# "Ant Forest" Carbon Finance Business Analysis Based on AHP-Fuzzy Comprehensive Evaluation Model

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**Abstract**—The "Ant Forest" launched by Alipay in 2016 is vigorously promoting the innovative model of "Internet + Green Finance" and "Internet + Public Welfare". This article analyzes the main effects of Ant Forest by using SWOT method and AHP-fuzzy comprehensive evaluation model to analyze the practical case of Ant Forest's carbon finance business, and explains that the attempt of "Internet + Public Welfare" can mobilize the public's action. At the same time, it also raises the problems of the difficulty of word-of-mouth and habits, the unsustainability of ethical marketing, and the technical problems in the professional field. This leads to the problems that exist in the Internet finance industry in integrating into the carbon finance market, and puts forward these problems. This paper discusses the innovation of carbon finance products and the indispensable differentiated competitive advantages, and other relevant countermeasures and suggestions, and provides suggestions for the innovative and green development of the Internet financial industry in the future.

**Keywords**- Carbon finance; ant forest; AHP-fuzzy; effectiveness;

## 1 INTRODUCTION

In the past two years, the government work report emphasized the necessity of "developing green finance." For the first time at the G20 Summit in 2016 [1], China proposed to focus on the development of green finance, and fully explained green finance, and put forward new requirements for green finance. Among them, the part of the Internet carbon finance business is the key analysis object of this article.

In August 2016, Ant Financial, in response to the call of "Internet +", launched an unprecedented carbon financial product-Ant Forest, which is an effective combination of innovative development of carbon finance and social welfare [2]. According to the United Nations Development Program, in the global carbon finance market [3], the development of Ant Forest has unique practicality and is the most indispensable for carbon finance. Although Ant Forest has had a huge impact on the global carbon finance market, there are still many problems to be solved [4]. Therefore, this paper mainly analyzes the ant forest model, and at the same time puts forward effective suggestions to urge it to use existing conditions and then combine with external factors to choose appropriate product strategies, thereby forming differentiated competition. The enterprise's "Internet +" innovation model provides new ideas [5].

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## 2 THE SIGNIFICANCE OF THE RESEARCH

Carbon finance is a brand-new field. Although it is valued by the world, its development is still not mature and complete [6]. Therefore, accelerating the development of carbon finance can promote a good connection between my country's financial system and international finance. At the same time, the development of carbon finance is also compatible. From the perspective of Internet finance [7], vigorously developing carbon finance business can establish a good public image, guide the public to participate in green projects, form a brand effect, make the public more confident in Internet finance, and realize a virtuous circle [8]. Therefore, while absorbing the development experience of developed countries, Internet finance must also consider the domestic market conditions to make an innovative model that belongs to our market, explore the development path of carbon finance with Chinese characteristics, and fulfill social and environmental responsibilities, to ensure economic and social benefits [9].

China's carbon finance business is still in its seedling stage, and the carbon emissions trading market has also been officially launched. my country has a lot to learn from and adopt the mature experience of developed countries in the field of carbon finance. This article explains the advantages and disadvantages of Ant Forest's carbon finance business practice cases, points out the problems of the Internet finance industry's integration into the carbon finance market and puts forward relevant countermeasures and suggestions for these issues, to provide suggestions for the innovative green development of the Internet finance industry in the future.

## 3 OVERVIEW OF INTERNET CARBON FINANCE

### 3.1 The concept of Internet carbon finance

Internet carbon finance is derived from carbon finance in the context of "Internet +", to adapt to the development of the times. Internet carbon finance refers to the full and in-depth integration of the Internet and carbon finance through communication technology and Internet platforms, creating a new development ecology, and conducting various low-carbon investment and financing activities [10]. The technology of Internet carbon finance in developed countries is quite complete in this field, but it still regards climate issues as the primary concern and believes that future financial risks are mainly whether there are corresponding technologies to deal with climate change [11]. Therefore, developed countries believe that carbon finance is the core of green finance.

### 3.2 The main functions of Internet carbon finance in responding to climate change

Internet carbon finance is an indispensable link in tackling climate change, and its main functions are as follows:

One is the cost-benefit conversion function of emission reduction. Carbon emissions do not change with changes in the market and prices. Because under the premise of the carbon trading mechanism, carbon emission rights can be sold and traded. This happens to capture the psychology of the operators and prompt them to pay attention to carbon emissions for their interests. Such effective carbon asset management has become an effective measure for cost-benefit conversion of emission reduction.

