

## LETTER TO THE EDITOR

# Marketing and Development Risk Prediction of Highway Leisure Industry in West China from the Perspective of Circular Economy

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In order to achieve the goal of harmonious coexistence among society, economy and ecology, and to ensure a virtuous circle of economic development and ecological improvement, this paper proposes a risk prediction method for the development of highway leisure industry in West China from the perspective of circular economy. The theory of circular economy basically includes the theory of sustainable development, the theory of ecological economics and the theory of environmental capacity. It is mainly to realize the double cycle of production and consumption. Based on the principle of indicator system construction, this paper constructs the indicator system of behavior risk for the main body of highway leisure industry in West China through extensive questionnaire survey. The differential equation model is used to predict the behavioral risk of highway operators in West China. The predicted data are processed by means of cumulative reduction to obtain the predicted value of risk. The test results show that the risk prediction model can calculate the behavior risk prediction of the main body of the highway leisure industry in West China.

Circular economy; Highway leisure industry; Marketing; development risk; Prediction; Marketing risk

## 1 INTRODUCTION

The economic and cultural areas in the West China are backward, the infrastructure is weak, and the land is sparsely populated. This makes the development of the western leisure industry and market expansion have relatively higher development risks, market risks and management risks, and every step of industrial development requires high investment. If there is not enough funds and professional and efficient management, it is difficult to complete such a high-input process. The general resources are unwilling and difficult to intervene. With its unique and flexible financing mode, venture capital, driven by high efficiency, can accommodate the funds needed in different stages for the leisure industry in West China with potential high returns (Sun 2017).

Rent-and-let mode of operation is once a major obstacle to the development of rural economy, because it causes serious damage to the rural ecological environment, making the sustainable development of agriculture encounter greater problems. Therefore, we should start from the theory of circular economy, actively develop eco-agriculture, actively develop eco-agriculture from the theory of circular economy, and make it develop in the direction of industrialization, so that agriculture can achieve sustainable development through the mode of eco-industrialization and industrialization. This is a development direction in line with the law of market economy, and also the only

way to go in the process of agricultural modernization in China.

Jui-Sheng Wang, Jau-Shyong Wang and Chia-Ming Liu published an article in the journal of Ekoloji on Issue 107, 2019, entitled: “Based on Analytic Hierarchy Process (AHP) to discuss the Key Success Factors in the Establishment of Product Traceability Systems for Eco-Agriculture” (Wang et al. 2019). In order to promote the traceability system of ecological agricultural products, and accelerate the transformation of ecological agriculture in Taiwan, a traceability system for agricultural products was established, to solve the problem of food safety, so that enterprises attached more importance to the marketing and development of the leisure industry. In the past domestic and international risk research, people often analyze and discuss from the perspective of corporate finance and security, and research on related subject behavior is rare. Incorporating subjective behavior into risk research, combined with domestic and foreign scholars’ research on risk, the marketing risk of highway leisure industry in West China is defined as: in a certain period of time, it is possible for the leisure industry of the secondary highway to cause losses because of the characteristics of the main body. The operation of highway leisure industry is influenced by four main acts, namely, the behavior of government departments, the internal behavior of highway leisure industry, the behavior of competitors and the behavior of users (Zhao and Xun 2018). The uncertainty of these four main behaviors and their combined effects determine the risk level of the main behavior of the highway leisure industry (Zondo 2018). Facing all kinds of disadvantageous situations brought about by highway marketing behavior, while actively diagnosing and treating them, it needs to think deeply about how to construct a relatively complete and scientific early warning indicator system of highway operators’ behavior risk, and then establish a risk measurement model to predict the risks caused by the main body’s behavior, so as to provide basis and guidance for the operation of highway leisure industry.

## **2 IDEA DESCRIPTION**

### **2.1 Overview of circular economy theory**

The theory of circular economy basically contains the theoretical basis of three aspects: sustainable development theory, ecological economic theory and environmental capacity theory. According to the theory of sustainable development, natural resources and the environment are non-renewable. Therefore, efforts should be made to ensure the harmonious coexistence of society, economy and ecology to ensure a virtuous cycle of economic development and ecological improvement (Sun et al. 2017). According to the theory of ecological economics, human economic activities should maintain an organic coordination and unity relationship with the natural ecology, so that the economic development and the ecological environment become a whole and achieve the most objective of the ecological economy. According to the theory of environmental capacity, human economic and social development should be within the carrying capacity of the natural environment, thus maintaining the balance of natural ecosystems and environmental self-repair.

