

Analysis of the Evolution of the Program Structure, Trend Prediction, and Planning Suggestions for the Shanghai Spring International Music Festival

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Abstract:

This study takes the historical program lists of the Shanghai Spring International Music Festival as its research object. Based on structured long-term data, it applies descriptive statistics, keyword analysis, correlation analysis, principal component analysis (PCA), and linear trend prediction to examine the structural evolution and planning value of four program categories: Chinese instrumental music, Western instrumental music, vocal music, and integrated stage performances. The results show that the program structure of the festival has undergone a process of development from the early prominence of vocal music and Chinese instrumental music to the rapid expansion of Western instrumental music in the middle period, and then to a recent pattern characterized by a balance between Chinese and Western music as well as diversified integration. Further analysis using borrowing data from professional institutions shows that professional groups have maintained and gradually increased their interest in Chinese traditional music, while the program supply still reveals a structural problem: insufficient representation of local Chinese cultural content and a relatively high proportion of Western music. Data analysis can therefore provide useful references for festival planning, program structure optimization, and urban cultural communication.

Keywords:

Program Structure of the Shanghai Spring International Music Festival, Descriptive Statistics, Keyword Analysis, Correlation Analysis, Principal Component Analysis, Trend Prediction

1. Introduction

Against the background of digital cultural development, traditional arts festival materials are gradually being transformed from archival texts into data resources that can be organized, calculated, and analyzed. Music festival programs not only record performance content, but also reflect changes in artistic production, aesthetic preferences, urban cultural positioning, and social demand. Founded in 1960, the

Shanghai Spring International Music Festival is one of China's important music festivals. It has witnessed the development of music creation and performance mechanisms in New China, as well as musical exchanges between Chinese and Western traditions in Shanghai. Existing studies have mainly relied on literature review and historical narration, while quantitative analysis of program structure, stage division, and trend prediction remain insufficient. This study takes the historical program lists as its research object, analyzes four categories of programs—Chinese instrumental music, Western instrumental music, vocal music, and integrated stage performances—and introduces borrowing data from professional institutions. From the perspectives of program supply and professional demand, it examines the structural evolution of the festival and provides data-based references for festival planning and resource allocation.

2. Materials and Methods

2.1. Data Sources and Data Structure

The data used in this study mainly come from the compiled program lists of the Shanghai Spring International Music Festival. Taking year and edition as the main timeline, the program contents were classified to form a structured dataset covering 40 editions of the festival. According to program type, the data were divided into four categories: Chinese instrumental music, Western instrumental music, vocal music, and integrated stage performances. Among them, there were 327 vocal music performances, 301 Chinese instrumental music performances, 100 integrated stage performances, and 481 Western instrumental music performances, as shown in Table 1.

Table 1. Basic Structure of the Program Data of the Shanghai Spring International Music Festival.

Category	Number of Editions Covered	Number of Performances	Number of Subcategories	Total Frequency
Vocal Music	40	327	5	2411
Chinese Instrumental Music		301	23	1646
Integrated Stage Performance		100	3	282
Western Instrumental Music		481	24	1936

In addition to the overall number of performances, the data also record the internal sub-elements of each program category, such as vocal music types, Chinese musical instruments, Western musical instruments, and forms of integrated stage performances. During data processing, the fields for different years, categories, and performances were first standardized, including year, edition, performance title, program category, and sub-elements. Since the program lists cover a long time span, naming conventions and classification methods vary across different periods. Therefore, synonyms, similar terms, and category boundaries were standardized. Missing values, duplicate records, and obvious abnormal entries were then checked to ensure the comparability of statistical results across different years. Finally, a macro-level matrix of “year and program type” and a micro-level matrix of “performance and sub-elements” were constructed, providing a basis for subsequent statistical analysis and visualization.

