

Big Data Analysis of TikTok in the Education of Traditional Chinese Opera

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Abstract. Opera is the essence of traditional art accumulated in Chinese history and civilization. In China, the inheritance of opera culture has been developed as an educational cause. However, in the era of the Internet, the once glorious and popular opera is also facing an existential crisis of losing a large number of audiences. How to reconstruct the communication ecology of opera with the help of new media has become an urgent problem for opera and media circles. In this paper, through big data of Douyin (TikTok), to analyze the education of traditional Chinese opera, the ultimate hope as an innovative communication form combining traditional opera and mobile new media, short video of opera can expand the acceptance and influence of opera and promote the popularization and development of opera.

Keywords. Chinese opera; TikTok; Big data.

1. Introduction

The appearance of short videos has changed the audience's preferences. The audience watching Chinese opera, from the theater stage to the cinema to the TV program, until now everyone began to look at the mobile phone smart phone [1]. Driven by the power of science and technology, the Internet is rapidly updated, and the many advantages of network media provide soil for the innovative dissemination and modernization of Chinese opera. People who love Chinese opera may watch it on their mobile phones instead of going to the China Opera Academy [2]. As a result, lightweight, fragmented, and interactive transmission carriers like Tiktok, as popular phenomena on the Internet, have grown rapidly and attracted public attention. It caters to the audience's personalized media habits generated in a fast-paced lifestyle. Using mobile short videos to spread opera is a choice that fits the media environment. The emergence of short video shows that opera art is presenting itself to the audience with a new look full of the sense of The Times [3].

The modern communication theory is used to analyze this process using the method of satisfaction [4]. With the Internet era, the change of communication environment, communication concept and the diversification of entertainment modes have further squeezed the living space of opera. However, at present, the number of short video playback of traditional opera is still relatively high. The reasons for this are analyzed with the modern communication theory of use and satisfaction [5]. Taking the study of opera inheritance as an example, from the audience's perspective, this paper analyzes the key technologies of mainstream informatization such as satisfaction [6], digitalization

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[7], big data [8], new media, Internet [9], and Chinese opera culture, and demonstrates and designs the main contents and basic methods of short video communication of Chinese opera culture. Finally, through the data analysis of the content and phenomenon of short drama video communication, it is found that the logic behind the research is conducive to the healthy development of drama art and short video media [10].

2. Research Scope

By combing the media communication process of short drama video, this paper explains the value and characteristics of this communication mode, and then introduces the short drama video method that inherits the communication content of short drama video and combines the communication of mobile application and shows the development status of its platform content and interactive function, script selection and market share. The paper mainly analyzes the communication mechanism and value of short drama video. It analyzes its communication ecological structure from the aspects of resource content, platform channel, user interaction, publicity and so on, and then explains the interwoven and expanded communication mechanism inside and outside the system and points out that the short drama video achieves stickiness through the use and satisfaction theory [11].

3. Research Process

This paper basically follows the idea of raising questions -- analyzing problems -- solving problems. Centering on the opera audio APP object, under the main framework of the use and satisfaction theory and Lasswell's 5W model, the paper focuses on the analysis of the role and function of each media and channel in the platform to the whole communication process, and expounds its communication mechanism about inheritance. And spread the social value of traditional opera art. Namely: APP developers -- content and elements -- platform design and communication strategies -- users and audiences -- communication effects [12]. The following research methods are used in this research process.

The innovative communication of traditional opera in the era of mobile Internet new media is viewed from the short video of Tiktok, and the application platform of mobile phone new media is analyzed by means of communication theory. By analyzing what forms of content resources the platform has, what interfaces and functions it has designed, and what promotional behaviors it has done, the role and value of mobile short video in the dissemination of opera music and opera culture are explained.

3.1. Research Design

In order to verify the theoretical model of factors influencing the use behavior of fans of Tiktok and related operas, it is assumed that this paper mainly obtains research data through questionnaire survey. Therefore, this chapter first describes the design of the questionnaire in detail, and formulates the question scale for the established model variables, and determines the sample object. After the pre-test, the scale was adjusted and corrected, and finally the formal questionnaire was issued and the data samples were collected.

