

Research on Performance Measurement and Promotion Countermeasures of Digital Culture Industry in Zhejiang Province

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Abstract: After years of development, the digital culture industry in Zhejiang Province has achieved certain economies of scale, and has become one of the important industrial pillars in Zhejiang Province, occupying an important position in the national economy of Zhejiang Province. However, as far as the current situation is concerned, the development status of digital culture industry in Zhejiang Province is not optimistic. The low risk-resistance ability of enterprises, the lack of core technologies, improper government intervention and insufficient financial support have become the main bottlenecks to comprehensively improve the quality of digital culture industry. In this paper, qualitative and quantitative methods are used to study the development performance of digital culture industry and the mechanism of influencing factors, and the causes of existing problems are explained from a comprehensive perspective, and then the influence mechanism of public sector, industrial sector and financial market on the development performance of digital culture industry is discussed. In this paper, the connotation, development trends, existing problems and the scientific laws contained in the digital culture industry in Zhejiang Province are investigated in detail, which is conducive to promoting the development of economy and enterprises on the track of innovation-driven and endogenous growth, and will certainly bring huge economic and social benefits.

1. Introduction

The national "14th Five-Year Plan" and the long-term goal in 2035 points out that during the "14th Five-Year Plan", "public cultural service system and cultural system will be more perfect, the people's spiritual and cultural life is increasingly enriched, the influence of Chinese culture is further enhanced, and the cohesion of the Chinese nation is further enhanced [1]. " Zhejiang Province "strives to build a cultural highland in the new era, with the advanced culture led by the innovative theory, the culture represented by the Boat Spirit, the excellent traditional culture based

on Zhejiang history, the innovative culture based on Zhejiang spirit, and the digital culture supported by the digital economy flourishing and developing in an all-round way"[2].

After years of development, the digital culture industry in Zhejiang Province has achieved certain economies of scale, and has become one of the important industrial pillars in Zhejiang Province, occupying an important position in the national economy of Zhejiang Province. In December, 2020, the Notice of the General Office of Zhejiang Provincial People's Government on Printing and Distributing the Action Plan of Digital Empowerment to Promote the Development of New Business Forms and Models in Zhejiang Province (2020-2022) put forward that "Zhejiang Wisdom Culture Cloud" should be improved and digital libraries and cultural centers should be actively promoted. Promote the digital transformation of industries such as performing arts and entertainment, cultural exhibitions, etc., accelerate the development of digital cultural industries such as digital audio and video and live webcast [3-5], and foster new cultural formats and consumption patterns such as cloud tourism. In the end, "the cultural self-confidence is fully demonstrated, the cultural image is more vivid, and the cultural quality is significantly improved, forming a new pattern of cultural Zhejiang with international influence, Chinese style, ancient and modern splendor, and the blending of poetry and painting".

However, as far as the current situation is concerned, the development status of digital culture industry in Zhejiang Province is not optimistic. The low risk-resistance ability of enterprises, the lack of core technologies, improper government intervention and insufficient financial support have become the main bottlenecks to comprehensively improve the quality of digital culture industry. Under this background, this paper uses qualitative and quantitative methods to study the development performance of digital culture industry and the mechanism of influencing factors, and explains the causes of existing problems from a comprehensive perspective, then discusses the influence mechanism of public sector [6], industrial sector and financial market on the development performance of digital culture industry, and studies their different roles in the development process.

2. Literature Review at Home and Abroad

At present, there are different research theories and perspectives of digital culture industry in academic circles, and the related literatures at home and abroad focus on the definition, present situation, technical analysis, existing problems, countermeasures and suggestions of digital culture industry. However, there are still gaps in the research on the digital cultural industry policy:

- Foreign literatures mainly put forward the countermeasures to promote the innovation and development of digital culture industry through technical analysis, exploring industrial development environment and specific research on sub-industries [7], but there are few researches on the measurement and policy of digital culture industry performance.

- Most domestic literatures focus on the importance, existing problems and development paths of developing digital culture industry to the economy, and some studies are focused on comparing the development paths of foreign digital culture industries and summarizing advanced experiences [8]. Only a few scholars have made a preliminary study on the content of digital culture industry, and have not yet formed a perfect theoretical research system for the research framework of performance measurement and policy text.

- Because the statistical caliber of digital cultural industry data is not perfect, most theoretical studies are still in the qualitative research stage, lacking the research methods combined with theories and mathematical models [9].

Therefore, qualitative and quantitative methods are used to study the development performance of digital culture industry in Zhejiang Province and the mechanism of influencing factors. The causes of existing problems are explained from a comprehensive perspective, and then the influence

mechanism of public sector, industrial sector and financial market on the development performance of digital culture industry is discussed, and the different roles played in its development process are studied.

