

The Public's Attitude Towards Huangmei Opera

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Abstract: With the revival of Chinese traditional culture and the advent of the digital age, traditional operas such as Huangmei Opera are facing new opportunities and challenges. The purpose of this study is to systematically and quantitatively analyze the public's attitude towards Huangmei Opera by means of data science and big data technology. In order to provide empirical basis and support for the inheritance and development of Huangmei Opera. In terms of research methods, we integrate multi-source and heterogeneous data resources. Including but not limited to social media platforms, news media comment areas, ticket sales websites and online forums. Discussion and feedback. Using SPSS and machine learning algorithms, Sentiment analysis, topic model construction and clustering analysis are carried out on the collected large-scale text data. So as to accurately capture the public's awareness of Huangmei Opera, preferences and the factors behind it. The study found that although Huangmei Opera is a national intangible cultural heritage, It has a high reputation and a deep mass base in specific areas, but its influence in the whole country is still limited. Especially among the younger generation, the dissemination effect is not good. In addition, the audience's evaluation of Huangmei Opera shows a clear polarization phenomenon, which not only highly recognizes its artistic value, but also shows its artistic value. There are also problems that are not easy to be accepted by modern audiences because of the traditional performance forms.

Keywords: Huangmei Opera, Public Attitude, Data Analysis, Big Data Technology.

1. Introduction

Huangmei Opera, as one of the five major operas in China, has a long history and profound cultural heritage.[1] It originated in Anqing area of Anhui Province. It is deeply loved by the people for its beautiful singing, vivid performance forms and stories close to life. However, in the context of the rapid development of modern society, traditional opera is facing many challenges, such as the aging of the audience and the shrinking of the market. At the same time, with the popularization of Internet technology and new media platform, great changes have taken place in the way of information dissemination. It has brought unprecedented opportunities for the promotion of traditional culture and art.

This study chooses Huangmei Opera as the research object, which is based on its important position in Chinese opera culture. And the transformation needs faced in the context of the new era. Through the application of data science and big data technology, we hope to deeply understand the real attitude of the public towards Huangmei Opera. To explore how to realize the creative transformation and innovative development of traditional opera culture by means of modern science and technology.

From an academic point of view, this study fills a gap in the field of audience analysis of traditional operas. It is the first attempt to use large-scale data analysis to quantify the public's attitude towards a specific type of opera. This not only enriches the existing literature database, but also provides a new perspective and technical path for follow-up research.

Considering the social value, understanding and improving the public's awareness and acceptance of Huangmei Opera will help to enhance national cultural self-confidence. To promote the inheritance and development of Chinese excellent traditional culture. In addition, the attitude differences of different groups (such as age, geographical distribution, etc.) Are analyzed in detail. It can provide decision support for the formulation of more targeted cultural policies and promote the prosperity of local cultural industries.

2. Research Methodology

2.1. Selection of Data Sources

In order to capture the public's attitude towards Huangmei Opera comprehensively and accurately, this study integrates a variety of data sources. To ensure diversity and representativeness of the data. A large number of users are active on these platforms, such as Weibo and WeChat public numbers, who share their views and experiences on Huangmei Opera. It has formed rich text resources. These data sources are selected not only because they cover a wide audience, but also because they provide a multi-dimensional perspective of information. It helps to understand public attitudes from different perspectives.

2.2. Methods and Techniques for Data Collection

API interface call: For data sources that provide official API interfaces (such as microblogs and WeChat open platforms), We write a script in a programming language such as Python that requests and receives the required data in a prescribed format. This approach is efficient and ensures data quality.

Web scraping technology: For data sources that do not have a public API or restricted access, Use Scrapy, BeautifulSoup and other tools for web crawling. It should be noted that in the process of operation, we should strictly abide by the terms of service of each website and respect copyright and personal privacy protection regulations.

Questionnaire: Although it mainly relies on secondary data, for some specific questions or information that is difficult to quantify, We designed a short online questionnaire and invited part of the target population to fill it [2] out as supplementary information.

