Research Article

A Neural Network Model for the Relationship between Hotel Marketing Strategies and Performance Based on Nonlinear Random Matrix Theory

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The homogenization of hotel competition has become a key problem faced by the hotel enterprises. According to the marketing theory, one perfect marketing strategy will improve hotel performance. Based on nonlinear random matrix and neural network model, this paper empirically analyzes the relationship between different marketing strategies and hotel performance from the aspects of hotel demand collection, strategy support, performance matching, and strategy regulation. The results show that the hotel performance based on product marketing strategies is the best, which has improving hotel performance about 5%. In contrast, the hotel performance based on people-oriented marketing strategies is the worst. Therefore, we believe that the hotel enterprises should pay attention to the adjustment of product structure and the role of people in hotel operation and management. Adjusting product structure, strengthening hotel information construction, and paying attention to talent cultivation play an important role in improving hotel performance, in order to provide useful reference for the development of other hotels.

1. Introduction

According to relevant statistics, as of January 2021, the chain penetration rate of global chain hotels was 41.7%, and the penetration rate of chain hotels in China has reached 31%. Meanwhile, in the 20 years from 2000 to 2019, the number of domestic tourists increased from 7.5% in 2000 and increased to 6.0% in 2019, and the domestic tourism revenue also increased from 318 billion to 5730 billion. China tourism industry has entered the era of mass tourism. As an important part of the tourism industry, the hotel industry has ushered in a golden development period with the vigorous development of tourism. Hotels have specific development positioning in different market economic environments and different regions. Through the comparative analysis of market demand and cost, hotels can better formulate and adjust marketing strategies.

With the continuous acceleration of social development, personalization, circular economy, and green environmental protection have become the development trend of hotel and other service industries. At the same time, the government is encouraging economy and opposing extravagant and wasteful consumption patterns, while the hotel industry is facing various problems such as homogeneous competition and low performance. Therefore, it is increasingly necessary to rely on big data for intensive, professional, and personalized management. During the operation of the hotel, reasonable performance management can not only continuously improve the management performance of individuals, departments, and organizations, and create more profits or hidden wealth for the hotel, but also help achieve the development goals and long-term planning of the hotel. The relationship between hotel marketing strategy and performance is very close. Different marketing strategies lead hotels to develop in different directions and then affect the performance of hotel enterprises. The rich marketing strategy of the hotel helps expand the reputation of the hotel, increase the market share of the hotel, and then increase the
With the arrival of the fourth industrial revolution, the formulation of marketing strategy has become an urgent need for the hotel to achieve precision marketing, and it is also a key point to improve the efficiency of the hotel. The marketing strategy implemented by the hotel has a great impact on the hotel traffic. The formulation of traditional hotel marketing strategy depends on the accumulated experience of employees for many years, but the relevant experience is difficult to be expressed in an intuitive quantitative form. Therefore, in recent years, people have tried to train the historical data of hotels through machine learning methods to cope with the formulation and implementation of personalized marketing strategies for hotels in different regions and with different characteristics under the scenario of rapid market changes (precision marketing for short). The predicted traffic and demand under different data-driven marketing strategies can provide guidance for practitioners’ marketing strategy formulation. In other words, the establishment of a data-driven customer demand forecasting model has important practical significance for the precise marketing of hotels. Through accurate hotel marketing strategies, we can provide customers with differentiated needs, avoid homogeneous competition in the industry, and finally achieve the purpose of improving hotel performance.