3. Research Methods

3.1. Performance Scale Measurement of Overall Industrial Scale Development

The main indicators include the number of corporate units, output value scale, the proportion of industrial investment amount in the whole, the proportion of industrial investment amount and cases in the whole, the proportion of investment cases, the change of industrial investment amount, the proportion of industrial investment cases in the whole, the number of investment cases, the investment amount and proportion, the comparison of average financing of enterprises in various industries, the change of internal structure of industrial investment, the comparison of industrial financing rounds, Comparison of single investment amount in industry, distribution of project investment amount, investment amount in content production, distribution of investment amount in content production, comparison of average investment amount in content production segments, etc.

3.2. Measurement of the Structural Evolution of Digital Culture Industry

The development of digital culture industry firstly shows the development of industrial scale and the evolution of industrial structure. Traditional industrial structure changes are expressed by the ratio of output value to total output value, but digital culture industry is a concept of industrial cluster with various industrial categories. Therefore, the first problem to be solved in studying the development of digital culture industry structure is how to measure the structural changes of various industries, which cannot be solved by traditional structural indicators. In this paper, the structural change index is used to measure the adjustment and change process of industrial structure, that is, the spatial vector represents the state of industrial development, so the angle between the vectors in space is the degree of industrial internal structural change [10]. For example, an N-dimensional space vector represents N industries, and the values of each component represent the development indicators of the corresponding industries. The values of each indicator together determine the direction of the vector. When the share of some industries in the whole national economy changes, the direction of the vector will also change, so the angle between the two groups of vectors during different periods is used as an index to characterize the degree of industrial structure change. This index is called Moore structure change value, and its calculation formula is:

$$e = \arccos \frac{\sum_{i=1}^n W_{it_1} W_{it_2}}{\sqrt{\sum_{i=1}^n W_{it_1}^2} \sqrt{\sum_{i=1}^n W_{it_2}^2}} \quad (1)$$

W_{it_1} is the i proportion in the overall economy of period t_1 . Moore's structure value indicates the relative changes of industrial structure in different periods. The larger the e value, the greater the changes of industrial structure; on the contrary, the smaller the changes of industrial structure.

3.3. Measurement of Industry's Pulling Effect on Employment

The pulling effect on employment is one of the important manifestations of the influence of digital culture industry on the national economy. The strategic and emerging nature of digital

cultural industry determines that it has an important impact on the volume and structure of employment. The main logic is that the digital culture industry, as a frontier industry, has advanced technology that can produce higher production efficiency, and its broad development prospects are highly attractive to employment. On the other hand, as a strategic industry, the digital culture industry also needs a large influx of labor, which will push the industrial development into a healthy track and gradually occupy an important position in the national economy. Through these two functions, the digital culture industry will not only stabilize China's employment market, but also promote the development of China's employment structure to high-end.

The "strategic" nature of digital cultural industry requires it to drive the growth of employment, which shows the efficiency of industrial development in driving employment. Combining the available data with the existing research methods of economics, this paper takes employment elasticity as a measurement index to study the growth of employment volume driven by digital cultural industry [11]. Employment elasticity refers to the ratio of the growth (or decrease) rate of industrial output value to the employment growth rate when other factors affecting economic change are constant, which represents the sensitivity of employment to the change of output value. The formula is defined as:

$$\varepsilon_i = \frac{\Delta L_i / L_i}{\Delta Y_i / Y_i} \quad (2)$$

When the employment elasticity is greater than zero, the greater its value means that when the industrial output value changes by the same proportion, the higher the labor increase rate, indicating that the industrial development has a strong driving effect on employment; On the contrary, when the employment elasticity is small, it means that when the industrial output value changes by the same proportion, the lower the labor increase rate, the more limited the driving effect of industrial development. When the employment elasticity is less than 0, if the output value of the industry continues to increase, then it means that the production efficiency is greatly improved, the required labor force is not rising but falling, and the labor force needs to be redeployed to other industrial fields. Therefore, this paper uses employment elasticity to investigate the driving effect of digital culture industry on employment in Zhejiang Province.

3.4. Measurement of Regional Distribution and Development

Referring to the common practices in the literature, this paper uses location entropy to study the development intensity and concentration of digital culture industry in various regions of Zhejiang Province.

Assuming that there are n digital cultural industries and m regions in Zhejiang Province, e_{ij} is the output value of industry i in region j :

$$I_i = \frac{e_{ij}}{\sum_{j=1}^m e_{ij}} \quad (3)$$

Industry i the province's total output value accounted for the proportion of the province's total output value of digital culture industry calculation method is:

$$P_i = \frac{\sum_{j=1}^m e_{ij}}{\sum_{i=1}^n \sum_{j=1}^m e_{ij}} \quad (4)$$

The location entropy of industry i in j :

$$\varepsilon_i = \frac{I_i}{P_i} \quad (5)$$

Location entropy refers to the comparison between the proportion of industry i in region j in the whole province and the proportion of industry i in the whole province. The higher the value, the higher the development intensity of industry i in region j , the more centralized and "orderly" the industrial distribution is. On the contrary, the lower the location entropy value, the more "dispersed" the industrial distribution is [12].

