Research Article

Risk Prediction Algorithm of Green Agriculture Industry Direct Marketing Based on Improved Membership Function

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Live broadcast marketing refers to an online marketing mode that takes live broadcast platform as the carrier and synchronously produces and broadcasts programs at the scene of events through the technical means of live video in order to achieve brand promotion and sales increase in the Internet era. The year 2016 is known as the first year of live streaming in China. Since 2016, live streaming platforms have been constantly emerging. Major e-commerce (EC) platforms such as Taobao, Suning, and JINGdong have introduced live streaming functions, and the scale of live streaming users is also on the grow. The number of users is expected to reach 452 million in 2018, up to 15.3% year on year. It is a common problem in the production and operation of agricultural products that the production and operation of agricultural products are scattered and not widely sold. In the Internet era, the promotion of agricultural products by EC is more and more respected, while the emergence of direct broadcasting brings new development opportunities for agricultural products marketing. For the reasonable evaluation of green construction activities: firstly, the two-level evaluation index system of green construction is established. Secondly, the fuzzy comprehensive evaluation model of green construction is established using AHP to calculate the importance weight of each index. According to the structural characteristics of the index system, the improved membership degree (MD) conversion algorithm is used to identify the membership degree of the redundant index that has no effect on the target classification and the redundancy value in the membership degree of the target. The “effective value” that plays a role in the green construction classification is selected to participate in the calculation of the target MD, and the practical evaluation results are obtained. Finally, the feasibility of the method is verified by an engineering example.

1. Introduction

In recent years, with the rapid development of the Internet and the popularity of smartphones, more investors have begun to focus on how to better serve the various needs of network users, and various live broadcasting platforms have been established [1].

The optimization of fuzzy controller is the bottleneck of fuzzy control. In order to solve this problem, many methods have been proposed in recent years, such as the gradient method, adaptive method, neural network, and so on. But these methods are in certain limitations and deficiencies. The genetic algorithm is an excellent global search algorithm [2, 3]. It is to search the population and exchange information among the individuals of the population. The search does not rely on gradient information and requires less initial conditions of the problem. This enables the genetic algorithm to find the global optimal solution with high efficiency and strong robustness. Because of these advantages, the application of genetic algorithm to fuzzy controller optimization has become a hot topic in recent years [4]. Many scholars use GA to design fuzzy system parameters, adjust membership function, or adjust membership function and rule design at the same time [5].

With the deepening of national sustainable development strategy and people’s increasing concern for health, green agricultural products are more and more widely concerned and sought after. So, green agriculture with green agricultural products planting and management as the core has gradually become the basic direction of China’s agricultural
development. This new agricultural industry that integrates ecological, social, and economic benefits has not only changed the production mode of farmers [6] but also changed the way consumers consume, as well as the way people treat nature, society, and health. However, it is affected by factors such as narrow marketing channels, insufficient brand appeal, high price, and information asymmetry. Green agricultural products are often caught in an unwelcome embarrassment in the actual planting and marketing process. Looking at the current economic, business, and scientific and technological environment, it is not difficult to find that EC based on Internet technology has become the mainstream mode of business operation, especially as mobile communication technology continues to mature. The mobile EC derived from the traditional EC is not limited by the geographical location of users [7]. The advantages of being able to obtain commercial products and services anytime and anywhere attract more and more enterprises and consumers to participate in them and gradually become the main branch of EC activities. Therefore, the marketing strategy of mobile electronic commerce and green agricultural products integration is explored. Can open up more circulation channels and ways. Thus, the planting and breeding structure of green agricultural products is adjusted and the further development of green agricultural industry is promoted [8].