The main components of the circular economy are people, natural resources, science and technology, etc. It pursues continuous improvement of resources and environment, and promotes sustained economic development and sustained and continuous progress of society. Therefore, it contains economic, ecological and social characteristics. As far as economic characteristics are concerned, the circular economy is mainly to achieve a double cycle of production and consumption. In terms of production, the circular economy requires sustained consumption and intensive consumption. As far as ecological characteristics are concerned, circular economy requires full process control of resources and environment. It is necessary to make the improvement of ecological conditions as the premise and foundation of economic development, and also become a fundamental symbol of social progress (Chen 2018). As far as social characteristics are concerned, the fundamental purpose of circular economy is to realize the vortex development among economic development, ecological improvement and social

progress, so as to realize human development.

### 2.2 Construction of the risk indicator system for subject behavior

The establishment of the indicator system is the basis of risk prediction. In order to ensure that the risk indicators of the subject of the highway leisure industry in West China are scientific and reasonable, and can be operable in the early warning practice, on the basis of consulting a large number of literatures and combining with a wide range of questionnaires, according to the principles of indicator system construction, the indicator system of subject behavior risk of the highway leisure industry in West China can be divided into the following four parts: the first one is the government behavior risk indicator; the second is the behavioral risk indicator of the highway leisure industry in West China; the third is the competitor's behavioral risk indicator; the fourth is the user's behavioral risk indicator of road in West China. These indicators must be able to respond to a variety of undesirable and inefficient management practices to pre-control these behaviors into major errors (Cai 2018).

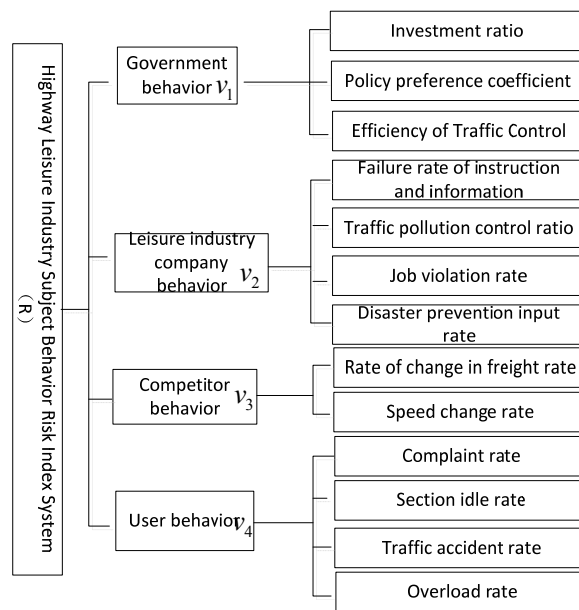


Figure 1 Risk indicator system of subject behavior

### 2.3 Prediction model

#### 2.3.1 Establishment of prediction model

The main influencing factors of marketing risk  $R$  in highway leisure industry in West China are government behavior  $v_1$ , operation company behavior  $v_2$ , project competitor behavior  $v_3$  and user behavior  $v_4$ . The

relationship between  $R_i$  and  $v_{1i}, v_{2i}, v_{3i}, v_{4i}$  is known as:

$$R_i = f(v_{1i}, v_{2i}, v_{3i}, v_{4i}) \tag{1}$$

Because the marketing risk data of highway leisure industry in West China are very difficult, the grey system prediction method can be used to predict the behavior risk of highway operators in West China (Luo 2018) when

there are few historical data. The differential equation model suitable for forecasting in grey theory is  $GM(1,1)$

model. Based on this model, the behavioral risk of highway's subject is predicted. The expression of  $GM(1,1)$

model is as follows:

$$\hat{R}^{(1)}(i) = \left( R^{(0)}(1) - \frac{u}{a} \right) e^{-a(i-1)} + \frac{u}{a} \tag{2}$$

Where,  $\begin{bmatrix} a & u \end{bmatrix}^T = \begin{bmatrix} B^T & B \end{bmatrix}^{-1} B^T Y_N$ ,  $\hat{R}^{(1)}(i)$  represents the cumulative risk prediction value with time series  $i$ .