With the arrival of the fourth industrial revolution, the acquisition and application of massive big data in all walks of life indicate the new productivity progress and consumer demand expansion brought about by the previous industrial revolution. As the cutting-edge concept of the latest generation of intelligent information technology, big data has surpassed the thinking mode of the traditional industrial revolution. This means that computers will use cloud computing capabilities to collect massive amounts of data generated from all walks of life. Generally speaking, people rely on artificial intelligence tools to analyze and process these data, and then extract useful information from them. Hotel management in the context of big data refers to the management method applied by the management department to online and offline hotel marketing promotion and operation analysis based on the massive data from cross-platforms and relying on the integrated big data and cloud computing technology. The key to hotel marketing is to advertise online and offline to customers in need at the right time through advanced carriers and in a simple way. Rich customer big data implies many types of needs, and differentiated needs point out the improvement direction for improving hotel performance. In the context of big data, hotel marketing management should pay attention to the collection, processing, and application of big data, and apply it to daily management and operation. With the development of 5G, various intelligent devices, software, and technologies have been continuously improved. The consumption mode and information access channel of Internet users have shifted from the traditional PC end to the “PC end and mobile end,” showing a trend of cross-screen interaction. Therefore, hotel managers can make full use of the massive data obtained by various software and equipment to accurately find the target population and provide personalized and diversified consumption needs. In addition, the hotel should also recognize the customer privacy problems brought about by big data and overcome the natural disadvantages caused by these data applications, and to a certain extent, the hotel can effectively guide the needs of customers on the premise of ensuring their privacy, so as to do a better job in hotel marketing management.

In the research of influencing factors of marketing performance, the academic circles use neural network to judge the action intensity of influencing factors, so as to obtain the weight of each influencing factor [1, 2]. In the research of marketing performance, neural network method has many advantages, such as multi-factor analysis, strong adaptability, and accurate calculation results, but it also has some disadvantages, such as prone to local minimum and low calculation efficiency [3, 4]. Some scholars have studied the influencing factors of marketing performance through factor analysis and found that marketing types can affect hotel marketing performance. In the research of marketing performance, factor analysis has the advantages of concise data, high interpretability of results, and low linear correlation, but there are some problems in the calculation. When using structural equation method to analyze multiple factors, it has high requirements for sample size, which cannot avoid the data errors in the questionnaire or sampling survey, and the analysis results are far from the reality. Correspondence analysis has many advantages in the study of various influencing factors, such as strong intuition, the more variables the model can reflect its advantages, but it also has some disadvantages, such as large influence of extreme values, poor objectivity, and unable to analyze the relationship between them. When dealing with big data, nonlinear random matrix theory and neural network model can reduce the dimension of indicators, so as to extract the most representative influencing factors. In addition, the nonlinear random matrix theory can also distinguish the advantages and disadvantages of different indicators and the maximum variance of indicators to dependent variables. There are many influencing factors and evaluation indicators in this study. Neural network method can accurately analyze many factors with high fitting degree, and its defects can be ignored in this study.

To investigate the relationship between different hotel marketing strategies and performance and the relationship between different data, that is, to evaluate hotel marketing strategies through the correlation between various data, it is necessary to introduce the random matrix network theory. Nonlinear random matrix theory is an effective method for processing high-dimensional data. It was first proposed by mathematical physicist Wigner in 1951 when he studied the
statistical properties of energy levels in complex atomic systems. In 1999, the random matrix theory was first applied to the correlation analysis of financial markets. For more than 20 years, scholars have widely applied random matrix theory to mature financial market [5, 6], drawing a conclusion with universal applicability. The hotel market is a very complex social and economic system, and the income correlation of the hotel industry is the basic law of the hotel market. Market information will have a significant impact on the hotel's marketing strategy and performance. In addition, the hotel's marketing strategy is also affected by the government's policy regulation, personal emotional changes, and social public support. For example, in the event of economic shock, the hotel industry will hold together for warmth to tide over the industry crisis, which may lead to a large degree of "noise" in the marketing strategy based on the market [7, 8]. In order to solve the marketing strategy optimization and performance improvement when the hotel is facing the impact of various factors such as market impact, this paper uses the nonlinear random matrix theory to distinguish the "noise" and the real information part of the correlation between the hotel industry marketing strategy and performance income.