After more than 20 years of development, the number of users of traditional EC has accumulated to a certain extent, and the marketing mode is gradually fixed, including B2B, B2C, C2C, O2O, and other modes [9, 10]. Therefore, many EC enterprises begin to seek new forms or fields. With the development of mobile communication technology, mobile EC arises at the historic moment [11]. For traditional EC, it is both a challenge and an opportunity. On December 4, 2013, the Ministry of Industry and Information Technology (MIIT) officially issued the 4G license, and China has officially entered the era of 4G communications since then. It greatly meets the needs of users in many aspects and also helps the rapid development of mobile EC. First, 4G communication has higher information transmission rates. The maximum data transmission rate of 4G is over 100 Mbi, which is 10,000 times that of mobile phone and 50 times that of 3G mobile phone. In addition, in the 4G environment, mobile devices start to become smaller and easier to use and carry, so they cannot be restricted by their location. At anytime and anywhere to carry out EC activities, the development of e-commerce activities is favored by more and more users; at the same time, mobile EC in the 4G environment is more flexible and more compatible, enabling more networks to be interconnected and facilitating communication between users. The diversification makes 4G stronger, spawls more start-ups, and promotes the market to diversify, and promotes the market to diversify. The biggest advantage of mobile communication technology lies in the positioning of each participating system in the value chain of EC. Both merchants and users can find potential customers and obtain desired services on the move according to the positioning [12].

With the development of EC, the marketing of green agricultural products also began to try to enter the field of EC to win a day. EC is one of the important means to promote agricultural progress and development. At the same time, green agricultural products are more suitable for the development of EC due to their own value, transportation, storage, and other characteristics. Compared with the traditional agricultural product sales model, agricultural product EC reintegrates its value chain, avoids the transportation, storage, and other steps of each link under the traditional model, and reduces losses. At the same time, agricultural product EC, as the core of the value chain, facilitates the information transmission and communication between the supply and demand. In recent years, the per capita disposable income of urban residents has increased year by year [13]. Engel’s coefficient shows a declining trend, and people’s living standard is improving continuously. With the upgrading of consumption, people’s demand level for products is also constantly advancing. Agricultural EC conforms to people’s consumption trend, and it is natural to usher in the outbreak period. The progress of logistics and the intervention of capital also promote the development and upgrading of agricultural EC. Considering the characteristics of green agricultural products and various difficulties encountered in marketing, mobile EC combined with O2O mode is undoubtedly an effective way to sell green agricultural products [14].

As a new marketing method, live broadcast with goods gives consumers a new shopping experience. The most traditional shopping experience is offline contact, contact with products, contact with salespeople, face-to-face communication, and face-to-face experience. But with the development of network technology, online shopping emerges at the historic moment. It has incomparable advantages over traditional shopping: First, you can buy desired products without leaving home; secondly, it breaks through the limitation of geographical space and can quickly enjoy the products from other places. Third, it squeezes the living space of middlemen and enables consumers to enjoy lower prices [15]. However, with the development of 4G technology, live broadcasting emerges at the right moment, and various road networks are born. People can have visual communication and instant conversation through the screen, just like face to face. With the further commercialization of the technology, a group of Internet celebrities gained a large number of fans and commercial value through talent shows such as singing and playing games. With the further development of the live streaming industry, live streaming has also emerged and developed rapidly. At present, it is becoming increasingly mature and leading the new mode of consumers. In the special period of 2020, everyone stays at home and watches mobile phones and TV. Most industries have been impacted and their performance has declined. But the game industry, online shopping industry, and entertainment industry have rapid development. It is in this period that the marketing mode of live broadcasting with goods grows again. With the guidance of shopping festivals such as “Double Eleven,” it has become an emerging and widely accepted new marketing method. This way created Li Jiaqi, Weiya, Simba, and other flow with goods ability to keep abreast of life with goods but also make the road network red, and stars are also joined in the
2. Related Work

All the time, China is a large country based on agriculture. The rise and fall of agricultural industry have been accompanied by China’s various historical stages. Once, the development of agriculture helped shape ancient Chinese civilization, and today, even in the age of the Internet, agriculture remains a major industry in the world’s most populous country. However, with the development of science and technology, the improvement of people’s living standards, the continuous enhancement of health awareness, and the promotion of the national sustainable development strategy, today’s agricultural industry has undergone earth-shaking changes compared with the past. In addition to mechanical, large-scale planting and other technical progress, the understanding and concept of agricultural products have also changed. The concept of green produce was born from this. The so-called green agricultural products refer to the protection and improvement of agricultural ecological environment under the premise of ecology, ecological economics, and sustainable development principles. Using modern science and technology, systematic engineering methods, and intensive agricultural development mode, we produce pure natural, pollution-free, high-quality, and safe and nutritious agricultural products, including vegetables, melons and fruits, rice, wheat, chicken, duck, fish, and other agricultural products. There are some potential risks with live streaming.