3.5. Measurement of Industrial Production Efficiency

The results of R&D investment in digital culture industry should be embodied in the growth of industrial production efficiency, in addition to the growth of patents and other indicators. In the concept of economics, industrial production efficiency is usually measured by total factor productivity, which was first put forward by Solo [13]. It is used to indicate the part of output growth rate that exceeds the growth rate of material factor inputs and is determined by technological progress. Therefore, the change of the production efficiency of digital culture industry has even become a comprehensive embodiment of the development achievements of digital culture industry [14]. This paper uses the measurement method of modern economics to measure the change of production efficiency of digital culture industry in Zhejiang Province from 2012 to 2022. In addition, due to the technology-intensive characteristics of digital culture industry, R&D always occupies an important position in its production. Therefore, the production function of digital culture industry considered in this paper needs to include R&D capital, and the CD production function set is:

$$Y = AK^\alpha L^\beta M^\gamma S^\sigma \quad (6)$$

Therefore, in order to get the relevant parameters, the regression formula to be estimated is:

$$\ln Y_{it} = \alpha_i + \beta_{1i} \ln K_{it} + \beta_{2i} \ln L_{it} + \beta_{3i} \ln M_{it} + \beta_{4i} \ln H_{it} + \beta_{5i} \ln R \& D_{it} + u_{it} \quad (7)$$

In which, $\ln Y_{it}$ means the natural logarithmic value of the output of industry i in period t .

4. Discussion and Result

Starting from the development status and problems of digital culture industry at home and abroad, based on the research ideas and framework of industrial innovation and development, this paper explains the causes of the existing problems from a comprehensive perspective, and then discusses the influence mechanism of public sector, industrial sector and financial market on the development performance of digital culture industry [15], and studies their different roles in the development process. Qualitative and quantitative methods are used to study the development performance status of digital culture industry and the mechanism of influencing factors, and to form effective industrial development policy suggestions. The main academic ideas and viewpoints include:

At present, the problems in the development of digital culture industry in Zhejiang province are as follows: low risk resistance of enterprises, lack of core technology, improper government intervention and insufficient financial support [16, 17]. We still lack a deep understanding of the severity of these problems. By using the analysis methods of modern economics and relevant data, this paper calculates the productivity utilization rate, technical efficiency and the loss of industrial production efficiency caused by resource mismatch of digital culture industry, and quantitatively studies the severity of these problems in related industries and regions, so as to deepen the understanding of the development performance of digital culture industry.

In order to explore the way out for the development of digital culture industry in Zhejiang province, it is necessary to deeply analyze the main factors that affect the development performance of digital culture industry, and how do they affect and function respectively? Aiming at the research of industrial innovation and development, this paper puts forward a brand-new analytical framework from the perspectives of government, market and finance, and studies the influence and mechanism of government subsidy, demand fluctuation and financial restraint on market structure and enterprise technology choice respectively, so as to explain the deep-seated reasons why the development performance of digital culture industry is difficult to improve more comprehensively.

5. Conclusion

With the rapid development of China's economy for more than 40 years, the residents' spiritual and cultural needs are getting higher and higher on the basis of the greater satisfaction of their material needs, and the steady growth of per capita disposable income ensures the sustained and vigorous consumption power of digital cultural industry. Moreover, digital culture, as an important carrier of shaping national image, spreading national culture and exporting values, is bound to grow rapidly under the background of national "the belt and road initiative". Digital culture industry is expected to become an important strategic industry and pillar industry of the national economy in the future, which will play an important leading role in the overall economic and social situation and have a strong forward-looking significance for future development. Therefore, accelerating the cultivation and development of digital culture industry is an important decision related to the overall situation and long-term development of the economy and society, an important way to change the mode of economic development, adjust the industrial structure and optimize the industrial layout, and an important engine to stimulate economic growth and expand employment. Moreover, in China, the development of digital culture industry has already passed the stage of conceptual dispute, and has entered the substantive starting and development stage. However, its forerunner, extensive industrial relevance and ability to mobilize social resources mean that its development will be different from that of traditional industries. Therefore, a detailed study of the connotation, development trends, existing problems and the scientific laws contained in the digital culture industry in Zhejiang Province is conducive to promoting the development of economy and enterprises on the track of innovation-driven and endogenous growth, which will inevitably bring huge economic and social benefits.

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