Based on the nonlinear random matrix network theory, this paper studies the correlation between hotel marketing strategy and performance. In the context of big data utilization, we creatively linked hotel marketing strategy with performance, used neural network model to train the samples, and achieved good results in the influencing factors and importance of marketing strategy. In addition, there are the following marginal contributions: first, under the background of big data, it studies the relationship between hotel marketing strategy and performance. Secondly, the nonlinear random matrix network is introduced into the correlation between hotel marketing strategy and performance, and the real relationship between different marketing strategies and performance revenue correlation is compared.

2. Overview

There are many researches on hotel marketing strategy by foreign scholars, which involve many subjects and fields, including the traditional hotel marketing theory, human resources management incentive system in the hotel marketing research, and 4P theory of hotel marketing strategy research. A famous American scholar believes that enterprises should focus on the needs and desires of customers, how to make it more convenient for customers to buy products, how to improve their communication skills with customers, and advocate the integration of enterprises and customers. Enterprises should maintain friendly relations with customers. The originator of the service quality theory is La Martinez. He thinks that whether customers are really satisfied with the service is the decisive factor of the service quality level. For customers, the provision of the company's services should conform to their corporate image, marketing content, etc., and their reasonable needs should be met. At the same time, customers usually evaluate the quality of the service based on the comparison of the service they enjoy at this time with their previous experience. It includes result quality and process quality. The combination of the two is the key to determine whether customers will choose the product again. Scholars who pay attention to the relationship between hotel environmental management and performance have conducted research on four American hotels. The results show that environmental management has a positive impact on saving hotel costs, improving work efficiency, and creating market opportunities [9]. Gudeman's subsequent case study of the Scandic Hotels is of great practical importance, because many in the industry believe the hotel's revival is due in large part to its successful environmental management. In addition, many scholars analyze the impact of hotel management behavior on performance by statistical analysis software [10, 11] and model analysis [12, 13]. Besides, relevant research points out that hotels need to launch new products and services innovation [14, 15], actively innovate business model, and maintain a sustained competitive advantage [16, 17].

In the era of network economy, the products and services of hotels are changing, and hotels are facing challenges. The change of customer groups and consumption habits is also a major issue. The consumption characteristics of young people in hotels are characterized by Internet and the pursuit of personalized service. When making marketing strategies, hotels need to adopt multi-channel construction, flexible promotion strategies, and hotel product development aiming at young people's consumption habits. At the same time, most of the customers pay more attention to the personalized, intelligent, networked, digital, and knowledgeable experience brought by the hotel after staying, so the marketing method emphasizes constantly improving the connotation level, which is consistent with the customer's cognitive space. How to adjust marketing strategies is a concern of many scholars. The wider the hotel's marketing channels, the more time it can handle consumer feedback and reduce human operation costs to improve hotel performance [18, 19]. Besides, customers occupy an important position in hotel marketing, and hotel marketing strategies are usually human-oriented to gain sustainable competitive advantage [20, 21]. There are also scholars who examine hotel marketing strategies according to consumer groups and satisfaction in different ages [22, 23]. Under the background of big data, some people analyze the influence of Internet on hotel marketing and analyze the innovation of hotel marketing strategy from four aspects. The hotel industry should take the Internet's special line, from the product strategy, price strategy, network reputation, network experience, and other aspects of innovation. Only by making full use of Internet thinking and technology and formulating marketing means in line with the development of the hotel industry can we stand out in the fierce market and peer competition and take the road of sustainable development. In addition, research on the evaluation of hotel performance is also involved. For example, scholars believe that hotel revenue management is a dynamic management process, which is guided by strategic objectives, aimed at maximizing overall revenue, and thinking about solving
problems. On the basis of intelligent information systems, on the premise of market analysis and prediction, and by means of appropriate pricing strategies, the marketable products of the hotel are matched with the needs of customers in the market segments and effectively improve product utilization.