# 4 THE REASONS FOR THE ANT FOREST AND THE STATUS OF ITS IMPLEMENTATION

## 4.1 Fierce competition in third-party payment

WeChat is a platform for social functions and third-party payment and wealth management. In 2018, the number of users reached 1.082 billion. As shown in Figure 1, the number of users of WeChat is increased over the same period. In 2014, the number of users of WeChat gradually surpassed that of Alipay. Putting a lot of pressure on Alipay. At the same time, the social functions of Alipay are far inferior to WeChat. Therefore, Alipay has launched a carbon financial product with social functions-"Ant Forest". Users can steal each other's energy within a certain period so that user activity can be quickly increased, so the frequency of using Alipay is also Be improved.

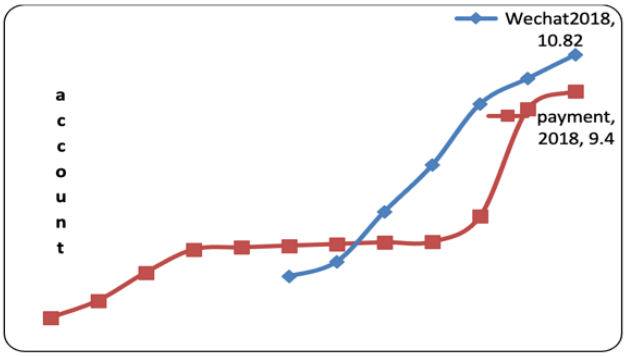


**Figure 1.** The number of users of WeChat and Alipay

## 4.2 Comply with national policies

In 2009, the government added a new binding indicator to limit total carbon dioxide emissions-"commit to reducing 40% to 45% in 2020 compared with the same period in 2005." In September 2015, the State Council highlighted the importance of the green financial system in its proposed plan. In September 2016, "Green Finance" became the focus of the Hangzhou G20 Summit for the first time. In the same year, Ant Financial took green finance as the company's new development direction. Therefore, Ant Financial chose to launch the "Ant Forest" to promote the development of green finance, which is active compliance with national policies.

## 4.3 Improve Alipay's brand image

Alipay screened several users to visit the ant forest planting area on the day of Arbor Day. Let users experience this sense of satisfaction and accomplishment for themselves, which will make people more like to use "Ant Forest". In September 2017, Ant Financial, relying on the success of the Ant Forest project, was able to ally with the United Nations Planning Agency to enhance the brand image of Alipay, which was known to more and more people.

### 4.4 Status of the implementation of Ant Forest

In August 2016, Ant Financial, in response to the call of "Internet +", launched an unprecedented carbon financial product-Ant Forest, which is a new function launched in the first phase of carbon accounts. Users can generate energy after performing low carbon behaviors and accumulate a certain amount of time to grow a virtual tree, and the ant forest will plant a real tree in the name of the user. It uses Internet technology to enable more people to become participants in low-carbon finance shown as Figure 2:

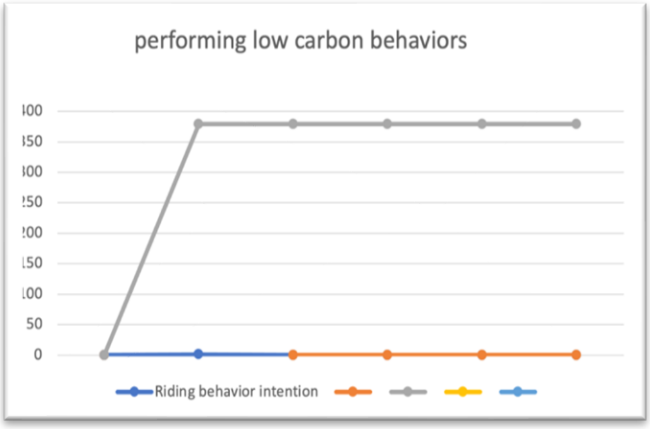


**Figure 2.** Flow chart of the use of Ant Forest

The initial number of users of Ant Forest was only about 60 million, but it has developed rapidly. As of the end of 2018, the number of users has exceeded 350 million, a total of 50,670 hectares of vegetation have been planted, and 2.83 million tons of carbon dioxide have been reduced.

