live recordings, internet video processing, and others. Content theme is the core of short videos; the complexity of the theme and its relevance to users determine whether users have the ability or interest to watch the short video [13]. Library short video content themes mainly include promotion and introduction, news dynamics or reviews, resource recommendations, cultural knowledge popularization, character stories, activity or service announcements, social events, city promotion, activity or competition videos, holiday or daily greetings, and others.

(3) Rewards in short videos. Due to the weak SNS (Social Networking Service) function of short videos, this paper mainly considers prey rewards, i.e., specific and useful information users can obtain from short videos. Library short video information types mainly include no specific information, resource information, service information, social information, and others.

(4) Factors that attract user investment. Short video duration is closely related to user time investment. This study divides library short video duration into under 1 minute, 2-3 minutes, and over 3 minutes. Relevance or continuity refers to whether an individual library short video has a relevant or continuous relationship with its adjacent short videos, which is related to whether users will continue to invest energy.

5 Empirical Study Based on SPSS Data Analysis

To explore whether the factors shown in Figure 2 have significant effects on the transmission and interaction effects of library short videos, this paper will use SPSS non-parametric testing methods to verify the significance of their impact.

5.1 Research Method

As shown in Table 1, the top 10 official library Douyin accounts by follower count have relatively large work volumes and follower numbers, covering representative and influential libraries such as the National Library and Shanghai Library. This paper selects the Douyin short video works of these 10 libraries as research objects, collecting each account's latest 100 short video works (or all works if fewer than 100), totaling 879 works as research samples. The study then collects the like count, comment count, and share count of these samples as data reflecting transmission and interaction effects; codes and statistics eight influencing factors including title sentence pattern, title length, background music

emotional type, production category, content theme, information type, duration, and relevance or continuity with adjacent videos; and finally adopts SPSS non-parametric testing methods to verify and analyze whether each factor has a significant impact on transmission and interaction effects.

5.2 Calculation of Dependent Variables

Data reflecting transmission and interaction effects that can be collected from the Douyin platform include like count, comment count, and share count. To comprehensively reflect transmission and interaction effects, the dependent variable in this paper draws on the calculation method of the Douyin account interaction index in the "Clear Index" [14] to derive the library short video transmission and interaction index (hereinafter referred to as the "C-index"), as shown in Formula (1). The "Clear Index" is a data product by Beijing Clear Big Data Co., Ltd. for new media evaluation, used as an evaluation standard by ministries including the Central Committee of the Communist Youth League, media outlets like Xinhua News Agency and PLA Daily, and internet companies like Tencent, Sina, and Toutiao for some of their new media operations.

$$C_m = [0.17\ln(X_m + 1) + 0.37\ln(Y_m + 1) + 0.46\ln(Z_m + 1)] \times 100 \quad \text{Formula (1)}$$

Where C is the transmission and interaction index, X is the like count, Y is the comment count, Z is the share count, and m is the sample number.

5.3 Classification and Coding of Independent Variables

The influencing factors are the independent variables in this study, including library short video title sentence pattern, title length, background music emotional type, production category, content theme, information type, duration, and relevance or continuity. The coding method is shown in Table 2 .

Table 2 Independent Variable Classification Coding and Sample Descriptive Statistics Results (N=879)

Independent Variable Classification	Percentage (%)
Title Sentence Pattern	
Declarative	72.7
Exclamatory	15.7
Interrogative	11.6
Title Length	
One sentence	79.4
Two sentences	18.7
Three or more sentences	1.9
Background Music Emotional Type	