2.2. Analytical Methods

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3. Results and Discussion

3.1. Long-Term Evolution of Program Structure

From the perspective of long-term evolution, the program structure of the Shanghai Spring International Music Festival can be divided into three stages, as shown in Figure 1 and Figure 2. The first stage, from the 1960s to the early reform period, was locally oriented, with vocal music and Chinese instrumental music accounting for a large proportion. The second stage, from the 1990s to the early 21st century, was marked by the rapid growth of Western instrumental music, especially symphonic, piano, and orchestral programs, reflecting the festival’s increasing role in international musical exchange. The third stage, mainly since the 2010s, shows a more diversified structure, with the recovery of Chinese instrumental music, the stable presence of Western instrumental music, and the gradual growth of integrated stage performances. Overall, the festival has shifted from a local performance platform to a comprehensive arts festival featuring both Chinese-Western balance and program diversity.

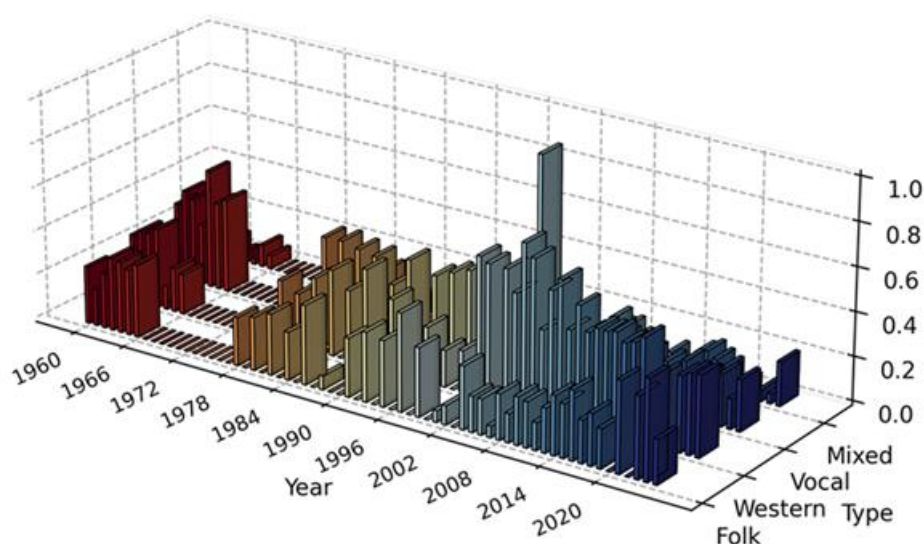


Figure 1. Three-Dimensional Bar Chart Comparison of the Annual Scale of Four Program Categories.

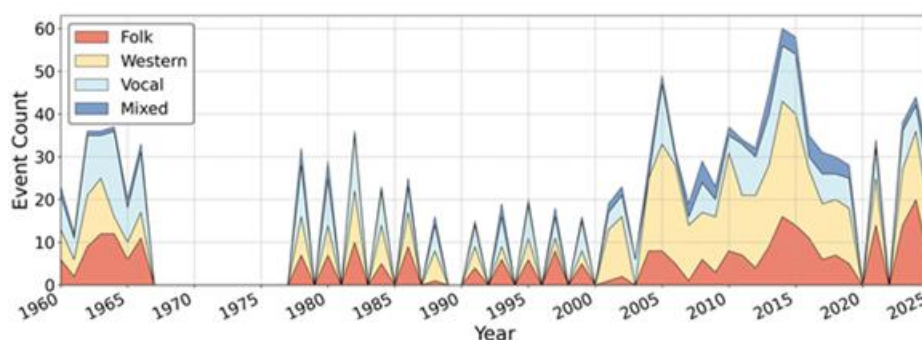


Figure 2. Stacked Area Chart of the Annual Number and Structural Proportion of Four Program Categories.

3.2. Keyword Features and Internal Program Logic

Figure 3 presents the keyword frequency statistics extracted from performance titles. Overall, the four program categories differ not only in quantity, but also in terms of institutional support, artistic resources, and performance forms.