From the above literature review, it can be seen that although many scholars have done sufficient data research on hotel marketing strategies, it can be concluded that there is a lack of research content on hotel marketing strategies, and most studies only have theoretical and suggestion discussions on hotel operation, without guidance on actual operation. There is a lack of discussion on the relationship between hotel performance and hotel marketing strategy from the perspective of big data, and the traditional evaluation methods are slow to deal with, resulting in weak practical guiding significance of relevant research. Especially from the perspective of hotel marketing and performance, there is less research on the internal mechanism of hotel marketing and performance. In light of China current economic situation, social environment, market demand, and other actual conditions, based on nonlinear random matrix and neural network model, this paper empirically analyzes how to improve hotel performance through marketing strategy innovation in the competition of hotel industry.

3. Overall Frame Design

Big data software platform mainly includes customer demand layer, marketing strategy layer, performance income layer, and management decision layer. In this scheme, the data mining algorithm is applied to classify various types of data in hotel marketing strategy and performance, so that users can output different target data according to their needs, and the time for users to search for data is reduced. Figure 1 shows how the hotel's marketing strategy and performance achieve the related processes of demand collection, strategy support, performance matching, management, and regulation. Demand collection is to investigate and study the needs of customers. Strategy support is to provide different marketing strategies for differentiated needs. Performance matching is the connection between marketing strategy and performance. Management regulation is to optimize different marketing strategies and performance.

3.1. Index Classification. In this paper, ID3 algorithm is chosen to construct decision tree, so as to classify the data related to hotel marketing strategy and performance. This algorithm is fast and accurate, can be classified according to the classification attributes selected by the user, and finally output the specific results of classification; the classification steps are described in detail below. Here, the classification steps are introduced in detail. When classifying, the classifier should be trained first, and then several weak classifiers should be trained into strong classifiers, as shown in Figure 2.

After selecting the classifier, the decision tree model is established by determining the nodes and branches [24]. Firstly, the calculation formula of empirical entropy $H(D)$ of data set is introduced:

$$
H(D) = -\sum_{k=1}^{k} p_i \log_2(p_i)
$$

where $i$ is the number of hotel marketing data types; $|D|$ is the number of all samples in the database set; $K$ is the type of target variable; and $|C_k|$ is the number of samples under this category.

Among all features, assuming that the empirical conditional entropy $H(D|A)$ of feature to database set $D$ is calculated, the information gain formula of feature $A$ is

$$
g(D, A) = H(D) - H\left(\frac{D}{A}\right)
$$

According to formulas (1) and (2), the empirical entropy is calculated to select the root node of the decision tree. When selecting the segmentation feature attribute of the current database set, the information gain is used to calculate. If the frequency of large information gain value is high, it means that the data loss is less on this attribute feature. The calculated attribute with large information gain value can be placed at the upper level of the decision tree, considered as the root node, and the attribute with small information gain value can be used as the leaf node.
According to the root node and leaf node, the data model is established.

3.2. Nonlinear Random Matrix. Random matrix theory can distinguish "noise" from real information by comparing the statistical characteristics of the research object and random system in eigenvalues and eigenvectors. Traditional evaluation models are generally effective in processing multidimensional data, especially for research objects such as the hotel industry, which produce massive data every day. Therefore, compared with traditional evaluation models, nonlinear random matrix theory and associative neural network model can improve the accuracy and speed of data processing. The hotel market environment is unstable, so it is difficult to determine whether the correlation between hotel marketing strategies and performance changes is random or really comes from the appropriate marketing strategies of hotel enterprises [25]. This problem can be effectively solved by comparing the statistical properties of the real return correlation matrix and the random correlation matrix based on the random matrix theory.