Independent Variable Classification	Percentage (%)
No background music	19.0
Lively and cheerful	31.3
Uplifting	11.6
Solemn and dignified	5.7
Gentle and emotional	18.2
Ancient style melodious	13.0
Sad and heavy	1.3
Production Category	
Live-action filming	42.8
Picture animation	22.4
Promotional video	11.8
Sitcom	0.5
Live recording	3.4
Internet video processing	19.1
Content Theme	
Promotion and introduction	14.7
News dynamics and review	8.5
Resource recommendation	13.9
Cultural knowledge popularization	28.2
Character story	2.4
Activity or service announcement	7.4
Social event	6.7
City promotion	2.3
Activity or competition video	8.3
Holiday or daily greeting	7.6
Information Type	
No specific information	33.6
Resource information	12.9
Service information	15.2
Knowledge point information	32.2
Social information	6.1
Duration (minutes)	
Under 1 minute	79.9
2-3 minutes	11.3
Over 3 minutes	8.9
Relevance or Continuity	
No relevance or continuity	70.8
Has relevance or continuity	29.2

As shown in the descriptive statistics in Table 2, library short video titles are mostly one-sentence (79.4%) declarative sentences (72.7%); background music emotional types are primarily lively and cheerful (31.3%) and gentle and emotional (18.2%); content themes are relatively dispersed, with cultural knowledge

popularization (28.2%) being the most common; production categories are dominated by live-action filming (42.8%) and picture animation (22.4%); most short videos convey specific information primarily in the form of knowledge points (66.4%); 79.9% of short video samples are under 1 minute in duration; and 70.8% of short video samples have no relevance or continuity with adjacent short videos.

6 Research Results and Analysis

6.1 Research Results

First, the C-index sample was tested for normal distribution. Based on SPSS single-sample K-S test, the sample did not conform to normal distribution, so SPSS non-parametric testing methods were adopted to verify whether each independent variable had a significant impact on the dependent variable. According to the number of independent samples, except for the relevance or continuity factor which used the Mann-Whitney test for two independent samples, the remaining seven factors all used the Kruskal-Wallis test for multiple independent samples. The specific results are as follows:

(1) Title Sentence Pattern. The non-parametric test results for title sentence pattern and C-index are shown in Table 3 .

Table 3 Non-parametric Test Results for Title Sentence Pattern and C-index

Title Sentence Pattern (Median)	C-index	Kruskal-Wallis Test Statistic H-value
1.0 (n=639)*	145.182	15.274
2.0 (n=138)	153.510	
3.0 (n=102)	194.231	
p-value	0.000**	

n represents sample size (same below) **p represents significance level; p<0.05 indicates significance at the 0.05 level; p<0.01 indicates significance at the 0.01 level; p>0.05 indicates no significant difference (same below)*

Table 3 shows that title sentence pattern exhibits significance at the 0.01 level (p=0.000<0.01), with different title sentence pattern samples showing significant differences in C-index. By comparing medians, specific differences can be understood as shown in Figure 3 [Figure 3: see original paper]. According to the corresponding coding, the order of transmission and interaction effect quality is: interrogative title > exclamatory title > declarative title.

(2) Title Length. The non-parametric test results for title length and C-index are shown in Table 4 .

Table 4 Non-parametric Test Results for Title Length and C-index

Title Length (Median)	C-index	Kruskal-Wallis Test Statistic H-value
1.0 (n=698)	150.509	1.459
2.0 (n=164)	166.671	
3.0 (n=17)	136.996	
p-value	0.482	

As shown in Table 4, different title length samples show no significant difference in C-index (p=0.482>0.05), indicating that different title lengths have no significant impact on C-index.

(3) Background Music Emotional Type. The non-parametric test results for background music type and C-index are shown in Table 5 .

Table 5 Non-parametric Test Results for Background Music Emotional Type and C-index

Background Music Emotional Type (Median)	C-index	Kruskal-Wallis Test Statistic H-value
0.0 (n=167)	184.149	19.102
1.0 (n=275)	165.144	
2.0 (n=102)	163.042	
3.0 (n=50)	142.217	
4.0 (n=160)	152.105	
5.0 (n=114)	117.383	
6.0 (n=11)	92.805	
p-value	0.004**	

Table 5 shows that background music emotional type exhibits significance at the 0.01 level (p=0.004<0.01), with different background music emotional type samples showing significant differences in C-index. By comparing medians, specific differences can be understood as shown in Figure 4 [Figure 4: see original paper]. According to the corresponding coding, the order of transmission and interaction effect quality is: lively and cheerful > solemn and dignified > uplifting > gentle and emotional > no background music > ancient style melodious > sad and heavy.