In the Spring Festival of 2017, Alipay held the "Five Fortune Collection" event for the first time, using 200 million cash red envelopes to attract many users to collect the Five Fortunes. Users can scan the word "Fu" and get Fuka by watering their friends' saplings. This activity has enabled many members of the public to open Ant Forest, and the number of Ant Forest users has grown to 200 million. In the Spring Festival of 2018, Alipay will broadcast relevant content of Ant Forest during the golden advertising time of the Spring Festival Gala. At the end of 2018, the number of people using Ant Forest continued to rise to 350 million, as shown in Figure 3. With the increasing number of real-name users of Alipay, this has an inseparable impact on the implementation of Ant Forest, and the number of users will continue to increase in the future.

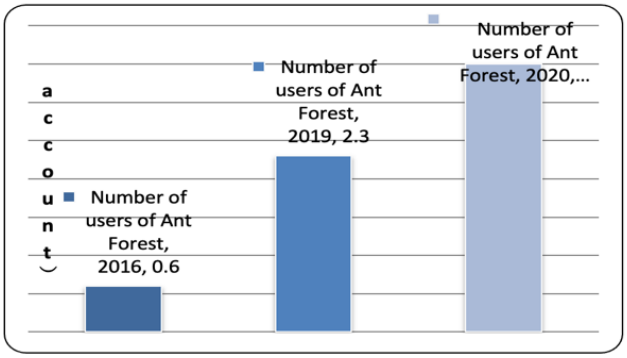


**Figure 3.** The number of users in Ant Forest

## 5 INNOVATION OF BUSINESS MODEL

The business model of Ant Forest is unprecedented in the field of Internet carbon finance, and it is a model of successful carbon finance practice. The innovation of its business model has the following characteristics.

### 5.1 It is authentic and meets individual needs

Ant Forest tries to record the real low-carbon actions of users through the virtual way of the Internet, which meets personal needs. The users of Ant Forest have a goal of growing a virtual tree, watering each other, collecting energy, and planting a sense of accomplishment every day, and finally planting a real tree. The user's environmental awareness is also continuously enhanced. In addition, all the energy of the ant forest is only related to real behavior.

### 5.2 Transparent and advanced technology

On November 6, 2018, Ant Forest has successively launched satellite tree viewing and real-time tree viewing functions to users, and more plots will open these functions in the future. On the page of Ant Forest, users can see the Haloxylon seedlings just planted in Ant Forest through WorldView-2 and Gaofen-2 satellites. This cross-border approach not only allows users of Ant Forest to see the trees, but more importantly, Ant Forest can provide replicable models and ideas for China and even the world.

## 6 ANALYSIS OF THE MAIN RESULTS OF ANT FOREST'S BUSINESS INNOVATION

### 6.1 Analysis

using the APH-fuzzy comprehensive evaluation method model to carry out empirical analysis on the effectiveness indicators of the ant forest to determine the comprehensive evaluation of the ant forest in the minds of users, the steps are as follows:

1. Determine the set of factors for the evaluation object: According to the actual meaning, select the operation mode, user experience, and the number of times of use as evaluation indicators, which are represented by respectively.

2. Determining the set of factor comments: This paper divides the evaluation grades into good, good, fair, and poor, respectively represented by, then the set of factor evaluation grades is =.

3. Empirical analysis of selected data: 600 WeChat questionnaires were distributed through the questionnaire star. Because age and identity are meaningless for this evaluation and analysis, three corresponding questions were designed, and 600 questionnaires were finally returned. According to the recovered results, the following table 4 is organized.

Then, assuming that the weights of the evaluation object's business model, user experience, and usage times are 0.5, 0.2, and 0.3 respectively, that is, the weight, the evaluation matrix is:

$$R_1 = \begin{bmatrix} 163/600 & 377/600 & 19/600 & 41/600 \\ 181/600 & 256/600 & 124/600 & 39/600 \\ 132/600 & 275/600 & 121/600 & 72/600 \end{bmatrix} = \begin{bmatrix} 0.272 & 0.628 & 0.032 & 0.068 \\ 0.302 & 0.427 & 0.206 & 0.065 \\ 0.220 & 0.458 & 0.202 & 0.120 \end{bmatrix}$$

The fuzzy evaluation set S is the fuzzy product operation of the weight coefficient and the evaluation matrix. Since there are four operator models for a fuzzy comprehensive evaluation, their characteristics are also different. This paper wants to highlight the innovative business model of Ant Forest and give an overall evaluation conclusion on the quality and effectiveness of Ant Forest. Therefore, the operator model is adopted. The model reflects that the weight is not obvious and belongs to the prominent main factor type. Determine the fuzzy evaluation set S and evaluate according to the principle of maximum membership degree.