If there are $N$ yield series of length $T$ and the random correlation matrix is $R$, $A$ is the performance and strategy of a hotel in the study area, and the collection of different hotels constitutes the correlation matrix, then

$$R = \frac{1}{T}(AA^T).$$  \hspace{1cm} (3)

$A = (a_{ij})$ is $N \times T$ matrix, $a_{ij}$ is random, and it fits the normal distribution with the mean value of 0 and the standard deviation of 1. When $n$ approaches infinity, the probability density $P(\lambda)$ is as follows:

$$P(\lambda) = \frac{Q}{2\pi} \sqrt{\frac{(\lambda_{\max} - \lambda)(\lambda - \lambda_{\min})}{\lambda}}.$$  \hspace{1cm} (4)

$\lambda \in [\lambda_{\min}, \lambda_{\max}]$, $\lambda_{\max}$ and $\lambda_{\min}$ is maximum eigenvalue and minimum eigenvalue, and $Q$ is the eigenvalue, respectively.

$$\lambda_{\max} = 1 + \frac{1}{Q} + 2 \cdot \sqrt{\frac{1}{Q}},$$

$$\lambda_{\min} = 1 + \frac{1}{Q} - 2 \cdot \sqrt{\frac{1}{Q}}.$$  \hspace{1cm} (5)

In the research on the correlation structure between hotel marketing strategy and performance, the hotel revenue is selected to construct the revenue correlation matrix, and the logarithmic rate of return of hotel price is calculated by

$$r_i(t) = \ln(S_i(t)) - \ln(S_i(t - 1)).$$  \hspace{1cm} (6)
where \( r_i(t) \) represents the logarithmic rate of return of the price of the \( i \)th hotel on day \( t \) and \( S_i(t) \) represents the income of the \( i \)th hotel on day \( t \). Due to different hotel incomes, the income rate is standardized:

\[
\tilde{z}_i(t) = \frac{r_i(t) - \bar{r}_i}{\sigma_i}.
\]

(7)

For any long-time hotel return time series of the real return partial correlation matrix, (8) can be used to eliminate the influence of exogenous factors such as the market, so the single factor model is used to extract the characteristic component:

\[
r_i(t) = \alpha_i + \beta_i r_m(t) + \varepsilon_i(t).
\]

(8)

The partial correlation coefficient of the real return of hotel \( I \) and hotel \( J \) relative to the market index is defined by the correlation coefficient between residuals:

\[
P_{ij} = \frac{(\varepsilon_i - \bar{\varepsilon}_i)(\varepsilon_j - \bar{\varepsilon}_j)}{\sigma_i \sigma_j}.
\]

(9)

\( \sigma_i \) and \( \sigma_j \) are standard deviation of \( \varepsilon_i(t) \), \( \varepsilon_j(t) \). In addition, calculate the element \( P_{ij} \) of partial correlation matrix \( P \):

\[
P_{ij} = \frac{C_{ij} - C_{im}C_{jm}}{\sqrt{(1 - C_{im}^2)(1 - C_{jm}^2)}}
\]

(10)

where \( C_{im} \) and \( C_{jm} \) are the correlation coefficients of \( r_i \), \( r_j \), and \( r_m \), respectively.

4. Empirical Results and Analysis

4.1. Hotel Revenue Forecast. In 2021, there was a big regional difference between the number of tourists and the total income of Chinese provinces, which has a directional guiding role for the marketing strategy of the hotel industry (Figure 3). This paper collected the business data of 20 hotels from June 1 to July 1 in 2021 and analyzed the marketing strategy and performance data set based on the collected data. Each record in the data set contains the hotel’s static attribute characteristics, dynamic characteristics, marketing strategy data, and revenue data. Use the big data application platform to process the original data first, and then analyze the data through relevant mapping software and data analysis software. In the process of data processing, the overall stability of the data should be maintained, and the index values with large errors should be eliminated. During the experiment, considering that the revenue forecast in the real scene is based on the historical data of each hotel, this paper divides the data sets into training data sets from June 1 to 10, and testing data sets from June 10 to 20. During the experiment, the number of days of hotel historical data is set to 1d, and the models are trained separately to predict the income from the 1st to 30th day of the next month.