(4) Production Category. The non-parametric test results for production category and C-index are shown in Table 6 .

Table 6 Non-parametric Test Results for Production Category and C-index

Production Category (Median)	C-index	Kruskal-Wallis Test Statistic H-value
1.0 (n=376)	155.555	51.022

Production Category (Median)	C-index	Kruskal-Wallis Test Statistic H-value
2.0 (n=197)	127.681	
3.0 (n=104)	141.205	
4.0 (n=4)	218.601	
5.0 (n=30)	84.000	
6.0 (n=168)	209.781	
p-value	0.000**	

As shown in Table 6, production category exhibits significance at the 0.01 level (p=0.000<0.01), with different production category samples showing significant differences in C-index. By comparing medians, specific differences can be understood as shown in Figure 5 [Figure 5: see original paper]. According to the corresponding coding, the order of transmission and interaction effect quality is: sitcom > internet video processing > live-action filming > promotional video with design elements > picture animation > live recording.

(5) Content Theme. The non-parametric test results for content theme and C-index are shown in Table 7 .

Table 7 Non-parametric Test Results for Content Theme and C-index

Content Theme (Median)	C-index	Kruskal-Wallis Test Statistic H-value
(n=129)	186.0	28.285
(n=75)	119.8	
(n=122)	174.8	
(n=248)	158.3	
(n=21)	203.2	
(n=65)	151.0	
(n=59)	120.4	
(n=20)	175.1	
(n=73)	143.3	
(n=67)	139.5	
p-value	0.001**	

As shown in Table 7, content theme exhibits significance at the 0.01 level (p=0.001<0.01), with different content theme samples showing significant differences in C-index. By comparing medians, specific differences can be understood as shown in Figure 6 [Figure 6: see original paper]. According to the corresponding coding, the order of transmission and interaction effect quality is: character story > promotion and introduction > city promotion > resource recommendation > cultural knowledge popularization > activity or service announcement > activity or competition video > holiday or daily greeting > social event > news dynamics and review.

(6) Information Type. The non-parametric test results for information type and C-index are shown in Table 8 .

Table 8 Non-parametric Test Results for Information Type and C-index

Information Type (Median)	C-index	Kruskal-Wallis Test Statistic H-value
0.0 (n=295)	178.476	19.941
1.0 (n=113)	149.769	
2.0 (n=134)	153.127	
3.0 (n=283)	155.346	
4.0 (n=54)	111.954	
p-value	0.001**	

As shown in Table 8, information type exhibits significance at the 0.01 level (p=0.001<0.01), with different information type samples showing significant differences in C-index. By comparing medians, specific differences can be understood as shown in Figure 7 [Figure 7: see original paper]. According to the corresponding coding, the order of transmission and interaction effect quality is: resource information > knowledge point information > service information > no specific information > social information.

(7) Duration. The non-parametric test results for duration and C-index are shown in Table 9 .

Table 9 Non-parametric Test Results for Duration and C-index

Duration (Median)	C-index	Kruskal-Wallis Test Statistic H-value
1.0 (n=702)	152.116	0.987
2.0 (n=99)	148.958	
3.0 (n=78)	153.036	
p-value	0.610	

As shown in Table 9, different duration samples show no significant difference in C-index (p=0.610>0.05), indicating that different durations have no significant impact on C-index.

(8) Relevance or Continuity. The non-parametric test results for relevance or continuity and C-index are shown in Table 10 .

Table 10 Non-parametric Test Results for Relevance or Continuity and C-index

Relevance or Continuity (Median)	C-index	Mann-Whitney Test Statistic
0.0 (n=622)	154.614	76691.000
1.0 (n=257)	144.614	-0.945
p-value	0.345	

As shown in Table 10, relevance or continuity shows no significant difference for C-index ($p=0.345>0.05$), indicating that whether a short video has relevance or continuity with adjacent short videos has no significant impact on C-index.

