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Research on Communication Channels and Audience Reviews of Chinese Ceramic Culture International Communication

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Abstract: *This paper focuses on the communication channels of Chinese ceramic culture international communication and two categories of sentiment analysis approaches. In the current digital age, social media, online forums and e-commerce platforms have emerged as crucial channels for promoting Chinese ceramic culture. Previous studies, such as those by scholars like Sahar A. El Rahman, have explored sentiment analysis on social media. As for sentiment analysis approaches, the lexicon-based approach, relying on pre-constructed sentiment dictionaries, and the machine learning-based approach, which learns from a large amount of labeled data, are both valuable. The practical application of these approaches in different communication channels is analyzed. For Chinese ceramic culture international communication, sentiment analysis approaches can judge the sentiment orientation of audience reviews on social media, online forums and e-commerce platforms. Through analyzing online audience reviews, we can not only understand the international audiences' attitude towards Chinese ceramic culture, but also enables us to take targeted measures to enhance its global influence and cultural communication power.*

Keywords: *Ceramic Culture, Communication Channel, Audience Review*

1. Introduction

Chinese ceramics have existed during thousands-year Chinese civilization and become a dual carrier of both material and spirit. Silk Road and Maritime Ceramic Road have enabled Chinese ceramics to be exported to Asia, Africa, Europe and other places, making them one of the typical representatives of Chinese culture. The international communication of Chinese ceramic culture allows the world to better understand China's historical heritage, aesthetic taste and humanistic spirit, and serves as a bridge for cultural communication between China and foreign countries. With the rapid development of digital and intelligent technologies, the communication model has taken on a new form. People are no longer just traditional content receivers, but gradually transforming into content generators. This has made the international communication channels of Chinese ceramic culture more diverse. International audiences leave a vast amount of reviews on these communication channels. How to accurately analyze these reviews and gain insights into the true attitudes and needs of audiences towards Chinese ceramic culture has become the key to improving the communication effect. Lexicon-based approach and machine learning-based approach provide powerful analytical tools for review sentiment analysis. This study explores the communication channels of Chinese ceramic culture international communication and analyzes two commonly used sentiment analysis approaches which enable the sentiment orientation judgment of audience reviews.

2. Communication Channels

In the era of globalization and digitization, the international communication channels of Chinese ceramic culture have been continuously expanded. In the past, it was mainly through traditional media such as books, television, newspapers, magazines and exhibitions for international communication. Nowadays, social media, online forums and e-commerce platforms have become important communication channels in promoting Chinese ceramic culture.

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2.1 Social Media

With its powerful dissemination efficiency and extensive user coverage, social media rapidly spreads the superb techniques and unique aesthetic values of Chinese ceramics to global audiences in the form of diverse visual media such as short videos and pictures. Social media platforms gather a huge user group from different ages, genders, regions and cultural backgrounds. Mainstream platforms, such as Facebook, YouTube, WhatsApp, Instagram and TikTok, have their user networks widely distributed around the world, thus becoming convenient channels for Chinese ceramic culture international communication. During the process, visual contents represented by exquisite images of Chinese ceramic wares and short videos of the production process can quickly attract users' visual attention and arouse their interest. Social media, which has a high-speed information dissemination rate, can ensure the instant release of Chinese ceramic culture contents. With the algorithm recommendation mechanism, these contents can be accurately delivered to the target audiences who have potential interest in Chinese ceramic culture. In addition, the interactive functions of social media provide users with abundant ways to participate. Users can actively participate in the communication and exchange of Chinese ceramic culture through liking, commenting and sharing. Content generators can also optimize the contents in a timely manner according to user feedback, thus forming a good interactive communication cycle and effectively enhancing the communication effect and influence of Chinese ceramic culture on the world.

With the popularity of social media platforms, the amount of user-generated comment data has increased exponentially. Research on sentiment analysis of social media platforms has also received extensive attention from scholars. Sahar A. El Rahman, Feddah Alhumaidi AlOtaibi and Wejdan Abdullah AlShehri (2019) constructed a sentiment analysis model that combines supervised and unsupervised machine learning algorithms, and collected public opinion data on McDonalds and KFC from Twitter. They fed the data into different models and tested the results of these models with metrics such as cross validation and f-score. The results show that their sentiment analysis model demonstrates strong performance on mining texts from Twitter [1]. Vallikannu Ramanathan, T. Meyyappan (2019) obtained people's emotional attitudes towards Oman tourism by conducting sentiment analysis on social media texts, and also studied the effect of domain specific ontology, entity specific opinion extraction, combined lexicon based method and conceptual semantic sentiment analysis on the sentiment analysis of tweets about Oman tourism. The research finds that conceptual semantic sentiment analysis can improve the performance of Oman tourism tweet sentiment analysis [2]. We collected user comments on Chinese ceramic culture on social media, and used sentiment analysis technology to identify positive, negative, and neutral sentiment expressions. For comments with positive sentiment, we further analyzed the specific topics that audiences like, such as ceramic-making techniques, decorative patterns, or historical and cultural backgrounds, in order to enhance the display and interpretation of these elements. For comments with negative sentiment, we further analyze the reasons. If the content is too professional to be understood easily, the content should be simplified and made more interesting. If the presentation form is not attractive enough, the display form should be enriched. By continuously monitoring and analyzing sentiment data, the communication content is constantly adjusted and optimized to make it more in line with the preferences and needs of audiences, thus enhancing the dissemination effect of Chinese ceramic culture on social media.

