# Application of Smart Model in the Analysis of Opera Heritage Archiving and Protection

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## Abstract

*Objective:* Opera Heritage in China is a rich and diverse cultural tradition passed down through generations. Today, Opera Heritage remains an essential part of Chinese culture and is celebrated through performances, festivals, and other cultural events. Efforts are being made to preserve and promote Opera Heritage through innovative technologies and approach such as digital archives, virtual reality, and community-based heritage management. *Analysis:* In this study, we suggested the SMART model that seeks to integrate these technologies and approaches into the preservation and promotion of Opera Heritage, ensuring that this rich cultural tradition can be enjoyed by future generations. We employed an 'opera heritage' using the Smart model in this study. In this research, "Smart Heritage" was defined as heritage experiences that used the word "Smart Heritage" or "similar terms" to describe the smart model. *Findings:* Opera Heritage analysis paid close attention to cutting-edge tools to record developments that showcase technical independence. Due to language barriers, this article could only interpret a clear convergence between SMART and opera heritage protection. For China's Opera Heritage to be properly archived and protected, a holistic and cooperative strategy that incorporates cutting-edge technologies and community-based heritage management practises are essential. *Conclusion:* Innovating technologies such as virtual reality and digital archives have been employed in efforts to promote and preserve China's rich Opera Heritage. This study emphasises the necessity for an extensive strategy for the efficient preservation and protection of Opera Heritage and suggests the SMART model to incorporate these methods.

*Keywords:* Opera Heritage; Archiving and Protection; SMART Model; Traditional Chinese Opera.

## 1. Introduction

The magnificent culture of China includes traditional opera in large measure. The establishment, growth, and popularization of classical opera art were significantly impacted by the Grand Canal. The Grand Canal's cultural belt could be constructed with the help of the outline of China's 2019 planning document for the preservation, inheritance, and use of the culture. Presently, traditional Chinese opera's viewership is steadily declining due to the influence of rising cultures like the internet, anime, and gaming culture, and its cultural legacy is in serious danger. Investigating the historical opera culture's chronological and spatial dispersion patterns is crucial, as is pushing for the development of the Grand Canal cultural belt in accordance with regional needs. Indeed, traditional Chinese opera is a cultural treasure of immense value, not only in China but also in the world. It is a comprehensive art form that combines music, dance, drama, literature, and visual arts and has unique performance styles, costumes, and makeup. A study mentioned that it

matured during the Song Dynasty and became popular among the masses during the reigns of Ming and Qing. z In the twentieth century, traditional Chinese opera experienced significant developments in artistic expression and performance techniques, thanks to the efforts of many outstanding artists and performers. These new forms of opera have unique styles, themes, and performance techniques, enriching the diversity and vitality of Chinese opera. In addition, traditional Chinese opera has also made great strides in terms of artistic expressions, such as the use of modern stage technology, the incorporation of Western music elements, and the exploration of new themes and topics. Figure 1 represents an overview of traditional Chinese heritage.
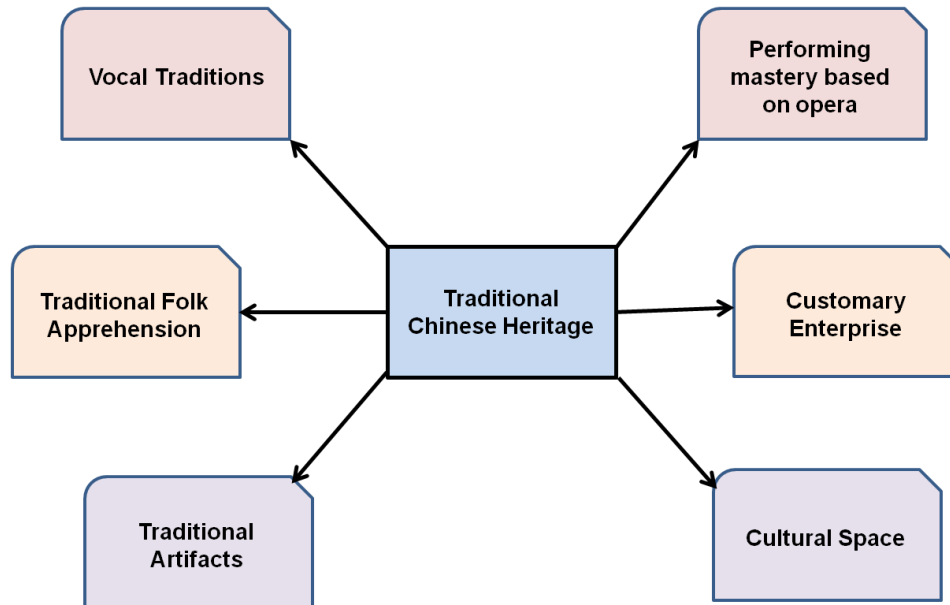