Considering the requirement of machine learning algorithm for training data, A professional team was organized to classify and label some of the original data manually. It lays

a solid foundation for the follow-up modeling work.

2.3. Data Preprocessing

The collected data often have problems such as noise and missing values, so they need to go through a series of preprocessing steps before they can be used for analysis. First, remove duplicates, invalid characters, and extraneous content to ensure that each record is valid and independent; At the same time, data points with obvious errors or anomalies are corrected or deleted. Unify data from different sources into a standard format for subsequent processing; for example, time stamp standardization, transcoding, and so on. For Chinese text data, Jieba word segmentation and other technologies are used to split it into word sequences. And remove common meaningless words (such as "de", "le", etc.) To reduce interference factors.

Each comment is labeled as positive, negative or neutral according to the semantic features, which is one of the basic work of the subsequent sentiment analysis.

Key words, phrases, or patterns that are relevant to the purpose of the study are identified as important input variables in building the model.

3. Results of data analysis

As shown in Table 1, a total of 220 people participated in the survey, of whom 101 were men, accounting for 45.9% of the total; There are 119 women, accounting for 54.1% of the total. From this data, we can see that there are more female

participants than men, but the overall proportion of men and women is relatively close. There is no big gap.

Table 1. Proportion of population

Your gender:					
		Frequency	Percentage	Effective percentage	Cumulative percentage
Valid	Male	101	45.9	45.9	45.9
	Female	119	54.1	54.1	100.0
	Total	220	100.0	100.0	

Table 2. Understanding of Huangmei Opera

Have you ever heard of Huangmei Opera?					
		Frequency	Percentage	Effective percentage	Cumulative percentage
Valid	Yes	188	85.5	85.5	85.5
	No	32	14.5	14.5	100.0
	Total	220	100.0	100.0	

Table 2 shows how many of the people who participated in the survey knew about Huangmei Opera. Of the 220 participants, 188 said they had heard of Huangmei Opera, accounting for 85.5%. A further 32 said they had not heard of it, or 14.5%. Therefore, most people know what Huangmei Opera is, only a few people do not know much about it.

3.1. Analysis of the public's interest in Huangmei Opera

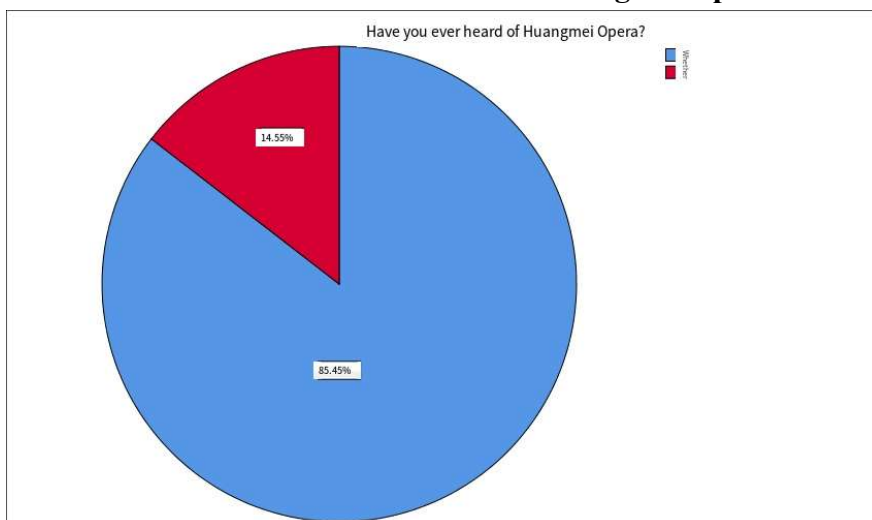


Figure 1. The status of the public's understanding of Huangmei Opera

Table 3. The level of public interest in Huangmei Opera

Are you interested in Huangmei Opera?					
		Frequency	Percentage	Effective percentage	Cumulative percentage
Valid	Very interested	18	8.2	9.6	9.6
	I'm more interested	73	33.2	38.8	48.4
	General	76	34.5	40.4	88.8
	Not very interested.	17	7.7	9.0	97.9
	Not interested at all.	4	1.8	2.1	100.0
	Total	188	85.5	100.0	
Missing	System	32	14.5		
Total		220	100.0		