2.1. Lack of Systematic Supervision. The live streaming industry shows an overheated development trend. All walks of life rush into the competition. Major dating and shopping apps have developed live streaming functions. Without the self-discipline of the industry and the standardization of corresponding normative provisions, the existing business problems of traditional EC and the development of the new mode of live delivery will gradually increase and affect consumers’ experience. At present, Taobao, P’duo Duo, and other shopping platforms, with the help of their original shopping platforms and their internal supervision system, introduce the mode of live streaming with goods to assist shopping, which is relatively standardized and less risky. However, Douyin, Kuaishou, Weibo, and other platforms themselves do not have supervision policies for shopping, and the introduction of a new model of live broadcast marketing with goods is not in place with supporting policies, resulting in great potential risks.

2.2. False Propaganda and Data Fabrication. When marketing and selling goods in the live broadcast room, the anchors usually only have a few minutes to sell each product and the backstage will also record the sales data. In just a few minutes, the host will demonstrate the product and say something to attract consumers to buy it. Then, these words need to extremely stimulate the purchase desire of consumers and show the most unique characteristics of the product in a few minutes to attract consumers to buy. However, in this way of promotion, it is inevitable that the anchors do not know enough about the product, and the anchors exaggerate; the product introduction is false and so on. In the closed environment of the live broadcast room, the words of the anchor have a certain power, and the consumers of the live broadcast room generally trust the anchor and only buy through the brief introduction of the anchor. Anchor have certain blindness easy to be deceived. If the platform is poorly regulated, merchants are short sighted, and the quality guarantee channels such as return and exchange are not smooth, consumers are easily trapped in the dilemma of rights protection. And, some products may have pictures inconsistent with the real product, product color difference, and so on.

2.3. Low Conversion Rate of Sales Results. With the further development of the live broadcasting industry, many problems have emerged. The live streaming with goods return rate is high for businesses, including product costs, operating costs, logistics costs, and hundreds of thousands of booth fees, and many businesses can only make money at a loss. The reasons for the high return rate of consumers are as follows: first, consumers do not meet their expectations because of product quality problems. Second, the description of the anchor is inconsistent with the received object, color difference, style, and other aspects. Third, the live broadcast room generally adopts the means of hunger marketing, and the product will be sold out in two minutes; if there is no timely shot, there will be no opportunity to buy, leading consumers do not have too much space to think, immediately purchase. Fourth, due to the host’s vivid description and the vivid atmosphere of the live broadcast room, consumers will be prone to impulsive consumption. The return rate of direct broadcast room is very high or causes a great waste of manpower, logistics, and other business, and social resources wave cost is not conducive to the sustainable development of this industry.

3. Design and Implementation of Risk Estimation Method

Drawing on the idea of big data association analysis, through the analysis and modeling of historical complaint data, the prediction method of complaint risk of future marketing
activities can be realized, and the activity risk value and potential complaint volume can be accurately predicted.

The risk value of marketing activities is calculated from the two dimensions of marketing elements and target customers, and the two factors of "material" and "people" are considered comprehensively. Drawing the concept of big data association analysis, the prediction technique of complaint risk of future marketing activities can be accomplished through the analysis and modeling of previous complaint data, and the activity risk value and possible complaint volume can be accurately forecasted. In terms of the potential complaint volume, the prediction is made according to the proportion of complaints of ten thousand people participating in the activity. In terms of activity risk value, it is estimated comprehensively from two dimensions of activity components and target users.

In addition, mobile EC as the core of the integration of related value chain, the value chain of ecological agricultural products mobile EC mainly includes enterprises building mobile EC platforms, online store content providers, product transaction management departments, network operators, and other industries mainly providing and promoting information products (Figure 1).