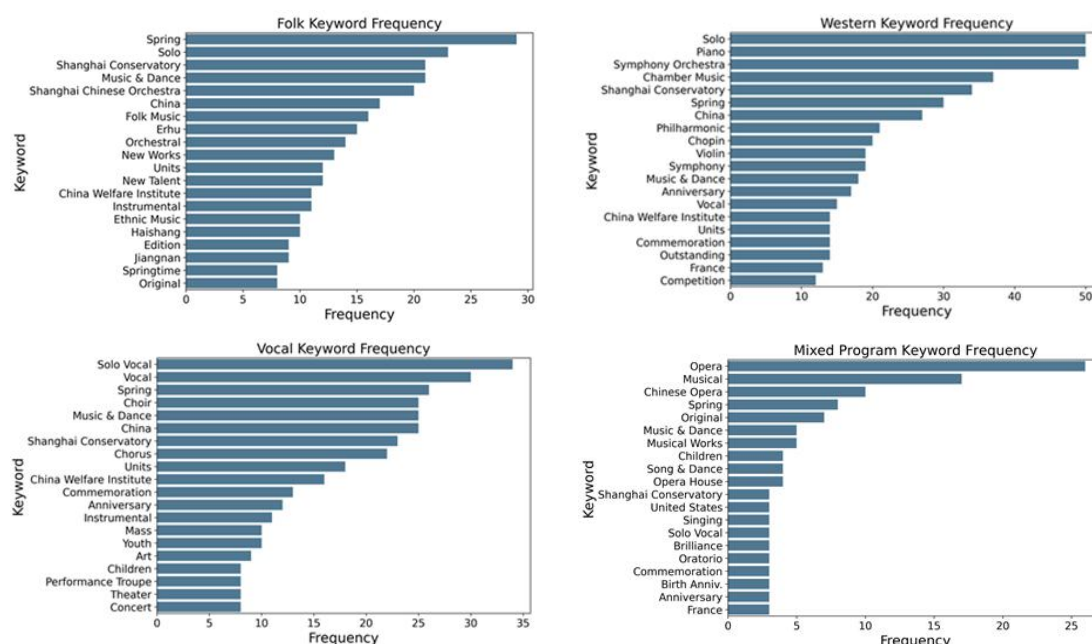


Figure 3. Keyword Frequency Statistics Based on Event Titles.

In the Chinese instrumental music section, institutional terms such as “Shanghai Conservatory of Music” and “Shanghai Chinese Orchestra” appear frequently, indicating that Chinese instrumental programs mainly relied on professional music institutions and performing ensembles. The frequent appearance of “erhu” also highlights its representative role in the modernization of Chinese instrumental music. In the Western instrumental music section, keywords such as “symphony”, “piano”, and “symphony orchestra” are prominent, reflecting the features of large-scale, professional, and internationalized programming. In the vocal music section, both solo and choral forms appear, showing the coexistence of collective expression and individual performance. Integrated stage programs mainly include composite forms such as opera, musical theatre, and traditional opera, reflecting the expansion of the festival’s stage presentation.

This indicates that the programming of the Shanghai Spring International Music Festival was not a simple accumulation of performances but followed a relatively stable curatorial logic shaped by professional institutions, performing ensembles, competition mechanisms, commemorative themes, and urban cultural activities.

3.3. Correlation and PCA Results

Figure 4 presents the proportion of the four major program categories and their differenced correlation matrix. The correlation analysis shows that the relationships among different program types are not simply a matter of one increasing while another decreases. During periods of overall festival expansion, some program types grew simultaneously, indicating that increased resources could support the development of multiple categories. However, in certain stages, the rapid expansion of Western instrumental music also reduced the relative proportion of other categories, showing a certain degree of structural competition.