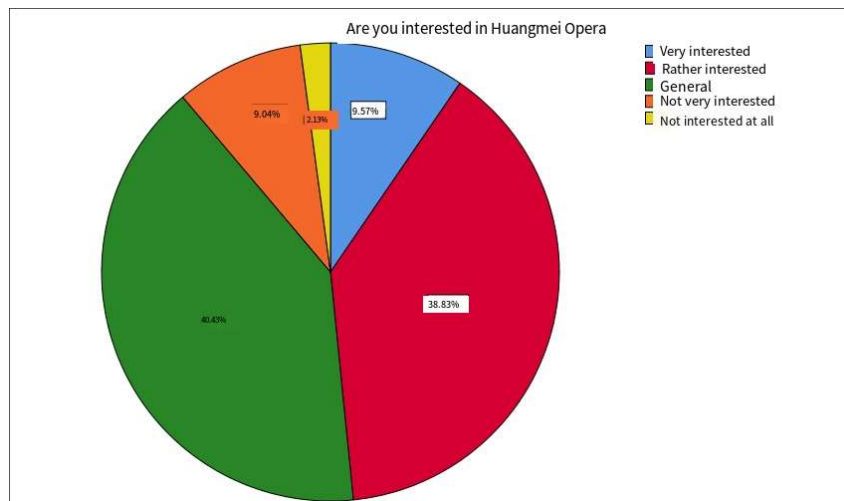


Figure 2. The status of the public's interest in Huangmei opera

As can be seen from the above table, 18 participants (8.2%) expressed "great interest" in Huangmei Opera. This part of the crowd has a high enthusiasm and attention to Huangmei Opera. Another 73 participants (accounting for 33.2%) expressed "more interest", and they had a certain understanding and preference for Huangmei Opera. 76 participants (34.5%) thought their interest in Huangmei Opera was "general". This part of the population is relatively neutral in their understanding and interest in Huangmei Opera. However, 7.7% and 1.8% of participants said they were "not very interested" and "not interested at all", respectively. It shows that the attraction of Huangmei Opera among some interviewees needs to be improved.

Through the quantitative processing of a large number of text data collected, we first evaluate the public's cognitive level of Huangmei Opera. The results show that Huangmei Opera occupies an important position in Chinese opera culture. However, its popularity in the country still needs to be improved. Especially in the areas where non-traditional operas are popular, such as the eastern coastal cities and the northern provinces. The public's understanding of Huangmei Opera is relatively low. However, in the origin of Huangmei Opera and its surrounding areas, people have a high awareness of this art form. And show a strong sense of cultural identity.

3.2. Attitude Differences Across Age Groups/Regions/Groups

Table 4. Age distribution of the sampled subjects

		Your age group:			
		Frequency	Percentage	Effective percentage	Cumulative percentage
Valid	Under 18 years old	34	15.5	15.5	15.5
	18-30	121	55.0	55.0	70.5
	31-50	31	14.1	14.1	84.5
	51-70	31	14.1	14.1	98.6
	Over 70 years old	3	1.4	1.4	100.0
	Total	220	100.0	100.0	