**Figure 1. Overview of traditional Chinese heritage**

However, it is worth noting that traditional Chinese opera faces challenges in the modern era, such as a declining audience, the shortage of young performers, and the impact of contemporary entertainment forms [1]. Indeed, traditional Chinese opera is a unique cultural product that reflects the Chinese nation's aesthetic taste and artistic expression. It has been an essential source of entertainment and cultural experience for Chinese audiences for centuries. The price of tickets also plays a role in determining the demand for opera performances. Cultural policy and promotion: The government's cultural policy and promotion of traditional Chinese opera can influence the public's awareness and appreciation of this art form and thus affect the demand for opera performances. Demographics and lifestyle [2]: Audiences' demographic characteristics and lifestyle preferences can also impact the need for traditional Chinese opera. For example, older audiences may have a higher demand for traditional forms of entertainment, while younger audiences may prefer modern entertainment forms. Quality and variety of performances: The quality and variety of traditional Chinese opera performances can also affect the demand for this art form. High-quality performances that showcase the artistic excellence of traditional Chinese opera are likely to attract more audiences [3]. Historical and cultural significance: The historical and cultural significance of traditional Chinese opera as a national cultural heritage can also influence the demand for this art form, as it is valued not only for its aesthetic qualities but also for its cultural and historical significance. It is important to understand these determinants to promote and sustain the growth of this cultural treasure in a contemporary context. By identifying these factors, policymakers and cultural organizations can develop strategies to promote and support the development of traditional Chinese opera, as well as enhance its appeal to audiences [4]. Moreover, the research on the demand for traditional Chinese opera can also provide valuable insights into the broader field of cultural economics, which examines the economic and social implications of cultural goods and activities [5]. Overall, the research has significant theoretical and practical implications and can contribute to the sustainable development of this cultural treasure and the broader field of cultural economics [6].

The questions raised about the impact of education and demographics are crucial to understanding and analyzing these factors. Using an econometric approach and time-series data covering 20 years, the study can provide a comprehensive and empirical [7]. The study can also contribute to the formulation of cultural policies that promote sustainable development and other cultural treasures. By identifying policymakers and cultural organizations, we can develop strategies to enhance their appeal to audiences, increase attendance, and sustain their cultural and economic value in the long run. Overall, the research is a valuable contribution to the field of cultural economics and can provide important insights into the consumption behavior and preferences of audiences towards cultural goods and activities [8]. As we proposed, through the development of the SMART model for the analysis of opera heritage archiving and Protection. The concept of conditional independence serves as the cornerstone of numerous research approaches.

*Contribution of study:*

By demonstrating how to employ a theoretical approach to improve a SMART model's performance, the paper contributes to the field. The following is a summary of the research's successes:

- This study implemented the SMART model intervention, which was created after reviewing the findings of earlier research.

- To examine conventional heritage studies, which are focused on preservation and archiving, and to adapt certain methods and ideas to more useful problems.

## 2. Related Works

The investigation analyzed the complexities of artisanship genetically transmitted in Hainan's indescribable cultural legacy, described the design, humanistic implications, and production techniques of the Li people's ship legacy, and summarized the contributions of an innovative deep learning convolutional neural network according to the effective reality model for cultural legacy intangible maintenance to the advancement of conventional skills' intangible cultural heritage [9]. The article showed that it could serve as a foundation for the production of cultural genes and, ultimately, the development of a computable cultural ecology [10]. The case study evaluated whether, with high-performance computer techniques, intangible cultural treasures could be accurately identified and protected. The framework for intangible cultural heritage's digital preservation and development is also being developed [11]. Ni (2023) [12] suggested many workable archival protection options. Using the geographical features of Chinese painting pigment production for marketing is one option. To raise knowledge and appreciation of the art form, a specific method would entail promoting the distinctive features of Chinese traditional heritage-making in different places. Building an archive talent team for the Chinese painting pigment method is another option. To assure the continuous conservation and advancement of the art form, a specific strategy would include selecting and educating a team of experts in the manufacture of pigment for Chinese paintings. Creating an online resource for Chinese traditional heritage-making techniques will also help spread learning about the art form and make it more accessible to a broader audience. Dang et al. (2021) [13] showed that over the relevant time, the volume of published material has continuously grown. Researchers and academic institutions have not worked well together, with ICH protection receiving the majority of the emphasis. The case study discussed that in addition to an effort to project a sense of global cosmopolitanism.