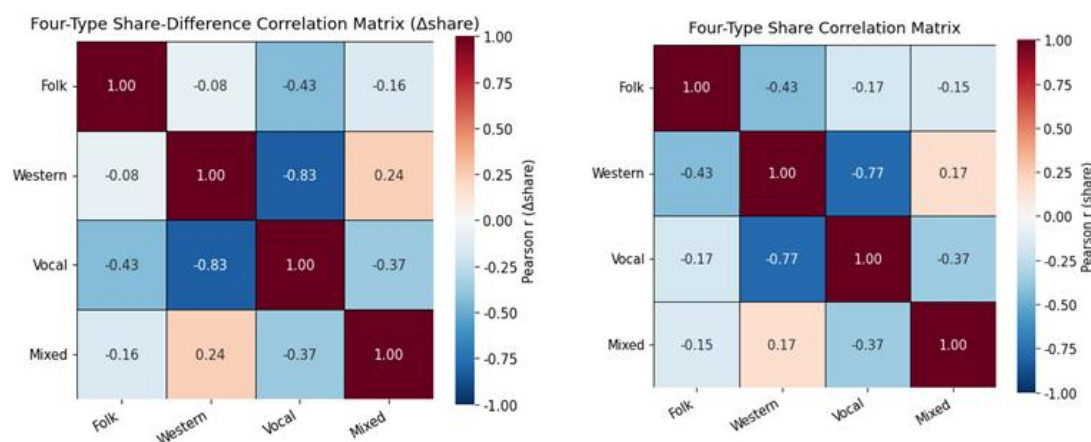


Figure 4. Correlation Matrix of Proportions and Differences among the Four Major Program Categories.

This result suggests that the evolution of the program structure of the Shanghai Spring International Music Festival was influenced not only by changes in the overall number of performances, but also by planning orientation, artistic resources, and changing cultural demands. Therefore, changes in the proportions of different program types should not be understood merely as numerical fluctuations but should be interpreted within the broader context of the festival's functional positioning, urban cultural development, and Chinese-Western musical exchange.

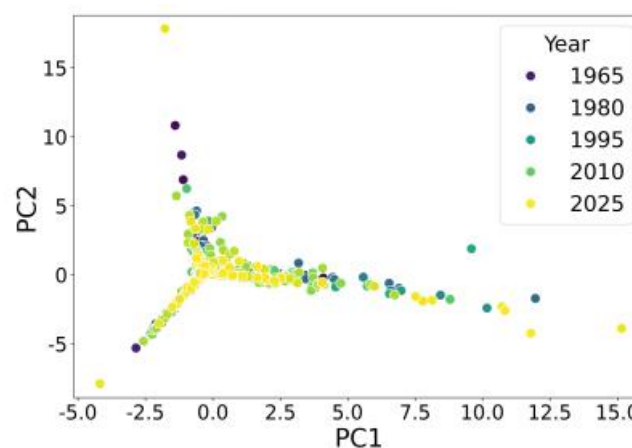


Figure 5. Principal Component Analysis (PCA).

Figure 5 presents the results of the principal component analysis. By reducing complex program elements to several major dimensions, the yearly samples can be seen not as randomly distributed, but as showing a gradual dispersion over time. The samples from earlier years are relatively concentrated, indicating that the program types and structural features were relatively stable. In contrast, the samples from later years are more dispersed, suggesting that the festival's program structure gradually became more complex and diversified.

This result shows that the structural evolution of the Shanghai Spring International Music Festival was not a simple replacement of one program type by another, but a process in which multiple program types were reorganized across different historical periods. In the early stage, the structural core was mainly composed of vocal music and Chinese instrumental music. In the middle stage, Western instrumental music became a new dominant variable. In recent years, Chinese instrumental music has recovered, integrated stage performances have expanded, and multiple program types have begun to coexist. Overall, the principal component analysis indicates that the festival's program structure is shifting from a single-dominant model toward a more balanced and composite structure.

3.4. Supply-Demand Comparison Based on Borrowing Data

Based on program-list data alone, this study can reveal the festival's supply structure, but it cannot fully show whether the supply matches professional demand. Therefore, borrowing data from professional institutions are introduced as a demand-side reference.

Figure 6, Figure 7, Figure 8 show that demand for Chinese traditional music among professional learners remained stable and slightly increased over time. Doctoral students showed a stronger preference for Chinese traditional music than master's and undergraduate students, suggesting that higher levels of professional study are associated with greater attention to Chinese music theory, history, and local traditions.