$$S_1 = W * R_1 = (S_K)_{1\sqrt{ón}} = [0.5 \quad 0.2 \quad 0.3] * \begin{bmatrix} 0.272 & 0.628 & 0.032 & 0.068 \\ 0.302 & 0.427 & 0.206 & 0.065 \\ 0.220 & 0.458 & 0.202 & 0.120 \end{bmatrix}$$
$$= [0.2624 \quad 0.5368 \quad 0.1178 \quad 0.083]$$

According to the principle of maximum membership, it can be seen from the above calculation results that the maximum membership degree is 0.5368, and the user's evaluation result of the quality and effectiveness of the ant forest can be considered as "good". The user's satisfaction with Ant Forest is high, and the title of "the company that changes the world" is veritable.

### 6.2 Deploy emerging markets early

Emerging markets refer to the carbon financial market, and Ant Forest is the successful practice of Ant Financial to seize and deploy emerging markets. In August 2016, Ant Financial took the initiative to cooperate with the Alexa SEE Foundation to establish a carbon financial product-"Ant Forest". At the end of 2018, the number of people in the "Ant Forest" project has exceeded 350 million, and the cumulative number of trees planted has exceeded 55.52 million, covering an area of more than 50.67 million hectares, accounting for 55.52% of the plan of the "100 million Haloxylons" project and reducing emissions of 2.83 million tons carbon dioxide. As can be seen from the afforestation area in Inner Mongolia in Figure 4, the area of artificial afforestation accounts for the largest proportion, and data from the China Statistical Yearbook shows that since the ant forest project was launched, the area of artificial afforestation has become larger and larger. This is inseparable from the ant forest.

The Ant Forest project has become a leader in "Internet + Green Finance" and occupies most of the Internet carbon finance market. Ant Forest continues to introduce new product models, and introduces China Green Foundation, Xingquan Foundation, etc., to jointly plant and maintain forests in Alashan, Ordos, Inner Mongolia, and other regions. The business innovation model of Ant Forest is unique. As shown in figure 4.

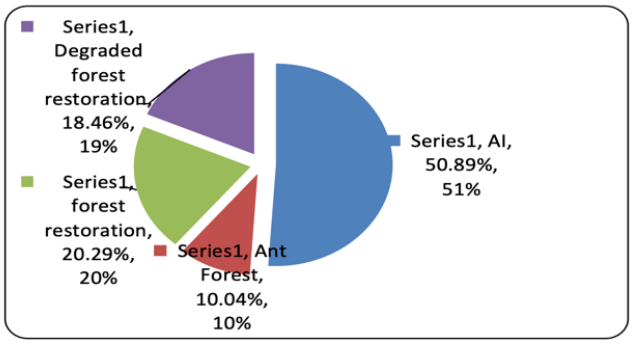


**Figure 4.** The proportion of afforestation area in Inner Mongolia in 2018

When Ant Forest was launched in 2016, its users had reached 60 million. In August 2018, the number of users reached 350 million, a year-on-year increase of 52%; cumulative carbon emissions reductions reached 2.83 million tons. A year-on-year increase of 132%; 55.52 million real trees were planted, an increase of 442% over the same period last year. The Kubuqi Desert's Forest coverage rate in 2008 was 2.3%, and the vegetation coverage rate was 22.6%. The vegetation coverage has increased significantly to 21.5% and 69%. From the above data, Antlin has achieved considerable results in business innovation, which not only protects the environment, but also raises the interest of users, and arouses users' awareness of ecology and protecting the earth's homeland.

## 7 CONCLUSION

This paper analyzes the practice and effectiveness of Ant Forest's carbon finance manufacturing technology, explores its development advantages and existing problems, and summarizes some relevant countermeasures using the SWOT model and the AHP-fuzzy comprehensive evaluation model.

First, Ant Financials' development of carbon finance manufacturing technology is conducive to its early entry into the carbon finance manufacturing technology and early completion of the market layout; at the same time, it takes the lead in product innovation, leads the development direction of the carbon finance manufacturing technology, and forms differentiated competition; early establishment Professional carbon finance team to improve team management efficiency and innovation level.

Second, this article puts forward some suggestions for the future development of carbon finance in the manufacturing technology industry: The manufacturing technology industry needs to

actively conduct market research, layout the carbon finance market, and combine finance and environmental protection for common development.

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