6.2 Results Analysis

Based on the above statistical and verification results, among the eight influencing factors designed for short video transmission and interaction effects, three factors—library short video title length, video duration, and relevance or continuity with adjacent videos—have no significant impact on the C-index. The analysis of reasons is: Douyin platform short video titles generally only display the first 40 characters, with the excess part being folded and hidden. Titles within 40 characters can basically be understood at a glance, having little relationship with sentence quantity. Moreover, due to the rich media presentation of short videos, the information expression function of titles themselves has been weakened. Therefore, different title lengths show no significant difference in C-index. Since the transmission and interaction effects of short videos depend more on the video content information itself rather than time factors [13], video duration has no significant impact on C-index. Because of the short, concise, and high information density characteristics of short videos, short video users with highly fragmented reading habits do not pay attention to the relevance and continuity between short videos. Therefore, whether a short video has relevance or continuity with adjacent videos has no significant impact on C-index.

The verification results above indicate that five factors—library short video title sentence pattern, background music emotional type, production category, content theme, and information type—have significant impacts on the C-index.

(1) **Short videos with interrogative titles significantly outperform those with exclamatory and declarative titles.** Interrogative titles attract users and stimulate their thinking through questioning or rhetorical questions, thereby attracting users. For example, Shaanxi Library's short videos "What is the real name of Ao Bai's mansion?" and "Jing'an Office is located in Guangde Ward of Tang Chang'an City, which ward is Shaanxi Library in?" use interrogative titles to attract users and trigger browsing interest.

(2) **Lively and cheerful, uplifting, or solemn and dignified background music positively impacts short video transmission and interaction effects.** Such music has a bright rhythm or strong auditory

impact, which can effectively trigger users' emotional resonance and enhance immersion. In contrast, ancient style melodious and sad and heavy music mostly has a slower rhythm, making it difficult to attract users at the first moment.

(3) **Sitcoms and internet video-processed short videos achieve better transmission and interaction effects.** Among the National Library's short video samples, sitcoms are short plays self-directed by staff, representing personalized and entertaining content. Zhejiang Library—Big Shots Are Coming's cultural knowledge popularization short videos select well-produced internet videos for reprocessing before publishing. These two types of videos align well with Douyin's entertainment and visual content characteristics and user psychological expectations. Although promotional videos with design elements have more exquisite visuals and elegant language, they often have slower pacing and less dense information. Some picture animations and activity recordings have low information density and lack visual aesthetics, making them unsuitable for short video platforms like Douyin.

(4) **Short videos with different content themes show significant differences in transmission and interaction effects.** This is consistent with previous related research findings. For example, different themed videos on government Bilibili accounts show different overall transmission effects, with science and technology videos being popular [15]; data from Chinese provincial health departments' Douyin accounts shows that medical staff-related theme videos are most popular [16]. This study demonstrates that based on data from the current top 10 libraries by follower count on Douyin, short videos with content themes of character stories, library promotion and introduction, city promotion, resource recommendation, and cultural knowledge popularization have better transmission and interaction effects, while announcement, greeting, social and library dynamic themes perform relatively poorly.

(5) **This paper argues that rewards in the "Hook Model" are embodied in short videos as specific and useful information including resource information, service information, knowledge points, and social information.** The results show that short videos with rewards have significantly better transmission and interaction effects than those without rewards. Evidently, users who follow or watch library short video accounts have a demand for specific information in knowledge and culture aspects. How to better integrate such rewards into short video content creation and produce interesting and "substantial" short videos has become key to operational success.