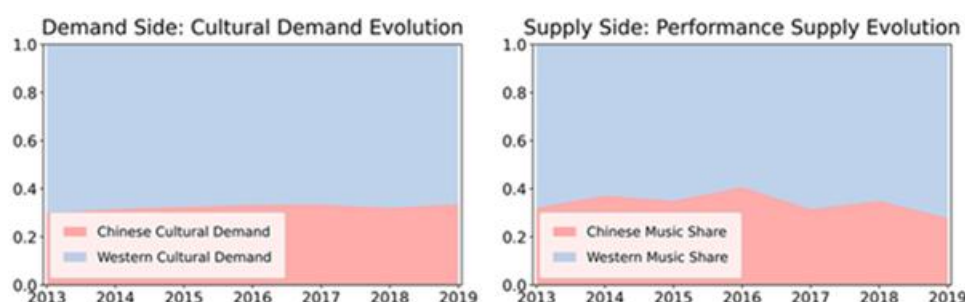


Figure 6. Temporal Evolution of Cultural Market Supply and Demand Structures.

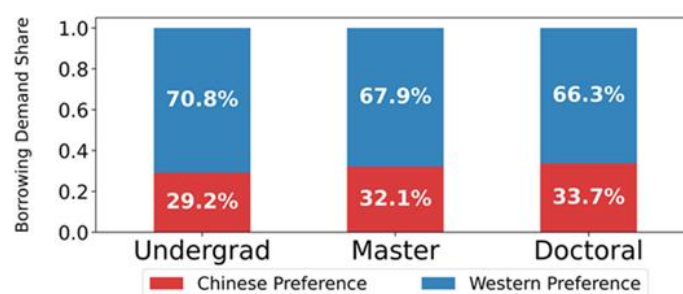


Figure 7. Differences in Cultural Aesthetic Preferences by Educational Background.

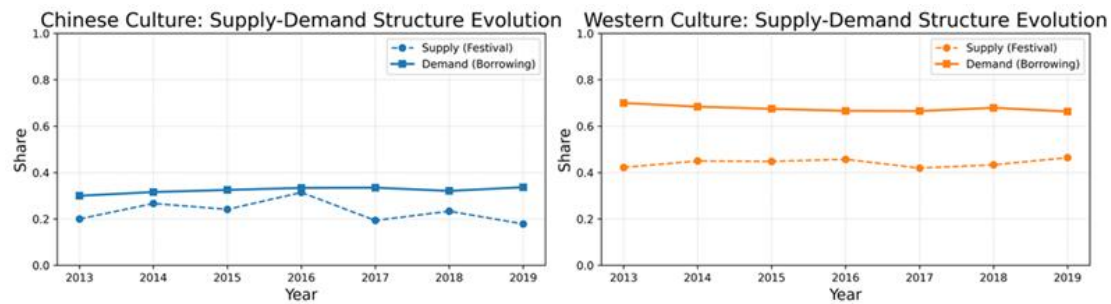


Figure 8. Evolution Trends of Chinese and Western Cultural Supply and Demand.

However, the festival's program supply in some periods still leaned toward Western music, especially Western instrumental music. This indicates a structural mismatch between program supply and professional demand. While maintaining its international vision, the festival should pay more attention to the growing demand for local Chinese musical culture. A data-based supply-demand comparison mechanism can therefore provide useful support for future festival planning.

3.5. Implications for Festival Planning

Figure 9 presents the trend prediction for the four program categories over the next twenty years. The result is not an exact forecast of the number of performances, but a trend-based judgment derived from historical data. Overall, Chinese instrumental music and integrated stage performances show an upward trend, Western instrumental music remains at a relatively high level but with slower growth, while vocal music may decline to some extent. This suggests that future festival planning should adjust the program structure by considering historical evolution, supply-demand relations, and changing trends.

