Application of Ceramic Glaze Based on Big Data

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Abstract. With the popularity of the Internet and the rapid development of information technology, the types and quantities of data are increasing at an unprecedented rate. We are in an era of ever-increasing data penetration, and "big data" has arrived. Nowadays, all walks of life are using big data, and human production and life can no longer leave big data. It has been widely used in many fields, including large-scale hydropower and ceramic glaze. This article mainly introduces the literature reference research method, analytic hierarchy process and investigation research method. This paper uses the analytic hierarchy process to analyze the application of big data in ceramic glaze, and establishes a potential mathematical model. The model is solved by the analytic hierarchy process, and the application status of big data in ceramic glazes is studied, and the model is revised using historical data to improve the accuracy of the application status of big data in ceramic glazes. The experimental results of this paper show that the analytic hierarchy process increases the efficiency of the application research of big data in ceramic glazes by 13\%, and reduces the rate of false alarms and false alarms. Finally, by comparing the application value analysis of big data in ceramic art glaze and the modernization demand analysis of ceramic art glaze, the influence of the application of big data in ceramic art glaze is systematically explained.

Keywords: Big Data, Ceramic Glaze, Analytic Hierarchy Process, Literature Reference Research Method

1. Introduction

1.1 Background and Significance
With the development of a new generation of information and communication technology, mobile Internet is everywhere [1]. The theory of big data, the large-scale computing power of the Internet cloud platform and continuous optimization and algorithm improvement ensure that computer systems rely on deep learning to independently perform the most complex and detailed tasks [2]. The arrival of information civilization has created rapid progress in human society. This is not only the result of continuous innovation in human cognition, but also an important manifestation of the realization of
human intelligence [3]. The science and technology of computer algorithms, Internet and big data will surely become the most concerned and research potential research [4].

The research and application of big data theory has made great progress. The use of big data in the recovery of ceramic glaze research and application industry not only enriches the flexibility of ceramic glaze research and application industry, but also improves the flexibility of ceramic glaze research and application industry [5]. It can be said that big data poses many challenges to the development and application of traditional ceramic glazes, such as the structure and concept of the development and application of ceramic glazes [6]. Therefore, in view of the current situation, this problem has practical significance for the deep thinking between the development and application of big data and ceramic glaze [7].

1.2 Related Work
Liu Bangqi provides a method to evaluate participatory stakeholder innovation in a complex stakeholder environment to solve essential problems [8]. Based on the principle of common value creation, he proposed an analytical framework that illustrates the security protection process. In this process, the stakeholders integrate their resources and capabilities to develop innovative wave simulation algorithms [9-10]. In order to evaluate this evaluation framework, a number of data were collected in the study. This case represents the significance of Hailangpu's research and system implementation of wave simulation algorithms [11-12]. But because the message collection process is too complicated, the data result is not very accurate.

1.3 Main Content
The innovation of this article lies in the literature reference research method, analytic hierarchy process and investigation research method. Based on the research of ceramic glaze under the background of big data, the application of big data technology in ceramic glaze is studied through the analytic hierarchy process. Establish the calculation method of analytic hierarchy process combined with literature research method to provide research guidance for the application of big data technology in ceramic glaze.

2. Methods of Research and Application of Ceramic Glaze Based on Big Data

2.1 Literature Research Method
The method of studying literature is a method of understanding scientific literature information with the help of scientific research. In the process of theories and cases related to ceramic glaze, the author needs a lot of data and useful literature. Please refer to the electronic resources and paper materials of the school library, purchase relevant books, and use the Internet to search for relevant materials, and extensively collect reports and statistical information related to ceramics and glazes to ensure a complete and correct understanding.

In the process of research and writing, according to the defined research materials, with the help of Wanfang and CNKI databases, many books, master's and doctoral dissertations, journals and other materials were searched. A large number of academic achievements played a role in the theoretical support of this article, and provide a reference for in-depth research on this topic. Studying related theories and literature is an important learning method. Read and study literature related to the country, understand and summarize newspapers, news, magazines and related theories.

2.2 AHP
AHP is a method that combines quality and quantity testing. This method is based on the principle of understanding things from simple to complex, and divides complex issues into several orderly and reasonable levels. By analyzing each relatively simple level layer by layer, the relative decision goals of each index are obtained. Through mathematical methods, the relative importance of each index is
converted into weight values, and different decision-making schemes are sorted to find the best decision-making scheme.