The rate of 10,000 people participating in a marketing activity is defined as the rate of complaints among 10,000 participating customers (10,000 investment ratio for short). The average-to-10,000 ratio of marketing campaign components is defined as the ratio of this component to the average complaint activity per 10,000 participating customers. The calculation is as follows:

\[ ts_i = \frac{ts_{num} \times 1000}{sum_{num}} \times \frac{1}{N}. \]  

(1)

In the above formula, TS_NUMI refers to the number of complaints of activity I occurring in this element, and sum_NUMI refers to the total number of customers participating in the activity. The following examples illustrate the method of using the above calculation. For example, the total number of participants in the activity of "National Day Holiday flow package" is 260,000, and the number of customers complaining about "no second confirmation link" is 62, so the 10 thousand investment ratio of "second confirmation" of this marketing activity is: 62/26–2.38; if the "double confirmation" ratio in another activity is 0.71, then the average ten-thousand investment ratio of "second confirmation" elements is (2.38 + 0.72)/2–2.80.

For a marketing campaign, it is of great significance to estimate its potential customer complaints. It can show the severity of complaints of the campaign through this clear indicator and provide an important reference for the operation staff. The estimation method of potential complaints of marketing activities is as follows:

\[ ts_{num} = N \times \sum_{i=1}^{M} ts_i. \]  

(2)

Among them, N is the estimated number of participants in the activity, M is the number of key elements involved in this activity, and TS num is the maximum estimated number of complaint.

The average risk weight values of marketing campaign components are calculated as follows:

\[ risk_k = \frac{\sum_{i=1}^{N} ts_i}{N}. \]  

(3)

Among them, I represents I activities, TSI is the proportion of complaints of component factor K in activity I, and N is the total amount of activities involving this component factor. The following examples illustrate the use of the above calculation method. In the process of online business processing, customers are usually required to perform "secondary confirmation," and if the component "secondary confirmation" occurs in both activities, each of which has several complaints. If there are 55 complaints about the activity "Spring Festival Holiday flow package," and 50 of them are "secondary confirmation," then for this activity, the complaint risk weight value of "secondary confirmation" is 50/55 = 0.91. If the risk weight value in the other activity "Yuanxiao Holiday Traffic package" is 0.51, then the average risk weight value for the two full activities is (0.91 + 0.51)/2 = 0.71.

The design of marketing activities will have its own complaint risk, and different marketing methods have different risks. For a marketing activity to be launched, if it involves M "component elements," its risk value is evaluated as follows:

\[ risk_k = \sum_{i=1}^{M} risk_i. \]  

(4)

Among them, RISKI is the risk weight value of the ith key factor. When the sum of the above risk weight values exceeds 1, it is automatically set to 1 and the final risk value is converted into a percentage system. The following examples illustrate how to use the formula. The marketing activity "weekend flow party" involves two components of "short-
term business “and” secondary confirmation,” and the risk value of each element is 0.37 and 0.45, so the risk value of the component elements of “weekend flow party” is 
\(0.37 + 0.45\) – 0.82, which is 82 points when converted to the percentage system.

Marketing activities not only have their own composition characteristics but also face different target customers. The tendency of target customers to complain about activities is an important factor affecting the risk of activities, so the factors of target customers should be fully considered. If a marketing activity is open to target customers, the risk assessment method for complaints from target customers to the marketing activity is as follows:

\[
\text{risk}_{\text{target}} = \frac{\sum_{i=1}^{N} \max(P_i, Q_i)}{N}.
\]  

Among them, \(P_i\) is the value of customer complaint tendency obtained from the evaluation of “activity association relation” and \(Q_i\) is the value of customer complaint tendency obtained from the evaluation of “customer association relation.” The maximum value is taken as the final evaluation result of the complaint risk of target customers, which means that the most pessimistic prediction is adopted to fully pay attention to customer experience in the face of the risk value of target customers’ complaint tendency.