3.2. Measurement item design of key variables

The following is the measurement design of each variable in the model framework, including the independent variable in the model studied in this paper: Performance expectation, effort expectation, social influence, contributing factor, perceived entertainment, identity; Intermediate variable: intention to use; Dependent variable: use behavior.

3.3 Users use behavioral descriptive analysis

According to the survey, 113 people used Tiktok to watch more than 1 hour to 3 hours of Chinese opera related content in a week, and 157 people used Tiktok to watch more than 3 hours to 5 hours of Chinese opera related content in a week, accounting for 45.51% of the total respondents; In addition, 75 people will spend more than five hours a week watching Chinese opera content on Tiktok.

In terms of viewing time, 60 people watch Chinese opera related content for less than half an hour on Tiktok each time, 121 people spend half an hour to 1 hour on Chinese opera each time, 116 people watch Chinese opera content for more than 1 hour to 1.5 hours each time, 48 people spend the most time. They will watch more than 1.5 hours of Chinese opera content on Tiktok each time.

Table 1. Using behavioral descriptive analysis

Category Items		Number of people	Percentage
Time to watch Chinese opera using Tiktok during the week	More than 1 hour to 3 hours	113	32.75%
	More than 3 hours to 5 hours	157	45.51%
	5 + hours	75	21.74%
Classified item		Number of people	Percentage
Time to watch Chinese opera each time you use Tiktok	Within half an hour	60	17.39%
	Half an hour to 1 hour	121	35.07%
	More than 1 hour to 1.5 hours	116	33.62%
	1.5 + hours	48	13.91%

In terms of usage preference, the "like" function is the most frequently used Tiktok software function by respondents, which is simple to operate and convenient to use. Among the respondents, 128 people frequently like videos, and 165 people frequently use "like" function, accounting for 84.93%. The second is the search function, the content in Tiktok is massive, users often need to actively search to find the content they are interested in more accurately, 51 people always actively search for the videos or creators they want to watch, 197 people will often use this function, accounting for 71.88%; The frequency of use of the comment function is also higher, 109 people will often comment, 132 people will occasionally comment, both accounted for 69.85%; While sharing and active shooting behaviors are less, 109 people will occasionally share videos, 118 people rarely share videos, which is mainly related to the sharing function often requires cross-platform operation and more steps. However, due to the overall age of the respondents, the demand for self-display is not high, so the respondents often or more to take the initiative to shoot video only accounted for 36.23%.

Finally, the respondents have the least reward behavior, only 23 people often reward videos or creators, accounting for 6.67%, 148 people rarely reward, 65 people never reward, both accounting for 61.74%.

In addition, it was found that the interviewees were willing to learn the video content and would follow the video for opera singing or skill learning. Among them, 153 frequently learned the video content and 147 frequently learned the video content, accounting for 86.96% of the total sample.

Table 2. Analysis of respondents' use preference

	Always		Often		Occasionally		Rarely		Never	
	Num ber of peopl e	Perce ntage	Num ber of peopl e	Percent age	Num ber of peopl e	Percent age	Num ber of peopl e	percent	Num ber of peopl e	Percent age
Make a comment	31	8.99%	109	31.59%	132	38.26%	60	17.39%	13	3.77%
Liking a video	128	37.10%	165	47.83%	46	13.33%	6	1.74%	0	0%
Share Videos	62	17.97%	49	14.20%	110	31.88%	118	4.20%	6	1.74%
Tipping Creators	0	0%	23	6.67%	109	31.59%	148	42.90%	65	8.84%
Search for videos of interest with creators	51	14.78%	197	57.10%	84	24.35%	13	3.77%	0	0%
Active video shooting	58	16.81%	67	19.42%	86	24.93%	106	0.72%	28	8.12%
Post Moments	0	0%	7	2.03%	53	5.36%	152	44.06%	133	38.55%
Learn video content	153	44.35%	147	42.61%	42	12.17%	2	0.58%	1	0.29%