Figure 4 shows that (1) the distribution of correlation coefficient and partial correlation coefficient between hotel marketing strategy and performance deviates from the standard normal distribution. Both June 1 and June 10 are centered on the positive mean value, which indicates that the positive correlation is more common than the negative correlation in the hotel revenue market. In the correlation...
coefficient matrix of June 10, the minimum value is 0.06, which indicates that after the adjustment of marketing strategy, the changes of hotel enterprises are more convergent, and the house prices are both rising and falling. The outbreak of the epidemic aggravated the systemic risk of the hotel industry. The minimum value between June 10 and

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**Figure 4:** Line chart of correlation coefficient and partial correlation coefficient.

**Figure 5:** Number of hotels, single room area, and income.
June 20 is the largest compared with other time periods. The possible reason is that the overall performance of the hotel industry is better. At this time, the hotel marketing strategy has little impact on hotel performance and has no greater impact on performance than the marketing strategy in other time periods.

There is a certain correlation between the number and area of hotel rooms in the study area and income (Figure 5). The more the hotel rooms, the larger the area of a single room, and the higher the average daily income of a single room. However, the largest room area of a single hotel is not necessarily the highest average daily income, which has something to do with the number of tourists received by the hotel and the old infrastructure of the hotel. However, this paper focuses on the relationship between hotel marketing strategies and performance, so excluding the endogenous factors of these hotels, the impact of marketing strategies on their performance is what the thesis aims to solve. Use neural network model and nonlinear random matrix network to predict the impact of hotel marketing differences on hotel performance. Figure 6(a) shows the hotel revenue training and test curve, train curve a whole, and curve fluctuated and decreased with the increase of time step, reaching the maximum on the fourth day. And test curve, as an accuracy verification, shows an overall rise in volatility. This may be because with the increase of time step, the training samples can get more real information and simulate the real market environment. Figure 6(b) shows the hotel revenue forecast curve, which reaches the maximum in the middle of the month, showing a normal right distribution, indicating that the hotel revenue is generally good in the later days of the month. This is related to time selection. The school is facing a summer holiday in mid to late June, which may push up the hotel room price.

4.2. Relationship between Hotel Marketing Strategy and Performance and Countermeasures. There are different relationships between different hotel marketing strategies and performance. Based on the data of 200 hotels in the study area, the effects of four marketing strategies on performance are summarized (Figure 7). First of all, hotels that implement product marketing strategy have the highest average performance and exceed 5%; the hotels with high-performance value are the most. Secondly, the overall performance of hotels with price strategy fluctuates around 5%, which indicates that the price-based marketing strategy is stable in improving hotel performance. Once again, the implementation of people-oriented marketing strategy hotel performance fluctuates greatly, but the performance of most hotels is higher than 4%, which shows that the people-oriented hotel marketing strategy needs to play its role according to the hotel’s own characteristics. Finally, the hotel performance with process marketing strategy is lower than 5%, and the overall performance is relatively stable, which shows that the hotel’s process marketing strategy has little effect on the hotel performance.

Nowadays, customers’ consumption concepts have changed, but the operation of hotels mostly revolves around hardware, but the scope of all hardware in the customer experience is extremely limited. Those so-called standardized products are both highlights and pain points. Product design, which has been popularized in the market, has little significance in improving hotel performance. It is inevitable for history to withdraw from the stage. Therefore, based on the analysis of the relationship between the four strategies of hotel marketing and performance, this paper holds that hotels should require both hardware and software.

First of all, adjust the product structure, create a “guest room+” model, increase the customized room type, add
products outside the room type, and optimize the price strategy. The number of rooms in the hotel is fixed, but the market demand is changing at any time. Guests book rooms at different times, through different channels and at different prices. The hotel should set the ladder price, step price increase, and price by time. Optimize the process strategy. The hotel sales start from the customer’s choice, from the choice to the booking, to the accommodation experience, and to the check-out. Before, during, and after the check-in, three links are linked together. Only by doing the whole process service can the hotel quality be really improved.