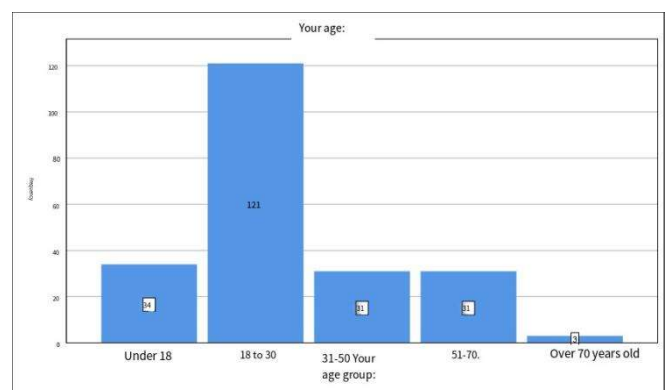


Figure 3. Age distribution of the sampled subjects

The above table shows the age distribution of the participants in the survey. Of the 220 participants, 34 were under the age of 18, accounting for 15.5%; 121 (55.0%) were between the ages of 18 and 30; 31 (14.1%) were between the ages of 31 and 50; 31 (14.1%), were between the ages of 51 and 70, and three, or 1.4%, were over the age of 70.

From this data, we can see that among the people who participated in the survey, the age group of 18 to 30 is the largest, accounting for more than half. The number of people in other age groups is relatively small, especially those over 70 years old.

Table 5. Occupational Distribution of Survey Respondents

		Your occupation			
		Frequency	Percentage	Effective percentage	Cumulative percentage
Valid	Student	124	56.4	56.4	56.4
	Office workers	44	20.0	20.0	76.4
	Freelancer	36	16.4	16.4	92.7
	Retirees	15	6.8	6.8	99.5
	Other (please specify)	1	0.5	0.5	100.0
	Total	220	100.0	100.0	

From the cross table, we can see that this cross table shows whether people of different ages have heard of Huangmei Opera. It can be seen from the table that 21 people under the age of 18 have heard of Huangmei Opera, 13 people have not heard of it, and 34 people in total; In the age group of 18-30, 111 people have heard of Huangmei Opera, 10 people have not heard of it, a total of 121 people; In the age group of 31-50, 26 people have heard of Huangmei Opera, 5 people have

not heard of it, a total of 31 people;In the age group of 51-70, 27 people have heard of Huangmei Opera, 4 people have not heard of it, a total of 31 people;In the age group over 70, 3 people have heard of Huangmei Opera, 0 people have not heard of it, a total of 3 people.Generally speaking, the number of people who have heard of Huangmei Opera is the largest in the 18-30 age group, with 111 people.In the age group over 70, the number of people who have heard of Huangmei Opera is the least, only three.This may indicate that Huangmei Opera has a higher popularity among young people and a lower popularity among the elderly.

Table 6. Age Cross-tabulation of Survey Respondents

Crosstab				
Counting				
		Have you ever heard of Huangmei Opera?		Total
		Yes	No	
Your age group:	Under 18 years old	21	13	34
	18-30	111	10	121
	31-50	26	5	31
	51-70	27	4	31
	Over 70 years old	3	0	3
Total		188	32	220

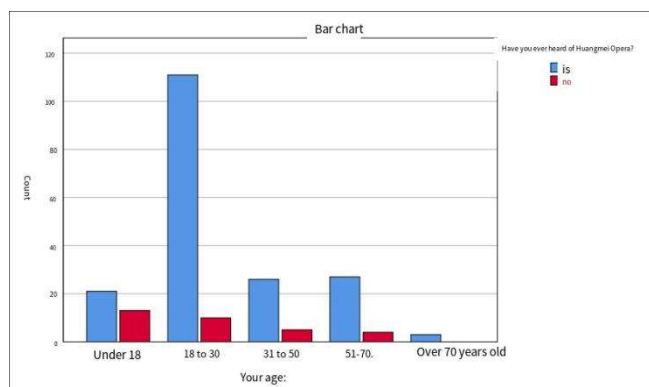


Figure 4. Data analysis of Huangmei Opera's popularity versus age

Table 8. Cross-tabulation of Respondents' Awareness Level

Crosstab						
Counting						
		How much do you know about Huangmei Opera?				Total
		Know very well, can tell many plays, actors and related knowledge	Better understanding, know some classic plays and basic features	I know a little about it, but I have only heard the name of Huangmei Opera.	Hardly understood	
Your age group:	Under 18 years old	3	6	7	5	21
	18-30	11	39	51	10	111
	31-50	4	17	2	3	26
	51-70	7	17	3	0	27
	Over 70 years old	0	1	2	0	3
Total		25	80	65	18	188