In summary, among Chinese opera fans who use Tiktok for more than two hours in a week, there are more male users than female users, and the overall male sex ratio is about 6:4, which is more balanced. In terms of age, the majority of Chinese opera fans who use Tiktok are middle-aged, with high school education and college education, and mostly live in northwestern provinces and cities, with an equal proportion of rural users and urban users. Based on the above information, it can be concluded that the Chinese opera fans who use Tiktok are in line with the basic characteristics of Chinese opera lovers. They are older in age, live mostly in northwest China, and the proportion of users in rural towns is large. To some extent, this reflects that with the increasingly low cost of Internet access and the continuous improvement of infrastructure today, middle-aged and even elderly people have gradually become residents of the Internet. In addition, it is worth noting that Chinese opera fans' preference for Chinese opera content is not just a kind of entertainment consumption, more than 80% of the respondents have learning behaviors, which can reflect the quality and quantity of Chinese opera content in Tiktok is relatively considerable. However, users' content consumption habits are not fully

formed -- only 6% of respondents often tip video creators, and most users' usage habits only stay at the level of content interaction [13].

4. Research model and hypothesis testing

Structural Equation Model is one of the important tools for multivariate data analysis [14, 15]. Compared with regression analysis, path analysis and other analysis methods, structural equation model can process multiple dependent variables at the same time and adjust the model according to the theoretical model and its fitting degree with the data, so as to measure the fitting degree of the whole model.

Commonly used structural equation model analysis software includes LISREL, Amos, EQS, etc. Due to the powerful function and simple operation of AMOS software, this paper contains eight latent variables "Chinese opera fans in Tiktok use behavior and its motivation and influencing factors" model is also more suitable for using SEM for research model and hypothesis testing. Therefore, the author chose to use AMOS24.0 software for model drawing and imported the sample data that had been tested for reliability and validity into the software to build the path relationship diagram between the variables, analyze the model fitting index, and then verify the research model and hypothesis in this paper.

The fitting index of the model is compared with the fitting standard range parameters as shown in the following table:

Table 3. Comparison of estimated parameters of the model

Fitting index	Fit standard range	Model index values
X ² /df	< 3	2.829
GFI	> 0.8	0.847
AGFI	> 0.8	0.814
RMSEA	< 0.08	0.073
CFI	> 0.8	0.901
PGFI	> 0.5	0.699
NFI	> 0.8	0.855
IFI	> 0.8	0.888

By comparing the fitting index of the model in this paper with the standard value, it can be seen that the theoretical model of "Influencing Factors of the use behavior of Chinese opera fans in Tiktok" in this study has a good fit with the sample data, and the path analysis can be continued.

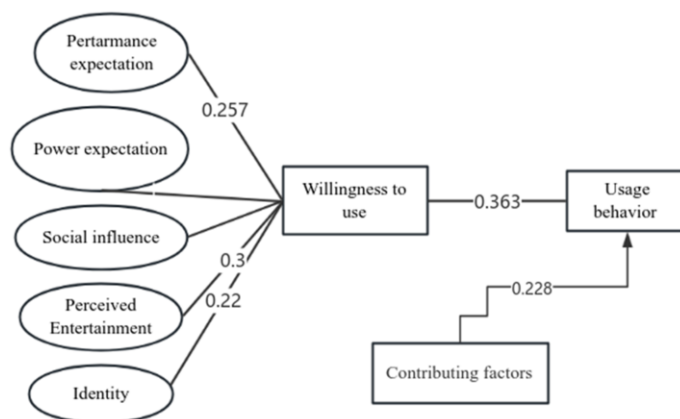
Table 4 shows the path test analysis results of the model.

As can be seen from the above table, there are other relationships except that effort expectation and social influence have no significant influence on use intention.