Normalize the required feature range to classify the significance of each evaluation factor, that is, the weight value. The test shall use the following formula:

\[ Q_A = \gamma_{\text{max}} A \]  \hspace{1cm} (1)

The random sequence ratio of the judgment matrix is represented by EI; the general sequence index of the estimation matrix is represented by M.

\[ EI = (\gamma_{\text{max}} - M) / (M - 1) \]  \hspace{1cm} (2)

I represents the average random consistency index in the standard table.

The reason for adopting the analytic hierarchy process is that the analytic hierarchy process treats the research object as a system, and makes decisions according to the way of decomposition, comparison, judgment, and comprehensive thinking. It has become an important tool for system analysis developed after mechanism analysis and statistical analysis. The idea of the system is not to cut off the influence of each factor on the result, and the weight setting of each layer in the analytic hierarchy process will eventually directly or indirectly affect the result, and the degree of influence of each factor on the result is quantitative and very clear.

2.3 Investigation and Research Method

Investigation and research methods refer to methods that directly obtain relevant materials through the understanding and understanding of objective conditions and analysis of these substances. Through a large number of online materials, practical cases, etc., this article fully investigates the current situation and reasons of ceramic glaze in the era of big data and new media, analyzes, synthesizes, compares and summarizes the large amount of data collected in the survey, so as to better how there is a comprehensive and profound understanding of the ceramic glaze model in the era of new media.

3. Development and Application of Ceramic Glazes Based on Big Data

3.1 Experimental Design of Big Data in the Research and Development and Application of Ceramic Glaze

Big data has a positive effect on ceramic glazes. The application of big data technology in ceramic glazes can not only help restorers reduce creative pressure, but also effectively reduce creative time, and can also promote the development of ceramic glaze technology. Big data technology can effectively help students to transform process knowledge through research and development of ceramic glaze. The technical form of ceramic glaze is different and will change over time, but the essence of ceramic glaze will not change. Regardless of the method of ceramic glaze or the later method, the creation of ceramic glaze is based on human subjective thinking. After all, regardless of the productivity of big data in the development and application of ceramic glazes, there is one thing that cannot be changed, that is, big data is determined by people, and the use of big data in ceramic glazes cannot be separated from people's participation and participation.

Big data algorithms have very good advantages and can complete target projects well. Therefore, big data is also common in the field of research and development and application of ceramic glazes. With the help of big data analysis, it can be seen that big data can only help people complete part of the research and development work, and cannot replace human thinking and analysis methods. This is also the main value of people in this field. Big data can complete big data analysis in a short time, but it cannot correctly analyze people's rich thoughts and emotions, so the performance of big data is not high. It can be seen that at this stage, big data cannot fully realize its evaluation and understanding of emotions, which has led to large data sets in the development and application of ceramic glazes. This is a problem to be solved.
3.2 Application of Big Data to the Satisfaction Experiment Data Collection of Ceramic Glaze

As we all know, ceramic art is widely regarded as an art form that combines traditional Chinese culture with modern art. It can be seen from the historical development that "ceramic art" is a comprehensive art that has experienced a long and complicated process of cultural accumulation. It has an inseparable heritage, and it is in harmony with painting, sculpture, design and other arts and handicrafts. Glaze is a continuous layer of glass attached to the surface of a ceramic body, or a mixed layer of glass and crystals. The glaze can be made of calcium-containing stone and charcoal ash used in old stone kitchens, or inspired by the beautiful texture of the bowl surface, or it can be made from shell powder deliberately as a raw material.

After these unique points are combined with big data, the success of its application to ceramic glazes depends largely on people’s satisfaction with such creative techniques. Therefore, this article investigates people’s application of big data to ceramic glazes. Comparing the application of traditional technology and big data technology in ceramic glaze in four aspects: the satisfaction of ceramic glaze master's big data technology, work efficiency and error rate. The data results are shown in Table 1:

**Table 1.** Experimental data table of big data applied to ceramic glaze

| Compare items          | Customer satisfaction | Employee satisfaction | Work efficiency% | Error rate% |
|------------------------|-----------------------|-----------------------|------------------|-------------|
| Traditional technology | 85                    | 87                    | 75               | 10          |
| Big data technology    | 95                    | 99                    | 95               | 5           |