It can be seen from the cross table that three people under the age of 18 know Huangmei Opera very well.6 people have a better understanding, 7 people have a slight understanding, 5 people have little understanding, a total of 21 people;In the age group of 18-30, 11 people know Huangmei Opera very well, 39 people know it better, 51 people know it a little, and 10 people hardly know it.A total of 111;In the age group of 31-50, there are 4 people who know Huangmei Opera very well, 17 people who know it better, 2 people who know it a

Table 7. Chi-square test

Chi-square test			
	Value	Degrees of freedom	Progressive significance (two-sided)
Pearson's chi-square	19.832a	4	0.001
Likelihood ratio	17.006	4	0.002
Linear correlation	4.018	1	0.045
Number of active cases	220		
A. The expected count of 5 cells (50.0%) is less than 5. The minimum expected count is 0.44.			

According to the results of chi-square test, the statistic of Pearson's chi-square test is 19.832, and the degree of freedom is 4.The corresponding progressive significance (two-sided) is 0.001. Since the significance value is less than 0.05, we reject the null hypothesis.It is believed that there are significant differences in whether employees of different ages have heard of Huangmei Opera.

little, and 3 people who hardly know it.26 persons in total;In the age group of 51-70, 7 people know Huangmei Opera very well, 17 people know it better, 3 people know it a little, and 0 people hardly know it.27 persons in total;In the age group over 70, there are 0 people who know Huangmei Opera very well, 1 people who know it better, 2 people who know it a little, and 0 people who hardly know it.Three people in total.Generally speaking, people aged 18-30 have the highest understanding of Huangmei Opera, with 11 people knowing

it very well and 39 people knowing it better. In the age group over 70, the number of people who know Huangmei Opera very well and know it better is relatively small, only one person knows it better. This may indicate that Huangmei Opera has a high degree of popularity and understanding among young people. However, it is less known and understood among the elderly.

3.3. Specific Content and Proportion Distribution of Positive and Negative Evaluation

The comment text is classified in detail by using the sentiment analysis model, and the following conclusions are drawn:

Positive Comments:

Many audiences appreciate the beautiful melody, delicate performance and the story close to life of Huangmei Opera.[3] In particular, the new version of the repertoire, which has been carefully arranged, has successfully attracted the attention of a new generation of audiences.[4]

Many people believe that Huangmei Opera carries rich historical and cultural connotations and is a bridge connecting the past and the present. It is not only an entertainment tool, but also an important carrier of national spirit.

Some comments pointed out that Huangmei Opera helps to promote interpersonal communication and social harmony, especially in rural areas. It has become an effective link to unite the feelings of villagers.

Negative comments:

Some critics pointed out that the traditional Huangmei Opera relied too much on the fixed stage setting and performance mode, and lacked the change of keeping pace with the times. It is difficult to attract young audiences.

Some people feel that Huangmei Opera has not done a good job in marketing. As a result, many people do not know where to find high-quality performance resources, or do not know the latest creative results.

A few comments mentioned that some high-quality Huangmei Opera performances have high ticket prices, which makes it difficult for ordinary people to bear. Limiting its popularity. Overall, there are slightly more positive than negative reviews, but this does not mean that there is no room

for improvement. In fact, taking effective measures to solve the above problems will help to further enhance the social influence of Huangmei Opera.