All of them were significant ($P < 0.05$). The coefficients of variables in the model are shown in Figure 1.

Table 4. model path check analysis results

The path relationship among latent variables	Eestimate	S.E.	C.R.	P	Salience
Willingness to use <-- Performance expectation	0.257	0.065	3.939	***	Significant
Willingness to use <-- Strive to expect	0.047	0.035	1.343	0.179	Non-significant
Performance expectations <-- effort expectations	0.388	0.047	8.194	***	Significant
Intention to use <-- social impact	0.031	0.055	0.565	0.572	Non-significant
Use behavior <-- contributing factors	0.328	0.062	5.288	***	Significant
Willingness to use <-- perceived entertainment	0.369	0.087	4.221	***	Significant
Use willingness <-- identity	0.122	0.058	2.107	0.035 *	Significant
Use behavior <-- willingness to use	0.363	0.363.065	5.629	***	Significant

**Figure 1.** Model diagram of variable coefficients

Based on the path coefficient graph, this study calculated the mediating effects of 6 independent variables or intermediate variables on dependent variables. The results are shown in the table 5.

It can be seen that performance expectation, perceived entertainment and identity have significant direct effects on use intention and significant indirect effects on use behavior respectively, while effort expectation and social influence have no significant direct and indirect effects on use intention and use behavior respectively.

In addition, since the direct effect of use intention on use behavior is significant, use intention plays an intermediary role in the influence of performance expectation, perceived entertainment and identity on use behavior.

Table 5. Effects of independent variables or intermediate variables on dependent variables

	Total effect		Direct effects		Indirect effects	
	Willingness to use	Use behavior	Willingness to use	Use behavior	Willingness to use	Use behavior
Performance expectations	0.361	0.336	0.361	0	0	0.336
Strive to expect	0.065	0.061	0.065	0	0	0.061
Social impact	0.033	0.03	0.033	0	0	0.03
Contributing Factors	0	0.369	0	0.369	0	0
Perceived Entertainment	0.392	0.364	0.392	0	0	0.364
Identity	0.112	0.104	0.112	0	0	0.104
Intention to use	0	0.929	0	0.929	0	0

5. Conclusion

Firstly, SPSS25.0 and AMOS24.0 software were used to conduct reliability and validity test, factor analysis and structural equation model test on 345 valid questionnaires collected. Then, in order to deepen the research results, in-depth interviews were conducted on some research subjects through random sampling. This chapter will summarize this research, summarize the conclusions obtained through empirical research and in-depth interview, and on the basis of the summary results, conduct a more in-depth discussion on the motivation of Chinese opera fans in Tiktok.

By verifying the research hypothesis proposed in this paper, we can draw the following conclusions:

1) Perceived entertainment and performance expectation can indirectly affect the use behavior of Chinese opera fans by influencing their use intention

The interpretation degree of perceived entertainment and performance expectation on usage intention is 36.9% and 25.7% respectively, indicating that perceived entertainment has the most significant positive impact on usage intention, followed by performance expectation. In this study, the two words most frequently used by users when referring to Tiktok are "useful" and "fun". Useful because Tiktok provides rich opera content, which is constantly confirmed in the following interview process, while fun is more reflected by user frequency and positive emotions -- many users are easily fascinated when using Tiktok. And the use of Tiktok can make them feel relaxed and happy.

2) Identity indirectly affects the use behavior of Chinese opera fans by influencing their willingness to use Tiktok

The explanation degree of identity to use intention is 12.2%, which indicates that the stronger the identity of Chinese opera fans as "fans" in Tiktok, the more inclined they are to use Tiktok. Through follow-up interviews, the author found that many users are satisfied with the community atmosphere in Tiktok, and the group chat function in Tiktok has been praised by users alike. This function greatly expands the social scene of users and enhances the opportunities for mutual exposure and interaction among users. Such strong sociability makes it easy to maintain user activity and high content popularity. Thus, the offline community of Chinese opera can be transferred to Tiktok more completely and conveniently, and the cultural atmosphere and fan stickability of Chinese opera fans are well maintained.