It can be seen from Table 1 that there is not much difference between traditional technology and big data in the development and application of ceramic glazes in the eyes of customers. However, employees’ satisfaction with the development and application of big data ceramic glazes is important 10 points higher than traditional technology, at the same time, the work efficiency is also 20% higher, and the error rate is 5% lower. It can be seen that big data technology is a big change for ceramic glaze. In order to be able to see the relationship between the two more clearly, we analyzed the data in Table 1, and the analysis results are shown in Figure 1:
4. Application of Ceramic Glaze Based on Big Data

4.1 Application Analysis of Big Data in the Modernization of Ceramic Glaze Patterns

From a formal point of view, the composition technology and expression style of ceramic glaze is a process from complex to simple, from concrete to abstract. The overall development is Jianggu and Qianlian, which is consistent with modern minimalist design. The use of a large number of geometric patterns implicitly reflects the laws of mathematics and nature, making the design simple but not simple. But different from modern minimalist design, ceramic enamel decoration is simple and flexible. It is not only connected with natural things, but also closely related to people's natural perception and outlook.

Through research, the composition methods of ceramic glaze patterns include contrast, spacing, filling, inversion and synthesis. The differences include curve and straightness, thickness, length, density, virtual reality, motion and static, etc. They form a rich decoration through the combination of points, lines and surfaces. The interval is usually interpreted as a blank area, which is connected and different from the decorative part of the tableware, which can achieve rich visual impact, enhance the sense of visual expansion, and give people a sense of organized rhythm, such as priority, virtual reality, Movement and static, and rhythm. The flip is similar to the image and foundation in modern design, and uses simple graphics to achieve rich visual effects.

4.2 Modernization Demand Analysis of Ceramic Glaze

With the continuous development of big data technology, 3D sports expression has gradually become the mainstream of society. By enhancing the two-dimensional image, the audience can obtain the original sensory simulation animation image. This realistic visual effect greatly enhances the

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**Figure 1.** Experimental data map of big data applied to ceramic glaze

It can be seen from Figure 1 that, for ceramic glazes, big data technology can improve work efficiency, reduce error rates, increase employee satisfaction, and create more benefits.
audience’s sense of immersion and makes them immersed in the field of composition. Secondly, communication with users is also very important. Printing with the help of big data technology is possible. HIS materials can be installed on the surface, scraped and polished, and the glass can be dried after completing these processes. Using lime to remove the melted tires and removing them not only solves the modeling problem, but also reduces the pottery processing time.

Under such technology, this article conducts an experimental analysis on the creation time and efficiency of big data technology and traditional technology, and conducts a survey by comparing the creation time, creation efficiency, and work satisfaction between the two. The data results are shown in the Table 2 shows:

**Table 2.** The modern demand for ceramic glazes is the restoration data table of lacquerware craftsmanship

| Compare items                  | Create time% | Creative efficiency% | Work satisfaction% |
|-------------------------------|--------------|----------------------|--------------------|
| Traditional restoration techniques | 97%          | 11%                  | 87%                |
| Big Data technology            | 87%          | 7%                   | 98%                |

It can be seen from Table 2 that in the modern aesthetics of the audience, compared with traditional technologies, big data technology reduces the creation time by 10%, the creation efficiency is 4% less, and the work satisfaction is 11% higher. It can be seen that big data technology can better meet the aesthetic needs of the modern public. In order to be able to see the relationship between the two more clearly, we analyzed the data in Table 2, and the analysis results are shown in Figure 2:

![Figure 2](image-url)

**Figure 2.** The modern demand for ceramic glazes is the analysis of lacquer craft restoration data
It can be seen from Figure 2 that at present, ceramic glazes need to adopt advanced technology, and it is necessary to use big data technology to improve the efficiency of research and development and creation of ceramic glazes and to increase consumer satisfaction with creative products. It is necessary to improve the level of restoration.

5. Conclusions
Although this article has made certain research results in the literature reference research method, analytic hierarchy process and investigation research method, there are still many shortcomings. There are still many in-depth contents worth studying in the research, development and application of big data technology in ceramic glazes. There are still many steps in the decision-making process that have not been involved due to reasons such as space and personal ability. In addition, the actual application effect of the improved algorithm can only be compared with the traditional model from the level of theory and simulation.

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