Secondly, strengthen the construction of hotel information. The existing information content of the hotel on the network platform is too popular and does not highlight the characteristics of the hotel. Therefore, when labeling hotel information, we should use the current popular keyword tags, add diversified tags to highlight hotel features, improve exposure, and introduce customer traffic. We can also flexibly change the room type name according to the preferences of target customers in different periods. Reasonably change the marketing concept. For the staff, they should pay attention to granting and training the sales skills of the front desk staff. The familiarity of the products depends on the daily management of the hotel and the hard work of the staff. Hotel managers should keep up with the market trends and timely adjust the room types according to the new market demands, such as the women’s exclusive room type with built-in high light mirror, which is popular among women in recent years, and the extremely popular e-sports room and film and television room during the

Figure 7: Relationship between hotel marketing strategy and performance.
Finally, we should pay attention to talent training. The sales strategy is realized by marketing talents, so there is a foundation for development only if there are talents. Therefore, the hotel must attract excellent talents and build a team with strong professional knowledge, long working background, and rich operation experience. In the mature employment mechanism, feasible employee promotion methods should be put forward to do a good job in career planning for employees. It should clearly indicate what behavior is worth rewarding and what behavior will be punished, and set up corresponding awards to reward employees. These awards can be either material awards or spiritual awards with certificates of award, such as “excellent employee.”

5. Conclusion and Discussion

This paper uses nonlinear random matrix theory and neural network model to reveal the relationship between hotel marketing strategy and performance. The research results show that the richness of marketing strategy has a great impact on hotel performance, and there is an unbalanced correlation between the two. Marketing strategy may have a weak impact on hotel performance in a specific period of time, or even not. On this basis, the influence of different marketing strategies of 200 hotels on hotel performance is analyzed by using big data network. The results show that overall product marketing strategy is better than process marketing strategy and price marketing strategy, and the relationship between humanistic marketing strategy and hotel performance is the weakest.

In the context of big data, using big data to conduct marketing analysis on consumers has become an important work in the hotel industry. On the one hand, hotels can discover and manage consumers’ consumption behavior and demand potential through big data, which can become an important basis for hotels to carry out precision marketing strategies. Selecting appropriate marketing technologies to carry out precision marketing strategies is conducive to reducing the marketing costs of enterprises. If the hotel can quickly and effectively use big data, it can optimize its marketing strategy and win the first opportunity in the process of market competition, so as to improve the competitiveness of the hotel and improve the performance level of the hotel. On the other hand, although big data is widely used, it also has limitations. Therefore, the hotel must face the challenge and eliminate the deviation caused by big data information. Big data information does not necessarily reflect the real market demand. When analyzing the market demand caused by big data information, the hotel’s own advantages and the experience advantages of managers must be combined. How to effectively use big data to carry out hotel marketing management, give full play to the massive information advantages brought by big data, overcome the shortcomings in the application process, and combine the massive information advantages of big data with the intelligence of managers is a problem that hotels need to seriously consider and face.

This paper makes a detailed analysis of hotel marketing strategy and performance, but it is difficult to make a comprehensive and detailed interpretation of a small amount of data, so the accurate summary of hotel marketing strategy and performance needs further in-depth research. In addition, the internal mechanism of hotel marketing strategy and performance needs a lot of research to reveal more accurately, which requires extensive research in different countries and regions.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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References

[1] Z. Xia, S. Xue, L. B. Wu, J. Sun, Y. Chen, and R. Zhang, “Fore XG Boost: passenger car sales prediction based on XG Boost,” Distributed and Parallel Databases, vol. 38, no. 3, pp. 713–738, 2020.

[2] F. Branda, F. Marozzo, and D. Talia, “Ticket sales pre-diction and dynamic pricing strategies in public transport,” Big data and cognitive computing, vol. 4, no. 4, pp. 36–17, 2020.