The report made an urgent case for the Chinese and the rest of the world to uphold and carry out UNESCO's goal of fostering ICH as a crucial tool for social inclusion and environmental sustainability [14]. Zhu et al. (2020) [15] examined the contribution of Confucianism to the development of Chinese opera. Educational ideology shapes certain cultural traits by penetrating the psychological underpinnings of pictures from various historical periods. Four different forms of Chinese opera could be distinguished based on an examination of the major topics presented in the works, which also showed Confucian cultural principles including "devotion," filial piety, honesty, and loyalty. Yang (2023) [16] focused on Meishan Nuo Opera and integrated contemporary digital technologies. It deliberates over the methods of protection and creation, employs digital technology to investigate Meishan Nuo Opera's technical art protection and inheritance, conducts investigation into digital innovation, builds a system for computing technology protection and descent innovation, and demonstrates the usefulness of digital technology in the field of intangible cultural heritage. Li (2023) [17] analyzed the process of valuing and implementing Ningbo Opera's intangible cultural property, which supports rural development. The objective is to highlight the significance of Ningbo Opera's intangible cultural legacy in rural rehabilitation and to encourage the achievement of several objectives, including social harmony, economic development, and cultural inheritance. Jin (2023) [18] concluded that Yue Opera has established its position in China's cultural strategy as a unique cultural treasure and has the potential to attract greater public attention. Developing a strategy in conjunction with art management's audience development can assist Yue Opera in resolving issues with its initial audience as well as drawing in new ones. The study examines the literacy of vocal technique in Huai Opera for school-based instruction in Beijing, China. The research, which is based on musicology and ethnomusicology, is carried out inside the Huai Opera School and includes both the Southern and Northern Schools, which are distinguished by their unique vocal styles and regional influences [19]. Li et al. (2023) [20] created a twin scenario of rural cultural heritage using digital dynamic technologies, such as computer picture and video processing, to achieve multifaceted, digitally stored protection and contemporary innovation of rural cultural significance.

*Research gap:*

The lack of investigation into the SMART model's application in the particular context of China's opera impact presents a research gap in the study of the model in opera heritage archiving and protection. Few studies have examined the complex potential and problems posed by Opera Heritage, even though studies recognize the significance of community-based management and technology integration in heritage preservation. Furthermore, comprehensive frameworks that expressly address the complexities of Opera Heritage preservation using SMART approaches are lacking. The investigation would provide insightful information that could prove useful in creating customized plans and resources to protect one of China's most significant cultural legacies.

## 3. Material and Methods

In this study, we discuss the SMART model and analyze how archiving and protecting opera heritage represents a powerful new tool for preserving and promoting this important cultural art form. With continued innovation and development in this area, we can look forward to new and exciting discoveries in the field of opera heritage preservation. The primary objective of the study's design is the examination and use of the SMART model for the preservation and security of opera history, specifically within the framework of Chinese cultural legacy. To secure the preservation and promotion of opera history, the SMART model incorporates modern technology and collaborative practices into a methodical and strategic strategy. The execution of the study involves a complex procedure with several essential elements, such as assessment, identification, integration, collaboration, and evaluation. The data analysis involves using statistical methods, particularly Multiple Regression Analysis and the Chi-Square Test, to assess the efficacy and significance of the SMART model in the preservation of operatic legacy. Multiple Regression Analysis analyzes the links between process variables, whereas the Chi-Square Test evaluates the importance of variables and category linkages. The consequences and implications of the SMART model implementation have been clarified due to these analytical techniques.

### 3.1. Opera Heritage

Depending on the history and objectives of the parties concerned, the phrase "opera heritage" might be interpreted in a variety of ways. It may be material or immaterial, mobile or stationary, new or old, privately or collectively held. In the past, historical "assets" like churches and temples were frequently regarded as certain buildings or memorials. At present, it is considered that a cultural asset's complete surroundings (or location) are of significant value and influence how it interacts with people. Any facets of a community's history and present that people value and want to preserve for future generations may be considered part of their heritage. As a result, heritage is priceless and cannot be replicated.

### 3.2. Opera Heritage Management

The impacts of urbanization, industrialization, climate science, pollutants, and heavy pressure from tourist growth have all taken a toll on opera history in recent decades. Until the 1970s, there was no standard procedure for managing opera legacy; instead, these landmarks were mostly protected via "conservation." Studies on heritage management began in the 1970s, and this concept was initially implemented by the international committee on sites and monuments of the intercontinental commission for archaeological heritage management (ICAHM). During this period, the concept of opera legacy management was investigated on a number of subjects, such as the management of historic sites and buildings, the monitoring and assessment of historical assets, and the management of opera and archaeological resources. Internationally, the technique for managing opera legacy shifted in the 2000s as the concept of long-term preservation emerged as a key tenet for preserving cultural property.

### 3.3. Opera Heritage Archiving and Protection

Opera Heritage Archiving and Protection involves the promotion and preservation of traditional Chinese opera as a cultural legacy. This includes archiving documentation of performances, costumes, makeup, musical compositions, and other artifacts related to Chinese opera. Some of the key aspects of Opera Heritage Archiving and Protection include:

- Documentation and archiving: The creation of digital archives and standardized documentation practices can help preserve the history and context of Chinese opera. This includes recording performances, interviews with performers and experts, and the creation of databases of musical compositions and other artifacts.

- Preservation of physical artifacts: The preservation of costumes, makeup, and other physical artifacts related to Chinese opera is also important. This can involve the development of specialized storage facilities and the use of conservation techniques to protect delicate materials.

- Use of innovative technologies: The use of virtual reality, augmented reality, and other innovative technologies can help to make Chinese opera more accessible and engaging for audiences. This can involve the creation of virtual performances, interactive exhibits, and other digital experiences.