2.2 Online Forums

Online forums, an online communication platform, attract people with specific interests in a certain field. For example, Ceramic Arts Daily Community forum on Ceramic Arts Network website is an online forum of ceramic art. This forum includes Studio Operations and Making Work (exchanges on ceramic art making, decorating, and firing), Clay and Glaze Chemistry (discussions on recipes, chemical properties, glazing techniques), Mold Making and Slip Casting (topics related to mold making and slip casting ceramics), Equipment Use and Repair (use and maintenance of kilns, pug mills, slab rollers, etc.), Business, Marketing and Accounting (covering marketing, selling, accounting, website development), Educational Approaches and Resources (discussions on ceramic art for students and educators), Aesthetic Approaches and Philosophy (critical theory and comments on contemporary ceramics), Int'l Ceramic Artists Network (ICAN) Operations and Benefits (discussions on related activities of Potters Council), Ceramic Events of Interest (including exhibitions, workshops and other ceramic-related events), Community Marketplace (purchasing, selling, trading or donating new or used studio equipment, tools and supplies), Job and Career Opportunities (career development and jobs for ceramic artists). This online forum provides an online space for in-depth exchanges of ceramic art among ceramic art enthusiasts, ceramic artists, ceramic art educators, people who work in ceramic

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industry, etc. from all over the world, promoting the communication of ceramic culture knowledge and the exchange of ideas.

Miaomiao Wen, Diyi Yang, Carolyn Penstein Rosé (2014) conducted research on sentiment analysis of MOOC forum posts. They used collective sentiment analysis to extract sentiment words from topic-related posts to calculate the sentiment ratio, and utilized survival analysis to measure the impact of students' expressed and exposed sentiment on dropout. Thus, they explored the relationship between students' views of the course and the impact of sentiment on dropout. The research found that the sentiment ratio in the forum was related to the number of dropouts, but the impact of sentiment on dropout varied across different courses [3]. Jorge Carrillo-de-Albornoz, Javier Rodríguez Vidal, Laura Plaza (2018) study the sentiment analysis of e-health forums. They collected posts from online health forums related to breast cancer, crohn and different allergies. Each sentence is labeled as "experience", "fact" or "opinion", and as "positive", "negative" or "neutral". Multiple features such as word embeddings, bags of words, as well as machine learning algorithms like Sequential Minimal Optimization and Naïve Bayes are used for training and classification. Cross-validation and various evaluation metrics are adopted for verification. The research shows that word embeddings perform excellently in predicting the polarity of patient-authored texts, with an accuracy rate of about 70%, and are superior to traditional representations such as bags of words [4].

2.3 E-Commerce Platforms

E-commerce platforms chiefly target global consumers with purchasing intentions. Consumers search for and buy Chinese ceramic products on e-commerce platforms, thus understanding Chinese ceramic culture deeper. On e-commerce platforms, culture communication is closely linked with the product selling. Through product display pages, detailed product descriptions, and consumer feedback, Chinese ceramic cultures go to the world. It can achieve the dual objectives of cultural communication and economic value, and create a win-win situation. E-commerce platforms use practical and intuitive presentation, enabling consumers to acquire an in-depth culture understanding such as the place of origin, making processes, and design ideas of Chinese ceramic products during their purchase. After their purchase, consumers can leave their comments on the platform, sharing their using experiences and their perceptions of cultural connotations that products convey. Companies can optimize the production and marketing strategies of their ceramic products, and innovate cultural communication approaches based on consumer feedback.

Yuniarta Basani et al (2019) conducted a sentiment analysis study on product reviews on e-commerce platforms, aiming to solve the problem that consumers have difficulty in making purchase choices due to excessive product reviews. The research collected and processed product review data, extracted product features using Double Propagation, classified them using Naïve Bayes Classifier and Support Vector Machine, and finally generated a summary based on product feature and compared the classification results of both methods. Experiments show that the accuracy rate of Naïve Bayes Classifier reaches 79%, while the accuracy rate of Support Vector Machine is 85%, and the execution time of Support Vector Machine is shorter. This research provides an effective method and reference for sentiment analysis of product reviews and proves its feasibility in assisting consumers' decision-making [5].