The idea of this method is as follows: users who have complained about historical activities tend to complain about similar activities of the activities they complained about. If a marketing activity is open to target customers, the complaint tendency value of any target customer against activity \(U\) is as follows:

\[
\text{risk}_U = \frac{\sum_{i=1}^{N} s(u, v) r_{i,v}}{\sum_{i=1}^{N} s(u, v)}.
\]  

Among them, \(n\) is the number of similar activities of \(U\) and \(V\), \(s(u, v)\) represents the similarity between activity \(U\) and \(V\), and \(r_{i,v}\) represents the complaint record of customer \(I\) against similar activity \(V\) of activity \(U\) (activity \(V\) has been carried out before). If there is a complaint, it is 1; if there is no complaint, it is 0.

Given that an activity to be carried out involves \(M\) components, all historical activities that also contain any one of these elements are classified as similar activities. The similarity calculation is as follows:

\[
s(u, v) = \frac{\text{freq}(u \cap v)}{\text{freq}(u | v)}.
\]  

The above formula is the intersection of activity \(U\) and activity \(V\) divided by the union. For example, activity \(U\) involves three elements and activity \(V\) contains five elements. The intersection of two activities is two links, so the similarity is 2/6 = 0.33.

The idea of this method is that similar users tend to complain about similar activities if they have complaints about historical activities. If a marketing activity is open to target customers, the complaint tendency value of any target customer against activity \(U\) is as follows:

\[
Q_{(i,u)} = \frac{\sum_{j=1}^{n} \max((i, j) \times r_{j,v})}{\sum_{j=1}^{n} \text{sim}(i, j)}.
\]  

Here, \(n\) is the number of similar customers \(J\) of customer \(I\); \(\text{sim}(i, j)\) is the similarity between client \(I\) and client \(J\); \(K\) represents the number of activities \(V\) similar to activity \(u\); \(RJV\) represents the complaint record of customer \(J\) against activity \(V\), 1 if there is a complaint, 0 if there is no complaint; \(S(u, v)\) represents the similarity between activities.

Customer similarity is calculated by customer label information. Customers are judged to be similar by labels such as “traffic sensitivity, call fee sensitivity, complaint rate (number of complaints/number of business transactions), and whether they have friends”. Customers with greater similarity tend to have similar complaints:

\[
\text{sim}(i, j) = \frac{i \times j}{|i| \times |j|} + \alpha.
\]  

The above formula is a modified cosine similarity calculation formula. \(I\) and \(J\) respectively represent the coordinates of customers in label coordinates (traffic, call charges, and complaint rate) and \(A\) represents the social circle influence factor (temporarily set to 0.1).

The final complaint risk value is calculated from the two dimensions of the composition of marketing activities and target customers, combined with the two factors of “material” and “person”.

\[
\text{risk}_{\text{hid}} = (a \times \text{risk}_{\text{act}} + b \times \text{risk}_{\text{cust}}) \times 100.
\]  

In the above formula, \(\text{risk}_{\text{act}}\) is calculated from the composition of the marketing campaign using an “activity-based component” approach. \(\text{risk}_{\text{cust}}\) is a value at risk calculated from the perspective of the target customer to which the marketing campaign is directed. \(\text{risk}_{\text{cust}}\) uses the “activity-based relationship” and “client-based relationship” methods. Factors \(A\) and \(B\) are the weight values. The weights are set to 0.5 in the initial stage and will be adjusted according to the accurate situation of evaluation in the later stage. The above risk values are ultimately expressed on a “percent scale,” with 100 points being set by default if the value exceeds 100 points.

Traditional fuzzy controller design mainly includes three parts: (1) language control rules; (2) the dependency function; (3) controller input and output standardized quantization factor, proportional net. Considering the fuzzy controller with double input and single output structure, let the input variable be error \(E\), error change be \(EC\), and the output variable be \(u\). On the basis of traditional fuzzy controller, this study uses improved genetic algorithm to optimize membership function.

This study adopts the mode of “one filter, two ratio, and three composition” to realize the conversion of the dependency degree. “One filter” refers to filtering out the redundant values that have no effect on target classification in the index MD by discriminant weight and extracting the
Table 1: Trial of risk estimation method.