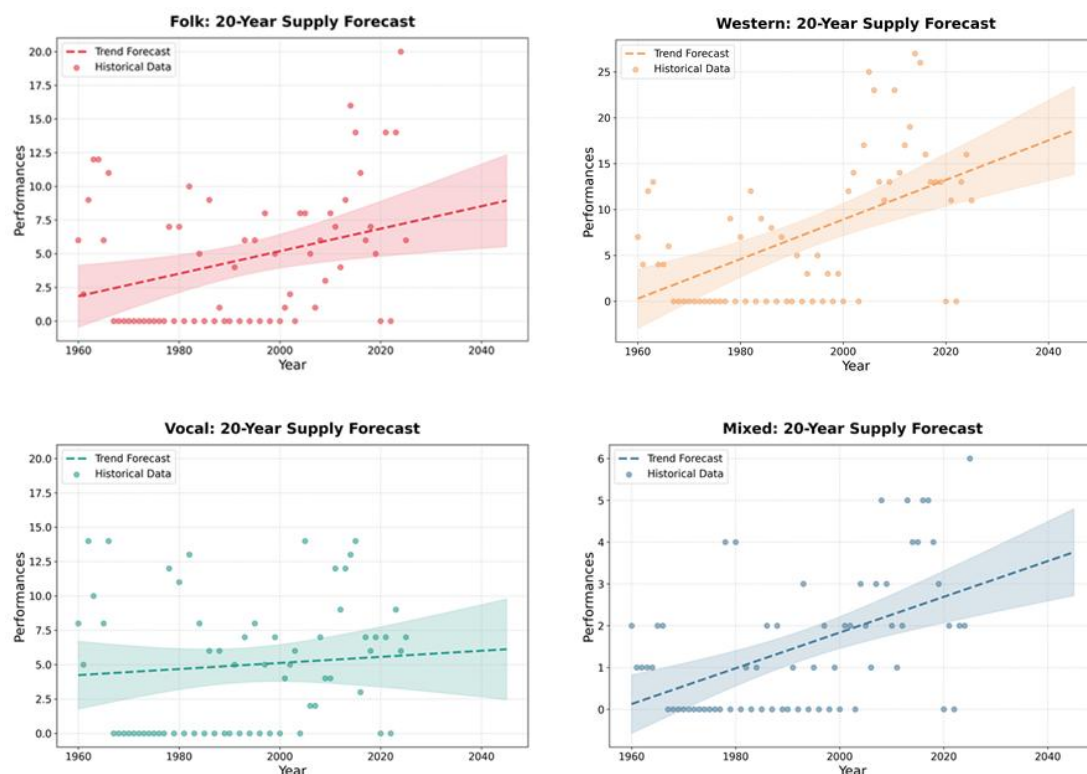


Figure 9. Predictive Analysis.

Based on the prediction results, future planning can be optimized in four aspects. First, the supply of Chinese music and Chinese traditional music should be strengthened, developing Chinese instrumental music from scattered programs into a continuous and branded section. Second, a balance between Chinese and Western music should be maintained. While preserving the international advantages of Western instrumental music, projects such as Chinese-Western instrumental collaboration and cross-cultural commissioned works should be promoted. Third, integrated stage performances and cross-genre programs should be developed appropriately, encouraging composite forms such as “music and theatre”, “music and image”, and “music and urban memory”. Fourth, vocal music programs should be renewed by expanding from traditional choral and solo performances to themed vocal concerts with stronger contemporary relevance.

Overall, the trend prediction provides a useful reference for festival planning. In the future, the Shanghai Spring International Music Festival should establish a data-driven planning and evaluation mechanism, continuously recording program types, performing institutions, work themes, and audience feedback, so as to promote a shift from experience-based planning to a combined model of “experience judgment and data support”.

4. Conclusions

This study analyzes the historical program lists of the Shanghai Spring International Music Festival using descriptive statistics, keyword analysis, correlation analysis, principal component analysis, and trend prediction. The results show that the festival’s program structure has experienced three stages: local dominance, international expansion, and diversified integration. Vocal music and Chinese instrumental music formed the early foundation, Western instrumental music expanded rapidly in the middle period, and recent years have shown a more balanced and diverse structure.

Keyword analysis shows that Chinese instrumental music is closely linked to professional institutions and performing ensembles, while Western instrumental music centers on symphony, piano, and orchestral programs. Correlation and principal component analyses indicate that the structural change was not a simple replacement of one category by another, but a reorganization of multiple program types over time.

Borrowing data from professional institutions further show stable and increasing attention to Chinese traditional music, while the festival’s supply still shows insufficient representation of local music in some periods. Therefore, the festival should maintain its international vision while strengthening local music resources and optimizing its program structure. Future studies may include audience feedback, box office data, and media communication data.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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