- Community-based heritage management: The involvement of local communities in the preservation and promotion of Chinese opera is critical. Community-based heritage management approaches can help to ensure that the promotion and preservation of Chinese opera are responsive to local needs and interests.

Overall, Opera Heritage Archiving and Protection involves a comprehensive and collaborative approach to the preservation and promotion of traditional Chinese opera. The use of the SMART model can help guide these efforts and ensure that Chinese opera is preserved and promoted for future generations.

### 3.4. SMART Model in the Opera Heritage Archiving and Protection

The SMART model in the context of China Opera Heritage refers to the use of innovative technologies and a smart approach to cultural heritage management and protection. This model highlights how crucial it is to incorporate technology into the promotion and preservation of a rich Chinese cultural legacy, especially when it comes to opera. The use of smart technologies such as virtual reality, artificial intelligence, and digital archives can help enhance the accessibility and understanding of China Opera Heritage while also preserving it for future generations. The SMART model also involves a collaborative approach to heritage management, involving multiple stakeholders such as government agencies, cultural institutions, and the local community. Overall, the SMART model represents a forward-thinking and proactive approach to the shield and promotion of China's cultural legacy.

The flow of the SMART model in the analysis of Opera Heritage Archiving and Protection can be broken down into several key steps: The first step, called *Assessment* involves assessing the current state of Opera Heritage Archiving and Protection in China. This may involve conducting surveys, interviews, and other forms of research to identify the strengths and weaknesses of current approaches to heritage preservation and promotion. The second step, called *Identification*; involves identifying the key challenges and opportunities facing the preservation and promotion of Opera Heritage in China. This may involve conducting a SWOT analysis or other forms of strategic planning to identify areas for improvement and potential areas of collaboration. The third step, called *Integration*; involves integrating innovative technologies and approaches into the preservation and promotion of Opera Heritage. This may involve the creation of digital archives, the use of virtual reality technologies, or the development of latest approach to heritage management and defence. The fourth step, called *Collaboration*; involves collaborating with stakeholders such as government agencies, cultural institutions, and the local community to develop a coordinated approach to heritage preservation and promotion. This may involve developing partnerships, sharing resources, and working together to address common challenges. The fifth step is called *Implementation*; it involves implementing the SMART model in the preservation and promotion of Opera Heritage. This may involve piloting new approaches, monitoring progress, and making adjustments as needed. The final step is called *Evaluation*; it involves evaluating the impact of the SMART model on the preservation and promotion of Opera Heritage in China. This may involve conducting assessments, surveys, and other forms of research to measure the effectiveness of the model and identify areas for improvement. Figure 2 depicts the overall architecture of the SMART model.
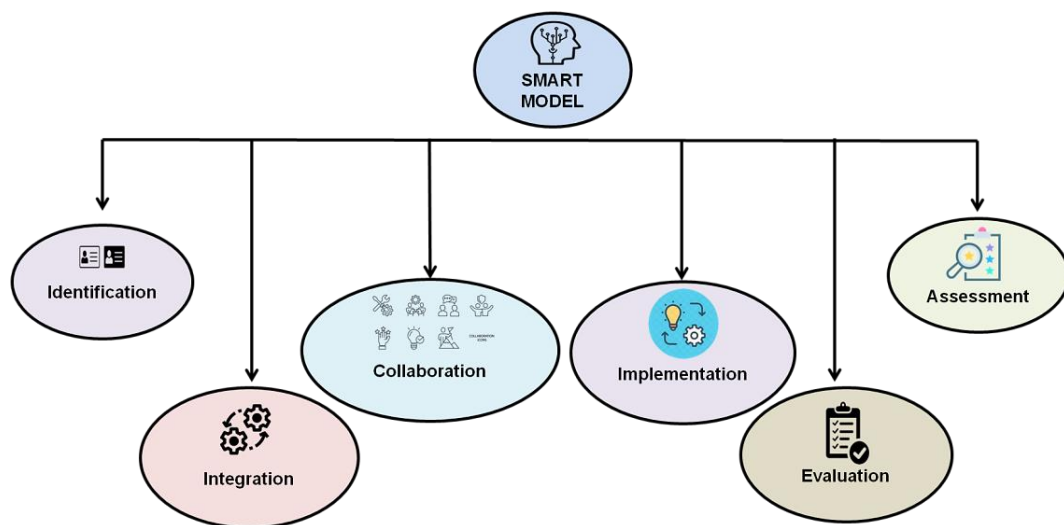


**Figure 2. SMART model architecture**

Overall, the flow of the SMART model in the analysis of Opera Heritage Archiving and Protection involves a comprehensive and collaborative approach to heritage preservation and promotion that integrates innovative technologies and approaches.