<table>
<thead>
<tr>
<th>Name of marketing activity</th>
<th>Target customers/ten thousand</th>
<th>Activity component</th>
<th>Estimate potential complaint volume/batch</th>
<th>Estimated value of risk/point</th>
<th>Actual development of the activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let me watch video stream unexamined package appointment</td>
<td>100</td>
<td>Business order + time limit second kill + double confirmation</td>
<td>728</td>
<td>33</td>
<td>The number of complaints is 0</td>
</tr>
<tr>
<td>Migu read the package</td>
<td>10</td>
<td>Business subscription + phone chargeback</td>
<td>25</td>
<td>33</td>
<td>The number of complaints was 2</td>
</tr>
<tr>
<td>Weekend traffic promotion package</td>
<td>25</td>
<td>Business order + time limit second kill + double confirmation</td>
<td>242</td>
<td>50</td>
<td>The number of complaints was 30</td>
</tr>
</tbody>
</table>

Table 2: Comparison of complaint reduction before and after preventive use of risk prediction.

<table>
<thead>
<tr>
<th>Time node</th>
<th>Month</th>
<th>Mall PC version of the complaint</th>
<th>Mall touch screen version complaints</th>
<th>Total amount of complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk estimation system before use</td>
<td>In October 2017</td>
<td>287</td>
<td>207</td>
<td>494</td>
</tr>
<tr>
<td></td>
<td>In November 2017</td>
<td>301</td>
<td>113</td>
<td>416</td>
</tr>
<tr>
<td></td>
<td>In December 2017</td>
<td>258</td>
<td>93</td>
<td>351</td>
</tr>
<tr>
<td>Risk estimation system before use</td>
<td>In January 2018</td>
<td>155</td>
<td>51</td>
<td>206</td>
</tr>
<tr>
<td></td>
<td>In February 2018</td>
<td>159</td>
<td>39</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>In March 2018</td>
<td>237</td>
<td>39</td>
<td>276</td>
</tr>
</tbody>
</table>

effective values. “Two ratio” refers to the conversion of effective values into ratios and the generation of comparable sums; “triadic composition” refers to the definition of target membership in terms of comparable sums. The specific steps are as follows:

1. Determine the Indicator Discrimination Right A (Q). Entropy weight theory can be used to quantitatively describe $\mu_{jk}(Q)$ concentration and dispersion of $k$ values and distinguish the contribution of MD of each indicator to target Q classification.

$$a_j(Q) = \frac{v_j(Q)}{\sum_{j=1}^{n} v_j(Q)},$$

where $v_j(Q) = 1 - 1/InPH_j(Q)$, $H_j(Q) = -\sum_{k=1}^{P} \mu_{jk} \cdot \mu_{jk}(Q)$, and the discrimination right $\mu_{ik}(Q)$ meets the requirement of normalization.

2. Determine the ratio of index MD as follows:

$$m_k(Q) = \beta_j(Q)a_j(Q)\mu_{jk}(Q), \quad k = 1, 2, \ldots, P.$$  

3. Determine the comparable sum of the ratios as follows:

$$M_k(Q) = \sum_{j=1}^{n} \beta_j(Q)a_j(Q)\mu_{jk}(Q).$$

4. Determine the MD of the upper index as follows:

$$\mu_k(Q) = \frac{M_k(Q)}{\sum_{k=1}^{P} M_k(Q)}, \quad k = 1, 2, \ldots, P.$$  

where the MD $\mu_{ik}(Q)$ meets the requirement of normalization.

4. Experimental Analysis

After the realization of the complaint risk prediction method in marketing activities, it is tried and tested in actual marketing activities. Trial activities are listed in Table 1 from the trial, the method can well forecast to carry out the marketing activities of the complaints and potential risks of values. Operators and auxiliary business personnel should provide targeted customer service and deal with potential complaints and risks in advance, which will play a positive role in improving the quality of marketing activities. After the method was officially put into use, the number of complaints of marketing activities decreased significantly. The monthly average number of complaints decreased by 46% month on month in three months after the method was put into use, as presented in Table 2.

According to the above modified genetic algorithm, during the calculation, the algorithm terminates when the fitness is asymptotically stable.