7 Strategic Recommendations

Short videos are a content format that aligns with current internet user groups' fragmented and mobile lifestyles [18], providing new content, experiences, and models while subtly changing people's cognition and thinking habits and influencing and reshaping the information transmission ecology in new media environments at a broader level [19]. The library industry should fully recognize the tremendous transmission value of short video platforms, actively activate accounts, operate them vigorously, and leverage them to expand library influence. Meanwhile, among the massive amount of entertainment content of User Generated Content (UGC) on short video platforms, library Professionally Generated Content (PGC) short videos serve as a refreshing stream, positively contributing to the construction of a new short video ecology. This also requires library personnel to deeply cultivate vertical segments, provide users with professional high-quality content, grasp user needs and media logic, and continuously innovate, thereby enabling libraries to win more attention on short video platforms with rapidly growing user scales and better fulfill their roles as cultural strongholds and public service values.

7.1 Title Triggering Based on User Knowledge Anxiety

Triggers require designers to understand user psychology and identify users' emotional vulnerabilities or concerns. Negative emotions such as knowledge anxiety can often serve as internal triggers [11]. In today's era of rapid knowledge iteration and updating, every individual, both vertically and horizontally, cannot comprehensively grasp all knowledge points, thus triggering varying degrees of knowledge anxiety [17]. As a cultural knowledge aggregation center, libraries can focus short video content on artistically interpreting and presenting knowledge points. Under highly fragmented reading habits, short video users often need to obtain more and more important information in the first moment. Therefore, library short video titles or cover text should skillfully use sentence patterns, styles, etc., combined with infectious background music to trigger specific emotions at the psychological level such as knowledge anxiety, which will also become key to attracting users to browse.

7.2 Low-Threshold High-Density Content Output

User ability levels and media habits must be considered in content creation. First, emphasize content themes and optimize presentation methods. Knowledge and culture short videos must avoid being too professional or obscure, preventing users from giving up due to difficulty. Knowledge and culture should be popularized and entertaining, presented to readers in a "down-to-earth" manner. Second, innovate production categories and output content with high density. Boldly innovate production categories with personality and affinity, such as sitcom performances, which can effectively enhance user participation. Additionally, video editing rhythm should align with short video platform characteristics

and user media habits, outputting content with high density to avoid being 拖沓冗长 (dragging and lengthy), causing users to lose patience and give up.

7.3 Variable Reward Design Focusing on Prey Rewards

To achieve good user feedback, users' actual and potential expectations must be satisfied after they begin action, i.e., obtaining rewards in the "Hook Model." In library short videos, rewards are mainly manifested as prey rewards—specific resources and information users obtain from the product. Therefore, library short video content can focus on artistically presenting useful information such as library resources and services, as well as specific knowledge points in science, culture, and art. Only when readers obtain knowledge points or other useful information from the content might they become interested in other rewards. Thus, variable rewards based on prey rewards can be attempted. For example, for reader interaction incentives, library accounts can create related topics to promote comments and interaction when introducing classic books or collection resources, and provide some free electronic resources for users who participate in comments and interaction. Social rewards and prey rewards can also be transformed into self-rewards of satisfaction and achievement from obtaining knowledge information through certain methods. See Figure 8 [Figure 8: see original paper].

References

[1] Kasi Data. 2020 White Paper on Short Video Content Marketing Trends [EB/OL]. [2020-03-05]. http://www.woshipm.com/marketing/3462722.ht…

[2] Douyin. 2020 Douyin Big Data Report (Complete Version) [EB/OL]. [2021-01-05]. http://www.199it.com/archives/1184841.html.

[3] Wilks S, Baehr T, Effelsberg W. Scalable mobile quality assessment for user-generated video [C]//2016 IEEE international conference on multimedia & expo workshops. New York: IEEE, 2016: 1-6.

[4] Tang T, Chen K, Chen H. Truncated SVD-based feature engineering for short video understanding and recommendation [C]//2019 IEEE international conference on multimedia & expo workshops. New York: IEEE, 2019: 695-700.

[5] Liu Y, Lyu C, Liu Z, et al. Building effective short video recommendation [C]//2019 IEEE international conference on multimedia & expo workshops. New York: IEEE, 2019: 651-656.