3. Sentiment Analysis Approaches

In natural language processing, sentiment analysis aims to determine the sentiment tendency contained in the text. Common sentiment analysis approaches include lexicon-based approach and machine learning-based approach.

3.1 Lexicon-based Approach

Lexicon-based approach is a traditional and commonly used approach for sentiment analysis. It relies on pee-constructed sentiment dictionaries, which contain a large number of words with emotional tendencies. Sentiment dictionaries include positive, negative, and neutral words. When analyzing review texts, the words in the text are matched with those in sentiment dictionaries, and the frequencies of positive and negative words are counted to determine the sentiment orientation of the review. There are mainly two ways to construct sentiment lexicons: manual creation and automatic expansion. Manually created sentiment lexicons are usually annotated for the sentiment orientation of words by

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professionals based on their own knowledge and experience. Automatically expanded sentiment lexicons, on the other hand, rely on seed words with clear sentiment orientations. By expanding the semantic associations between words and seed words, the vocabulary of the sentiment lexicon is automatically expanded. Most lexicon-based approaches use adjectives to indicate the semantic orientation of texts because adjectives can often directly express emotional attitudes. However, recent studies have found that, in addition to adjectives, nouns, verbs, and adverbs can also carry important sentiment information [6]. Valence Aware Dictionary and sEntiment Reasoner (VADER) identifies emotional expressions in social media texts through a predefined sentiment lexicon and calculates the positive, negative, and neutral sentiment scores of the texts. Since VADER, a sentiment analysis tool, is particularly suitable for analyzing informal texts such as social media posts and online reviews, and can handle slang, emojis, and modern internet language, we adopted VADER to analyze audiences' evaluations of Chinese ceramic culture international communication. The research mainly focuses on Chinese ceramic culture international communication through communication channels such as social media, online forums, and e-commerce platforms.

3.2 Machine Learning-Based Approach

Machine learning-based approach has demonstrated great potential in sentiment analysis. By training models using a large amount of labeled data, machine learning-based approach enables the models to automatically learn the sentiment patterns and features in texts. Common machine learning algorithms include Naïve Bayes, Support Vector Machine, Convolutional Neural Networks, etc. Naïve Bayes assumes that features are independent of each other. It predicts the sentiment orientation of a text by statistically calculating the conditional probabilities of each feature in different categories. Naïve Bayes usually converts the text into Bag of Words (BoW), taking words in the text as features, calculating the frequencies of features appearing in different categories (positive sentiment, negative sentiment, neutral sentiment), and predicting the sentiment orientation of new texts based on the calculated probabilities. Support Vector Machine usually converts texts into numerical features and finds a hyperplane in a high-dimensional space that can maximize the margin between different data. They determine the sentiment orientation of texts according to the division rules of the hyperplane. Convolutional Neural Networks usually use word embeddings to convert texts into vector representations. They extract local features in the text through Convolutional Layer, reduce the dimension through Pooling Layer, and classify through Fully Connected Layer to determine the sentiment orientation of the text. Naïve Bayes, Support Vector Machine, Convolutional Neural Networks all belong to supervised learning algorithms. This is because they all need to be trained with labeled data, learning the mapping relationship between input features and output labels to predict the sentiment orientation of texts. Compared with semi-supervised learning and unsupervised learning, supervised learning can achieve higher prediction accuracy and is suitable for programs with clear goals and high-quality data annotation.

4. Conclusion

With globalization and digitalization, the international communication of Chinese ceramic culture has achieved broader dissemination and deeper exchanges through diverse channels such as social media, online forums, and e-commerce platforms. Social media, with its powerful dissemination capabilities and interactivity, quickly attracts global users' attention to Chinese ceramic culture and optimizes the communication content based on user feedback. Online forums provide a professional communication space for ceramic culture enthusiasts, facilitating the spread of knowledge and ideas. E-commerce platforms closely integrate cultural communication with commercial activities, enabling consumers to understand Chinese ceramic culture during the process of purchasing products. Meanwhile, enterprises can optimize their marketing strategies based on consumer feedback.

In terms of sentiment analysis of audience reviews, both lexicon-based approach and machine learning-based approach are of great value. Lexicon-based approaches are straightforward, relying on predefined sentiment lexicons to identify and analyze text sentiment. Machine learning-based approaches, on the other hand, train models with a large amount of labeled data and predict the sentiment orientation of texts by learning the mapping relationship between input features and output labels. These approaches provide effective ways to understand the true attitudes and needs of audiences towards Chinese ceramic culture, which helps to continuously optimize the international communication strategies of Chinese ceramic culture, enhance the communication effect, and promote the international exchange and development of Chinese ceramic culture.

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