Figure 2 shows the simulation results of the fuzzy controller based on the genetic algorithm and the conventional fuzzy controller. It can be seen from the figure that the performance of the fuzzy controller designed by the genetic algorithm is better than the conventional fuzzy controller. One of the biggest advantages of fuzzy controller is that it does not need to know the mathematical model of the controlled object, so according to different control objects, it only needs to choose the appropriate scale factor that can be applied to different occasions, so
this method is also suitable for other types of industrial control objects.

AHP was applied to determine the judgment matrix of green construction index, as presented in Table 3.

Ten experts in related fields were selected to form an evaluation group. Members of the evaluation group evaluated each secondary index respectively, and a single factor fuzzy evaluation matrix was obtained through statistics. The method of calculating index MD is shown in Figure 3.

The conversion of index MD to target MD starts from the MD of the bottom index and calculates the P grade MD

![Figure 2: Performance comparison of fuzzy controller based on genetic algorithm and conventional fuzzy controller.](image)

**Table 3: Evaluation matrix and index weight.**

<table>
<thead>
<tr>
<th>Total days</th>
<th>Comprehensive housing evaluation index set</th>
<th>Special seal judgment opinions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First-level indicators and weights</td>
<td>Good</td>
</tr>
<tr>
<td>0.04</td>
<td>0.08</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.14</td>
<td>4/10</td>
</tr>
<tr>
<td>0.46</td>
<td>0.68</td>
<td>6/10</td>
</tr>
<tr>
<td></td>
<td>0.18</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.44</td>
<td>1/0</td>
</tr>
<tr>
<td></td>
<td>0.48</td>
<td>6/10</td>
</tr>
<tr>
<td></td>
<td>0.64</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.05</td>
<td>4/10</td>
</tr>
<tr>
<td>x</td>
<td>0.46</td>
<td>6/10</td>
</tr>
<tr>
<td>0.64</td>
<td>0.11</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.46</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.14</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>6/10</td>
</tr>
<tr>
<td>0.11</td>
<td>0.49</td>
<td>1/10</td>
</tr>
<tr>
<td></td>
<td>0.41</td>
<td>5/10</td>
</tr>
<tr>
<td></td>
<td>0.08</td>
<td>0</td>
</tr>
<tr>
<td>0.15</td>
<td>0.56</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>1/10</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>6/10</td>
</tr>
<tr>
<td>0.11</td>
<td>0.66</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.64</td>
<td>6/10</td>
</tr>
</tbody>
</table>
of each index in the adjacent upper level one by one. In fuzzy comprehensive assessment, the typical MD conversion uses the “weighted sum”; however, this conversion approach does not specify which part of the MD is appropriate for the target categorization. As a result, the target MD is calculated using the redundant values in the index MD that have no effect on the target classification.

5. Conclusion

This article in view of the green agriculture industry live marketing risk evaluation, established the analytic hierarchy process (AHP), and fuzzy set theory is the general evaluation model of combining application of analytic hierarchy process (AHP) to determine the importance of weights, using fuzzy evaluation method and risk comprehensive evaluation method. Considering the multistage fuzzy MD on the evaluation of the conversion, the MD conversion mode of “one filter, two ratio, and three synthesis” is selected to separate the redundant value and effective value of the MD in green construction evaluation and enable the effective value to participate in the calculation of the target MD. This mode neither increases the prior knowledge nor causes the distortion of classification information. Finally, the feasibility of the method is verified by a practical example, which has application value and guiding significance. Marketing activities are one of the important means of business promotion of operators. For a long time, the problem of complaint risk affects the improvement of service quality of operators and the effect of marketing activities. To realize the prediction and control of complaint risk of marketing activities in advance is the systematic ability expected by the majority of staff. Make full use of massive data resources, combine complaint data with the existing customer labels and other information, learn from and improve the big data association analysis algorithm to predict the complaint risk of marketing activities, comprehensively consider the risk from the two dimensions of marketing elements and characteristics of target customer groups, and finally get good results. According to the actual situation, different marketing activities are not only affected by their own factors, target customer characteristics, and other factors, but also affected by some potential events. We use later prediction methods and optimization algorithm models to obtain more accurate prediction results and better service quality of marketing activities.

Data Availability

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

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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