### 3.5. Statistical Analysis

### 3.5.1. Chi–Square Test

The Chi-Square test evaluates the importance of categories of variables. It calculates the difference between expected and observed frequencies within different categories and assesses the probability that this difference can be attributed only to probability. The chi-square distribution is used, and variable independence is assumed in the test. Chi-square analysis is one statistical method that can test a hypothesis most successfully when there are few components, as in clinical trials. Unlike other statistics, it can provide precise information about the categories responsible for any

significant variability and the significance of any such variability. The non-parametric test uses frequencies in place of the standard deviation and mean. The objective of a test is to evaluate the hypothesis, not to estimate it. It has been indicated that this is an is an experiment.

$$\sum X_{i-r}^2 = \frac{(P-L)^2}{L} \tag{1}$$

Where; $P$ stands for the present circumstances, $L$ represents the actual point, $X^2$ is frequency chi-squared, and $\Sigma X^2$ is the equation exceeds the chi-square values for each row.

Regardless they received management or not, the predicted Chi-Square estimates are as follows,

$$L = \frac{M_G \times M_T}{Q} \tag{2}$$

Where; $L$ indicates that the device is operational, $M_T$ demonstrates the cell nucleus's row boundary, $M_G$ depicts the row boundary, and $Q$ represents the complete collection of samples.

To calculate the sample size, the column and row borders of each molecule are multiplied.

$$x^2 = \frac{(B-L)^2}{L} \tag{3}$$

A correlation measure is a statistical indicator of how strong the connection occurs. The calculating process utilizing equation is made simpler by the Equation 4:

$$\sqrt{\frac{x^2/q}{(f-1)}} = \sqrt{\frac{x^2}{q(q-1)}} \tag{4}$$

The Chi-square is a potent data analysis tool that provides extensive definitions for the properties of research data. Consider a contingency table that has $c$ columns and $r$ rows. The measured frequency is denoted by $Q(j,i)$, for each row $j$, and column $i$, and the frequency expectations were represented by $A(j,i)$.

$$Y^2 = \Sigma \left( \frac{(Q(j,i)-A(j,i))^2}{A(j,i)} \right) \tag{5}$$

Where statistic from the chi-square test is $Y^2$, $\Sigma$ represents the sum of all values, $Q(j,i)$ is the row-j, column-i frequency of the cell, and $A(j,i)$ represents the expected cell frequency at column $i$ and row $j$.

The chi-squared statistic, which calculates the whole difference between actual and expected frequency for each contingency table, is the resultant total.

The chi-squared $Y^2$ test statistic can be obtained using the Equation 6:

$$Y^2 = \Sigma \left( \frac{(Q-A)^2}{A} \right) \tag{6}$$

When the Chi-square test estimate is displayed, solve for $Y^2$. The projected frequency of each contingent table cell is reflected in A, while the aggregate of all values is represented by $\Sigma$. $Q$ Represent the frequencies of the contingency table cells. The statistical significance of the categorical variable connection is determined by this statistic.

### 3.5.2. Multiple Regression Analysis

The multiple conversions technique is used to determine the connection between the process variables. Regression equations can employ multiple designs, including complete models, interaction models, and linear and quadratic models.

Linear expression,

$$z = \beta_0 + \beta_1 V_1 + \beta_2 V_2 + \beta_3 V_3 \dots \tag{7}$$

The quadratic formula:

$$z = \beta_0 + \beta_1 V_1 + \beta_2 V_2 + \beta_3 V_3 + \beta_4 (V_1)^2 + \beta_5 (V_2)^2 + \beta_6 (V_3)^2 \tag{8}$$

Equation of interaction:

$$z = \beta_0 + \beta_1 V_1 + \beta_2 V_2 + \beta_3 V_3 + \beta_4 V_1 V_2 + \beta_5 V_1 V_3 + \beta_6 V_2 V_3 \dots \tag{9}$$

Whole design:

$$z = \beta_0 + \beta_1 V_1 + \beta_2 V_2 + \beta_3 V_3 + \beta_4 (V_1)^2 + \beta_5 (V_2)^2 + \beta_6 (V_3)^2 + \beta_7 V_1 V_2 + \beta_8 V_1 V_3 + \beta_9 V_2 V_3 \dots \tag{10}$$

Where $V_1$, $V_2$ & $V_3$ are variables that predict and $z$ is the criteria variable. The coefficients of regression are $\beta_1, \beta_2$ and $\beta_3$.

# 4. Analysis of the SMART Model in the Opera Heritage Archiving and Protection

China has an extensive traditional legacy that is knit together from a wide range of traditions, beliefs, and practices that have persisted over many generations. These cultural riches, which range from the graceful calligraphic strokes to the vivid colors of traditional painting, the disciplined motions of martial arts, and the exquisite flavors of Chinese food, enthrall audiences not only in China but also across the world. Table 1 provides evidence of the widespread distribution of traditional heritage in China. The propagation of traditional legacy has become a major theme in China's cultural landscape in recent years, driven by the country's coordinated attempts to maintain its cultural identity in the face of globalization and industrialization. China is embracing modernity and evolving, and as a result, maintaining and advancing its traditional history is essential for maintaining cultural continuity as well as for fostering pride in the country and international acknowledgment of its rich cultural past. The propagation of traditional legacy serves as a link between the past and the present, a symbol of China's ongoing cultural vitality, and a pillar of the country's identity in a world that is changing rapidly.