3) Usage intention and contributing factors will positively affect the usage behavior of Chinese opera fans in Tiktok.

The results show that the interpretation degree of usage intention is 36.3%, and the explanation degree of contributing factors is 32.8%, both of which have significant positive effects on usage behavior. There is no need to explain the influence of the intention to use on the use behavior, and the relationship between the two is also consistent with the common sense of life and the conclusion of psychological research. The contributing factors are the necessary objective conditions for the occurrence of use behavior. Only when users feel that their own material conditions and the external attraction of Tiktok are sufficient and perfect, will they be prompted to have actual use behavior.

References

- [1] Georgios Rigopoulos. Assessment and Feedback as Predictors for Student Satisfaction in UK Higher Education[J]. *International Journal of Modern Education and Computer Science*, 2022, 14(5): 1-9.
- [2] Yana Serkina, Alena Vobolevich, Irina Petunina, Aleksandra Zakharova. Analysis of the Information and Communication Technology in Blended Learning for Economics Students in the Context of Digitalization[J]. *International Journal of Modern Education and Computer Science*, 2023, 15(3): 33-43.
- [3] Asma Omri, Mohamed Nazih Omri. Towards an Efficient Big Data Indexing Approach under an Uncertain Environment[J]. *International Journal of Intelligent Systems and Applications*, 2022, 14(2): 1-13.
- [4] Qingqing Zhou, Minkang Yang, Hongyi Zhang, Rong Qian. Comprehensive introduction to Chinese traditional music[M]. Hollitzer Verlag, 2023, 12: 23-25 (in Chinese).
- [5] Liu Kaixuan, Lin Kai, Zhu Chun. Research on Chinese traditional opera costume recognition based on improved YOLOv5[J]. *Heritage Science*, 2023, 11(1):41-44 (in Chinese).
- [6] Si Zhengyu. An introduction to the use of Chinese Opera expressions in experimental drama[J]. *SHS Web of Conferences*, 2023, 158(1): 51-60.
- [7] Information Systems Mobile. Retracted: design of Chinese Opera Cultural Platform based on digital twins and research on international cultural communication strategies[J]. *Mobile Information Systems*, 2022, 2(2): 51-55.
- [8] Zhifei Chen. Kunqu Opera Film the Zidu: A case study of cross-media communication research of kunqu[J]. *Art and Performance Letters*, 2022, 3(4): 33-36 (in Chinese).
- [9] Chi Xia Bing, Belliveau George. Between tradition and modernity: developments in Xiqu (Chinese opera) actor training[J]. *Theatre, Dance and Performance Training*, 2022, 13(4):14-18 (in Chinese).
- [10] Yang Zhiyong. Scientific and technological creative stage design using artificial intelligence[J]. *Computers and Electrical Engineering*, 2022, 103(1): 16-17 (in Chinese).
- [11] Shanshan An. Research on the aesthetic connotation of Beijing opera mask culture and innovation of modern design[J]. *Art and Design*, 2022, 5(5): 126-128 (in Chinese).
- [12] Xu Lisha, Johnston David. Between safeguarding and translating: Chinese classical opera and Spanish Golden Age theatre[J]. *Translation Studies*, 2022, 15(3): 99-107.
- [13] Ma Li. Design of Chinese Opera Cultural Platform Based on digital twins and research on international cultural communication strategies[J]. *Mobile Information Systems*, 2022, 22(1): 56-57.
- [14] Liang Hui, Dong Xiaohang, Liu Xiaoxiao, Pan Junjun, Zhang Jingyue, Wang Ruicong. A semantic - driven generation of 3D Chinese opera performance scenes[J]. *Computer Animation and Virtual Worlds*, 2022, 33(3-4): 1-17 (in Chinese).
- [15] Ma Haili. The missing intangible cultural heritage in Shanghai cultural and creative industries[J]. *International Journal of Heritage Studies*, 2022, 28(5): 19-27.