[3] Y. J. Tian, D. Su, S. Lauria, and X. Liu, “Recent advances on loss functions in deep learning for computer vision,” Neurocomputing, vol. 497, pp. 129–158, 2022.

[4] M. He, H. M. Gu, and J. Xue, “Log interpretation for lith-ofacies classification with a robust learning model using stacked generalization,” Journal of Petroleum science and Engineering 2022, vol. 9, no. 8, pp. 173–178.

[5] A. Garcia, “Global financial indices and twitter sentiment: a random matrix theory approach,” Physica A: Statistical Mechanics and Its Applications, vol. 461, no. 1, pp. 509–522, 2016.

[6] H. L. Gao and D. C. Mei, “The correlation structure in the international stock markets during global financial crisis,” Physical A-Statistical Mechanics and its Applications, vol. 534, pp. 2–10, 2019.

[7] N. J. Gormsen and R. S. J. Koijen, “Coronavirus: impact on stock prices and growth expectations,” The Review of Asset Pricing Studies, vol. 10, no. 4, pp. 574–597, 2020.
[8] A. Gregoriou, "Market quality of dealer versus hybrid markets for illiquid securities: new evidence from the FTSE AIM Index," *The European Journal of Finance*, vol. 21, no. 6, pp. 466–485, 2015.

[9] C. Chandran and P. Bhattacharya, "Hotel's best practices as strategic drivers for environmental sustainability and green marketing," *Journal of Global Scholars of Marketing Science*, vol. 29, no. 2, pp. 218–233, 2019.

[10] G. E. Hernandez, C. Dey-ta, and P. S. Sanchez, "The resources and capacities in the adoption of a green marketing strategy: evidence in sun and beach tourism hotels in Oaxaca, Mexico [J]," *Direccion y Organizacion*, vol. 72, no. 11, pp. 34–51, 2020.

[11] Z. Duric and J. Potočnik Topler, "The role of performance and environmental sustainability indicators in hotel competitiveness," *Sustainability*, vol. 13, no. 12, p. 6574, 2021.

[12] O. O. Olatunji, O. O. Ayo, S. Akinlabi, F. Ishola, N. Madushele, and P. A. Adeleji, "Competitive advantage of carbon efficient supply chain in manufacturing industry," *Journal of Cleaner Production*, vol. 238, no. 238, pp. 117937–118402, 2019.

[13] W. Q. Ruan, S. N. Zhang, C. H. Liu, and Y. Q. Li, "A new path for building hotel brand equity: the impacts of technological competence and service innovation implementation through perceived value and trust," *Journal of Hospitality Marketing & Management*, vol. 29, no. 8, pp. 911–933, 2020.

[14] J. Widardi, T. Y. R. Syah, and R. Indradewa, "Marketing mix strategy implement on for business plan at LH hotel," *Journal of Multidisciplinary Academic*, vol. 3, no. 5, pp. 166–170, 2020.

Quach and Jiimny, "Social media marketing in the hotel industry: trends and opportunities in 2017," HVS Global Hospital Report, pp. 13–19, HVS Global Hospital, Chennai, India, 2017.

[16] E. Sthapit, "Antecedents of a memorable hotel experience: Finnish hotels perspective," *Current Issues in Tourism*, vol. 22, no. 20, pp. 2458–2461, 2018.

[17] Z. L. Zhang, "Big data analysis with artificial intelligence technology based on machine learning algorithm," *Journal of Intelligent and Fuzzy Systems*, vol. 39, no. 5, pp. 6733–6740, 2020.

[18] Q. Wang, Y. Zhuang, and S. Yan, "Correlation characteristics analysis of line loss big data of AC and DC transmission channels based on random matrix theory," *Electric Power Automation Equipment*, vol. 38, no. 5, pp. 77–83, 2018.