**Table 1. Analysis of traditional heritage to Dissemination in China**

| Years | Revenue in billions | Annual rate of development | Rate of growth (%) |
|-------|--------------------|-----------------------------|--------------------|
| 2015 | 319.55 | 0 | 0 |
| 2016 | 356.90 | 36.36 | 11.5 |
| 2017 | 434.87 | 74.98 | 15.7 |
| 2018 | 466.65 | 18.79 | 3.8 |
| 2019 | 510.31 | 47.67 | 8.8 |
| 2020 | 506.32 | 48.78 | 10.1 |
| 2021 | 456.66 | 30.04 | 8.7 |
| 2022 | 385.7 | 23.12 | 7.9 |

A variety of communication strategies are used in an attempt to increase public understanding of cross-cultural communication. In this article, the propagation strategies based on the SMART mode (Figures 3(a) and 3(b)) are compared with those that are implemented using traditional methods. Modern distribution techniques have been compared to creative ways that follow the SMART paradigm in recent years. This comparison emphasizes the way cultural communication is changing and how effective it is to integrate contemporary technology and strategic frameworks to promote cross-cultural contact.
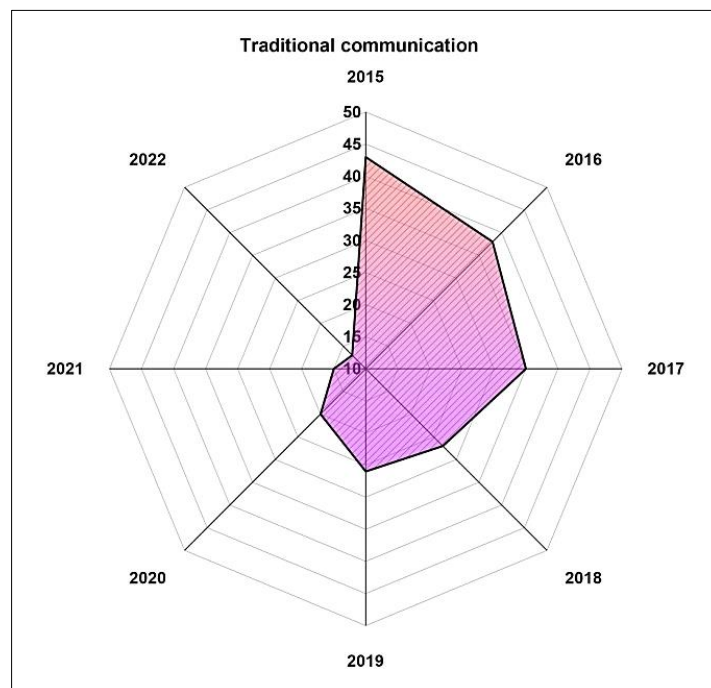


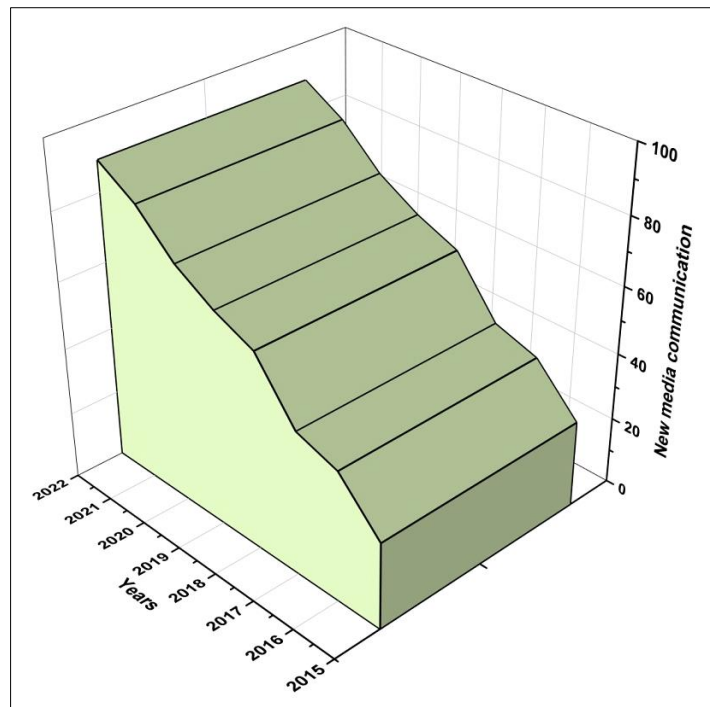**Figure 3(a). Improvement of traditional communication**

**Figure 3(b). Improvement of communication-based on SMART model**

Opera heritage is a medium for showcasing many civilizations and providing spectators with a view into a multitude of cultural narratives. Immersion in operatic performances allows spectators to learn about many cultures and develop an understanding of the subtle creative and historical elements present in the work. To differing degrees, this experience frequently causes their perception of culture to change. Although audiences are usually well aware of traditional culture, it's possible that prior cultural distribution methods hindered their comprehension. To get a sense of the opinions and experiences of 100 opera aficionados worldwide, we conducted a survey as part of this study. Their fundamental data is shown in Table 2:

**Table 2. Basic facts about 100 devotees in the heritage of global opera**

| Fundamental circumstance | Subjects | Quantity of individuals |
|---|---|---|
| Ages | 25 to 40 | 56 |
| | > 40 | 46 |
| Gender identity | Men | 48 |
| | Women | 54 |
| Level of Educational | Beneath the junior high level | 21 |
| | Elementary school or higher | 77 |

According to Table 2, the gender split among the 100 respondents is essentially the same. There are far more people in this age group than any other. The percentage of people with junior high school graduations or above is higher. In Tables 3 and 4, the paper assesses how well 100 individuals recognize and are knowledgeable of the heritage of opera across the world.

**Table 3. The acknowledgment of the world opera heritage by 100 devotees**

| Approval | Quantity of people | Percentages (%) | Efficient percentage (%) |
|---|---|---|---|
| Completely in agreement | 52 | 52 | 52 |
| Identification | 31 | 31 | 31 |
| Neither concur nor dispute | 11 | 11 | 11 |
| Not in agreement | 6 | 6 | 6 |
| Disagree severely | 5 | 5 | 5 |

**Table 4. The 100 devotee's awareness about the opera heritage across the world**

| Approval | Number of individuals | Percentages (%) | Percentage of efficiency (%) |
|---|---|---|---|
| Understand deeply | 13 | 13 | 13 |
| Overall knowledge | 21 | 21 | 21 |
| Not understanding | 44 | 44 | 44 |
| Extremely unaware | 26 | 26 | 26 |

The majority of the population has a distinct identity and a long-standing worldwide Opera heritage, as demonstrated in Tables 3 and 4. Worldwide Opera heritage has a very high level of fundamental popular recognition. 52 individuals, or 52%, say they strongly identify with international Opera heritage. Until now, just 13 people, or 13% of the population, are knowledgeable about global Opera heritage. The great majority of those surveyed, however, lacked a deeper knowledge of and awareness of other traditional cultures. Several respondents said they were familiar with and had heard of these civilizations, but they had not done a thorough investigation of the cultural essence they carried.

Due to the various risks and difficulties these historical places face, protecting Opera Heritage has been a key priority in recent years. Opera Heritage sites are vulnerable to a variety of threats that compromise their preservation, including urban development pressures and environmental degradation. Considering these obstacles, deliberate measures have been implemented to ensure the protection and preservation of Opera Heritage. An increasingly popular strategy is using the SMART model, a strategic management tool well-known for its efficiency in performance monitoring, goal-setting, and progress assessment. Through the application of the SMART model, parties engaged in the preservation of Opera Heritage may set specific goals, outline feasible approaches, and track the effectiveness of their conservation efforts. Figure 4 and Table 5 depict the protection of opera heritage by using the SMART model. Overall, using the SMART model in the year 2022 has had better effectiveness.
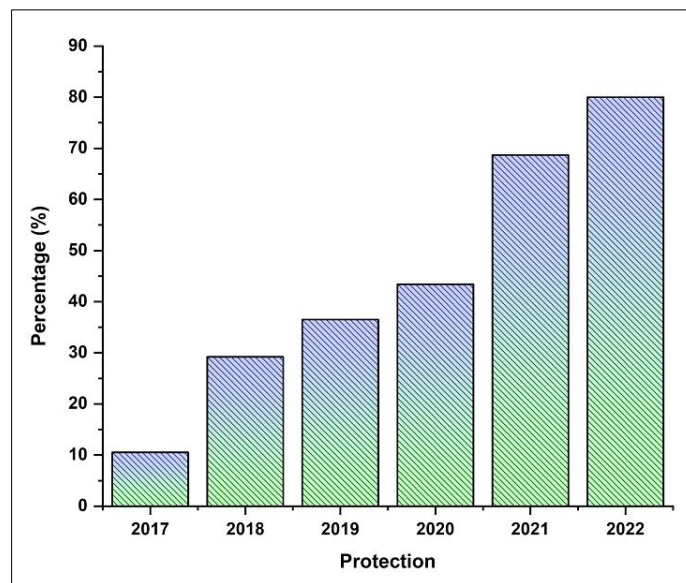


**Figure 4. SMART model in opera heritage protection**

**Table 5. The Protection of opera heritage by using the SMART model**

| Protection of the year | Percentage (%) |
|---|---|
| 2017 | 10 |
| 2018 | 28 |
| 2019 | 37 |
| 2020 | 44 |
| 2021 | 69 |
| 2022 | 80 |