[6] Zhang X, Wu Y, Liu S. Exploring short-form video application addiction: Socio-technical and attachment perspectives [J]. Telematics and informatics, 2019, 42: 1-15.

[7] Gong Yanping, Cao Yu, Li Jian. The influence of short video application characteristics on user participation behavior: The mediating role of psychological participation [J]. Information Science, 2020, 38(7): 77-84.

[8] Zhang Wenliang, Liu Peiwang. Application and development strategy of short video APP in library promotion [J]. Library Science Research, 2019 (14): 34-39.

[9] Zhu Kunpeng, Zhou Jing. Research on virtual community governance from the perspective of body sociology: Taking short videos as an example [J]. Guangxi Social Sciences, 2020(2): 74-77.

[10] Zeng Yixin, Zhang Qijie. Analysis of the current status of public library short video public platform construction [J]. Library Science Research, 2020(4): 13-18.

[11] Eyal N, Hoover R. Hooked: How to build habit-forming products [M]. London: Penguin Books Ltd, 2014.

[12] Chen Qiang, Gao Xingxing, Chen Shuang, et al. Research on factors influencing public participation in government short videos: Taking the "Communist Youth League Central Committee" government Douyin account as an example [J]. E-Government, 2019(10): 13-22.

[13] Wang Haiyan. Analysis of the development status, problems, and countermeasures of library short videos: Taking Douyin platform as an example [J]. Library Work and Research, 2020(5): 76-80.

[14] Clear Index, Douyin Account Communication Power Index DCI (V1.0) [EB/OL]. [2021-01-05]. http://www.gsdata.cn/site/usage-16.

[15] Chen Qiang, Zhang Yangyi, Ma Xiaoyue, et al. Influencing factors and empirical research on information transmission effects of government Bilibili accounts [J/OL]. Library and Information Service, 2020, 64(22): 126-134.

[16] Zhu C, Xu X, Zhang W, et al. How health communication via TikTok makes a difference: A content analysis of TikTok accounts run by Chinese provincial health committees [J]. International journal of environmental research and public health, 2020, 17(1): 192-205.

[17] Huang Bingyi. Research on knowledge sharing motivation stimulation strategies in mobile academic virtual communities based on the Hook Model [J]. Information Exploration, 2019(2): 72-75.

[18] Chen Qiyan. Research on short video ecology from the perspective of communication studies: Taking Douyin as an example [J]. China Media Technology, 2019(6): 86-88.

[19] Wang Xiaohong, Guo Haiwei. Research on the construction and innovation of short video new ecology [J]. China Editor, 2019(7): 4-8.

Author Contributions

Gao Xiaojing: Proposed the core research ideas, drafted the outline, wrote and revised the paper;

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Model and Empirical Analysis on the Influencing Factors of Library Short Video Transmission and Interaction Effect—Exploration Based on "the Hook Model"

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Abstract: [Purpose/significance] The research on the influencing factors of library short video transmission and interaction effect has guided significance for its content creation and scientific operation, enabling libraries to win more attention on short video platforms with rapid user growth, and promoting the effectiveness of library service publicity and promotion. [Method/process] Taking Douyin, the platform with the largest active user base in China, as an example, this paper constructed an influencing factors model of library short video transmission and interaction effect based on the four main links of the "Hook Model," and applied SPSS non-parametric testing methods to empirically analyze the influencing factors model based on 879 short video sample data from the top 10 official library Douyin accounts by follower count. [Result/conclusion] The results show that five factors—title sentence pattern, background music emotional type, production category, content theme, and information type—significantly influence the transmission and interaction effect of library short videos. Based on the research results, operational strategies for library short videos are proposed, including title triggering based on user knowledge anxiety, low-threshold high-density content output, and variable reward design.

Keywords: short video; transmission and interaction; Hook Model; Douyin platform; SPSS; operation strategy

Note: Figure translations are in progress. See original paper for figures.