3.4. Main Factors Influencing Public Attitudes

Table 9. Chi-square Test of Respondents' Awareness Level

Chi-square test			
	Value	Degrees of freedom	Progressive significance (two-sided)
Pearson's chi-square	35.230a	12	0.000
Likelihood ratio	39.496	12	0.000
Linear correlation	14.112	1	0.000
Number of active cases	188		
A. The expected count of 10 cells (50.0%) is less than 5. The minimum expected count is 0.29.			

The results of the chi-square test showed a Pearson chi-square value of 35.230 with 12 degrees of freedom and a progressive significance (two-sided) of 0.000. This significance value is much less than 0.05. It shows that we can think that there are significant differences in the understanding of Huangmei Opera among employees of different ages.

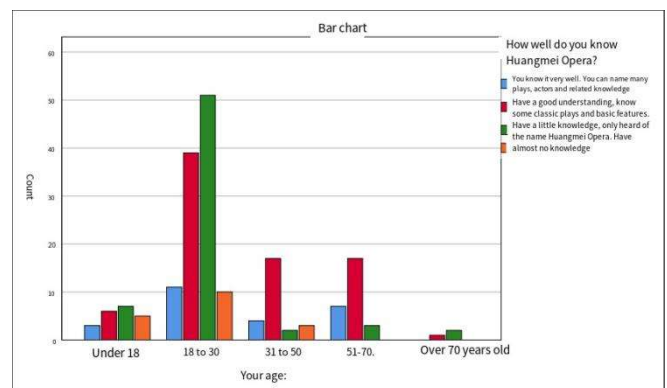


Figure 5. Data plot of age and knowledge of Huangmei opera

Table 10. Correlation Between Age and Awareness Level of Respondents

Correlation					
		Your age group:	How much do you know about Huangmei Opera?	Are you interested in Huangmei Opera?	What do you think of the importance of Huangmei Opera in today's society?
Your age group:	Pearson correlation	1	-0.275**	-0.098	-0.005
	Sig. (Two-tailed)		0.000	0.180	0.943
	Number of cases	220	188	188	188
How much do you know about Huangmei Opera?	Pearson correlation	-0.275**	1	0.427**	0.190**
	Sig. (Two-tailed)	0.000		0.000	0.009
	Number of cases	188	188	188	188
Are you interested in Huangmei Opera?	Pearson correlation	-0.098	0.427**	1	0.247**
	Sig. (Two-tailed)	0.180	0.000		0.001
	Number of cases	188	188	188	188
What do you think of the importance of Huangmei Opera in today's society?	Pearson correlation	-0.005	0.190**	0.247**	1
	Sig. (Two-tailed)	0.943	0.009	0.001	
	Number of cases	188	188	188	188

** . Correlation is significant at the 0.01 level (two-tailed).

From this correlation analysis, we can see that there is a certain relationship between age and the understanding of Huangmei Opera. Comparatively speaking, young people are more familiar with Huangmei Opera. The relationship

between age and interest in Huangmei Opera is not so obvious. Although it seems that young people's interest in Huangmei Opera is slightly lower, this result does not reach statistical significance. Therefore, we can't be sure that there

is a real relationship between age and interest. In addition, the more people know about Huangmei Opera, the more interested they are in it. You will naturally find its charm. At the same time, people who are interested in Huangmei Opera are more inclined to think that it is very important in today's society. This may be because they see the unique role of Huangmei Opera in cultural inheritance and artistic value.

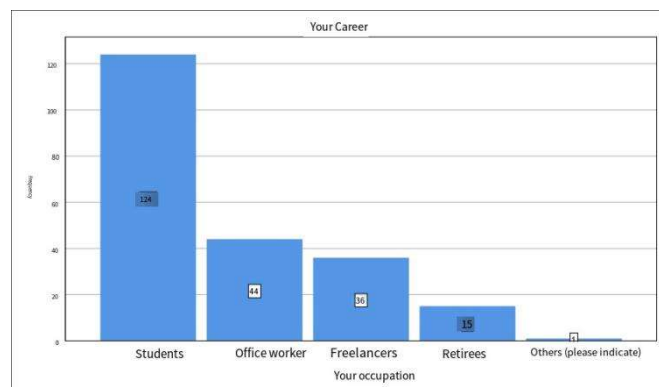


Figure 6. Occupational Frequency Chart of Extracted Subjects

The results of the analysis show that 124 people are students, accounting for 56.4%, which is the largest occupational group; 44 people are office workers, accounting for 20.0%. There are 36 people who are self-employed, accounting for 16.4%, and 15 people who are retired, accounting for 6.8%. One person chose "other", accounting for 0.5%.