Developing a SMART model for opera heritage involves identifying the relevant parameters that affect the sustainability and growth of this cultural treasure. Some possible parameters to consider are illustrated in Figure 5.
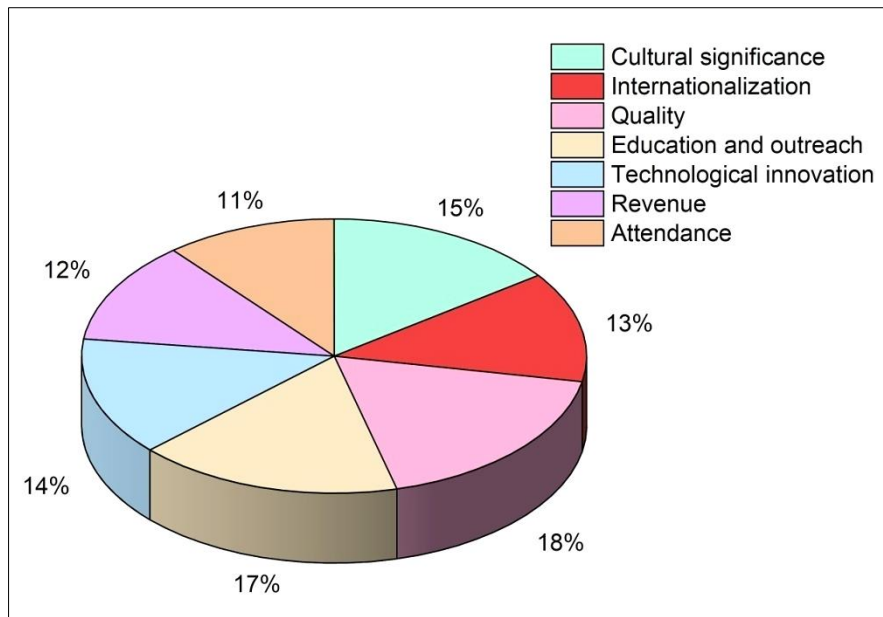
**Figure 5. Parameters of SMART representation**

*Attendance*: The number of people attending traditional Chinese opera performances is an important parameter to consider, as it reflects the popularity and demand for this art form, which achieves only 11%. ***Revenue***: The revenue generated from traditional Chinese opera performances, such as ticket sales and merchandise, is another important parameter to consider, as it reflects the economic value and sustainability of this art form and achieves 12%. ***Technological innovation***: The adoption of modern technology and innovative stage design in traditional Chinese opera performances is an important parameter to consider, as it can enhance audience experience and appeal to new generations of audiences, and it achieves 14%. ***Cultural significance***: The cultural and historical significance of traditional Chinese opera as a national cultural heritage is an important parameter to consider, as it affects its social and symbolic value to Chinese society and achieves 15%. ***Education and outreach***: The promotion of traditional Chinese opera education and outreach programs to younger audiences is an important parameter to consider, as it affects the future sustainability and growth of this art form, and it achieves 17%. ***Internationalization***: The promotion and exposure of traditional Chinese opera to international audiences and markets is an important parameter to consider, as it can increase its cultural influence and economic value on a global scale, and it achieves 13%. ***Quality***: The artistic quality and innovation of traditional Chinese opera performances are important parameters to consider, as they affect audience satisfaction, and while comparing other parameters, to improve more effectiveness, it achieves 18%.

## 5. Conclusion

The SMART model is a useful tool for analyzing and managing opera heritage archiving and protection. By using this model, opera heritage organizations can ensure their archival and protection strategies. By applying the SMART model, an innovative approach is developed that combines technology, strategic planning, and cooperative efforts to guarantee the survival and appreciation of opera history, particularly in relation to Chinese heritage. The current study explores into the intricate aspects of opera tradition, recognizing its varied interpretations and immense importance in shaping cultural identity. The SMART approach provides a systematic framework that includes assessment, identification, integration, cooperation, and evaluation to effectively manage the preservation and promotion of opera history. The significance and importance of the SMART model in the context of opera heritage preservation have been revealed by statistical studies such as the Chi-Square Test and Multiple Regression Analysis. This study demonstrates the value of cooperation, technical advancement, and strategic planning in protecting opera heritage from challenges like urbanization and environmental deterioration. The examination of 100 global opera enthusiasts highlights the way the idea of opera legacy is changing. Additionally, our study clarifies the significance of community involvement, public awareness initiatives, and international cooperation in preserving and advancing opera history globally. In order to preserve and promote opera history through creative methods and teamwork, the conclusion acts as a call to action for the academic community. It calls for practical, actionable scholarship to be conducted.

## 6. Declarations

### 6.1. Author Contributions

Conceptualization, X.L. and W.Z.; methodology, X.L., W.Z., and Y.D.; formal analysis, L.Z. and N.C.; investigation, Y.D.; writing—original draft preparation, X.L., W.Z., and Y.D; writing—review and editing, X.L., W.Z., Y.D., L.Z., and N.C. All authors have read and agreed to the published version of the manuscript.

### 6.2. Data Availability Statement

The data presented in this study are available in the article.

### 6.3. Funding and Acknowledgements

### 6.4. Institutional Review Board Statement

Not applicable.

### 6.5. Informed Consent Statement

Not applicable.

### 6.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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