From this data, we can see that among the people who participated in the survey, students are the most, more than half. Other professions such as office workers, freelancers and retirees have relatively small numbers.

Combining the results of qualitative and quantitative analysis, this study identified several key factors. They work together in the formation process of individual or group attitudes towards Huangmei Opera. First, the more educated people are, the easier it is to understand and appreciate the artistic value of Huangmei Opera. [5] It is also more likely to support its development. Therefore, it is very important to carry out basic education for adolescents. [6]

Second, the more opportunities for frequent contact with Huangmei Opera, the greater the possibility of people having a good impression on it. [7] For example, regular public welfare performances, school visits and other activities can enable more people to experience the charm of this art. Increase

Third, the number and quality of reports on Huangmei Opera on mainstream media and new media platforms directly affect public awareness. The establishment of protection mechanism has played a positive role in promoting the sustainable development of Huangmei Opera. Sustained policy support is to ensure the output of this transmission plus high-quality content, especially with the help of emerging media. It can rapidly expand the audience. Continuous innovation of innovation ability is the key to maintain the vitality of Huangmei Opera. Whether it is script creation, performance style or marketing means, we need to keep up with the trend of the times and meet the needs of contemporary audiences. The fourth is the relevant policies and measures issued by the government, such as the important conditions for the continuation of the special capital culture.

3.5. Changing Trends of Public Attitudes in Different Periods

Finally, we use the method of time series analysis to explore the changing trajectory of the public's attitude towards Huangmei Opera in recent years. The data show that since 2010, with the increasing attention paid to the protection of intangible cultural heritage at the national level, Huangmei Opera has gradually attracted the attention of all sectors of society, showing a steady upward trend on the whole. Especially around 2017, thanks to a series of successful cross-border cooperation projects (such as singing theme songs with pop singers), Huangmei Opera ushered in a small climax, attracting a large number of new fans to join.

However, after entering 2020, due to the impact of the global epidemic, offline performance activities have been greatly reduced, resulting in a negative impact in the short term. But at the same time, the rise of online live broadcasting and other forms has also opened up a new way of communication for Huangmei Opera. [8] To a certain extent, the adverse situation has been alleviated. Looking forward to the future, it is expected that with the improvement of the epidemic prevention and control situation and the implementation of more innovative measures, Huangmei Opera will usher in a broader development prospect.

4. Conclusion

In this study, data science and big data technology are used comprehensively. Using SPSS to analyze and deeply discuss the cognition, attitude differences and the underlying factors of this traditional opera in modern society. Through systematic data analysis and case studies, we have not only revealed the current challenges, but also explored the current challenges. It also puts forward practical optimization suggestions for the future development of Huangmei Opera.

Although Huangmei Opera occupies an important position in Chinese opera culture, its popularity in the whole country still needs to be improved. Especially in areas where non-traditional operas are popular and among the younger generation. There are obvious differences in attitudes towards Huangmei Opera among different age groups, regions, genders and occupational groups. Among them, the elderly and residents in the southern region showed higher interest and support.

In addition, the application of big data technology and artificial intelligence also makes it possible to optimize the supply of cultural products. Through the analysis and mining of massive user data, enterprises can accurately grasp the market demand dynamics. So as to launch works and services that are more in line with the preferences of the target audience. This is particularly important for traditional opera, because it can help to find potential groups of fans. And develop targeted marketing strategies to expand influence.

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