$$\text{Where, } B = \begin{bmatrix} -\frac{1}{2} [R^{(1)}(1) + R^{(1)}(2)] & 1 \\ \vdots & \vdots \\ -\frac{1}{2} [R^{(1)}(n-1) + R^{(1)}(n)] & 1 \end{bmatrix}$$

$$Y_N = \begin{bmatrix} R^{(0)}(2) & R^{(0)}(3) & \dots & R^{(0)}(n) \end{bmatrix}^T$$

Because the gray theory is not based on the original data model, but the data model is generated, the generated data values obtained here must be reduced by the predicted value of the GM model that generates the series in order to obtain the sequence after the reduction of the generated prediction series. After the restoration process, the last obtained data is listed as the prediction sequence of the original series, and the restoration model is:

$$\hat{R}^{(0)}(i) = \hat{R}^{(1)}(i) - \hat{R}^{(1)}(i-1) \tag{3}$$

Where  $\hat{R}^{(0)}(i)$  is the risk prediction value for the time series  $i$  (Fan 2017). The risk value is a value, which is located in a certain value range. The greater the risk value of a certain behavior is, the greater the risk is.

### 3 RESULTS

In order to verify the accuracy and rationality of the model, it is necessary to continue testing. According to the small error probability  $P'$  and the variance ratio  $C'$ , the accuracy can be divided into four levels. Each level standard is shown in Table 1.

**Table 1 Classification table of prediction accuracy**

Prediction accuracy	$C'$ value	$P'$ value
Good	<0.35	>0.95
Qualified	<0.50	>0.80
Reluctantly qualified	<0.65	>0.70
Failed	≤0.65	<0.70

According to the prediction accuracy in the above table, the risk value is determined according to formula (3). By comparing the error probability with the variance ratio, both values are within the range of “good” prediction accuracy. Therefore, the risk prediction model can calculate the behavior risk prediction of the subject of the highway leisure industry in West China.

Further analysis of the marketing and development risk of leisure industry shows that the efficiency index that characterizes the level and capacity of leisure agriculture tourism development in the current region and the potential index to characterize the prospects and benefits of regional leisure agricultural tourism development in

the future prove the feasibility of the prediction method of risk prediction in this paper after considering the actual situation of leisure agriculture development.

#### **4 DISCUSSION**

(1) Giving full play to the government's macro-control role and strengthening the construction of relevant laws and regulations.

As one of the three major industries in China, agriculture is still a public welfare industry and has strong external economics. Therefore, we must give full play to the macro-policy guiding role of government departments, constantly improve the construction of various policies, laws and regulations, and provide a sound policy environment and legal guidance for the development of eco-agricultural industrialization. Specifically, the government should seriously study and formulate sustainable and guiding policies suitable for the development of eco-industrialization, provide them with preferential financial subsidies and preferential tax policies, and give certain incentives to modify and formulate suitable eco-agriculturalization. The control and coordination policies of industrialization development must also formulate special laws and regulations for it, so that the development of ecological agriculture industrialization has a relatively complete policy system and legal system, thus providing a solid policy support and legal protection for the development of ecological agriculture industrialization.

(2) Promoting agro-ecological and industrial upgrading with market-oriented

The development of eco-agricultural industrialization is inseparable from the market-oriented development path. Otherwise, the high economic benefits of eco-agriculture cannot be reflected. Therefore, in the development of eco-agricultural industrialization, we must take the market as the leading direction, establish the leading industries in ecological agriculture, vigorously support leading enterprises or key enterprises in ecological agriculture, and strive to build a one-stop integration of agriculture, industry and trade. The eco-agricultural industrialization model enables farmers to obtain market information in a timely and accurate manner, guide farmers to establish a marketing concept, and promote the industrialization development of eco-agriculture. Of course, the market-oriented development of eco-agricultural industrialization will also encourage farmers to strive to develop healthy food, mainly green healthy food, organic food, non-polluting food, ecological food, and so on. It will also make every link of production environmentally friendly, healthy and non-polluting. In addition, we should vigorously publicize healthy food, combine the advantages of rural areas, promote the brand building of agricultural products, so as to realize the industrialization transformation and upgrading of ecological agriculture.

#### **5 CONCLUSION**

The marketing risk prediction of leisure industry has become an important part of marketing management and an important guarantee for enterprises to achieve stable and sustainable competition. Under the background of accelerating economic integration and increasingly fierce market competition, the leisure industry has a clear understanding and mastery of marketing risks and their causes. According to the actual situation of the company, the marketing risk forecasting and prevention plan is formulated in a targeted and purposeful manner, to improve the accuracy and timeliness of risk prediction, and ensure the effective elimination and utilization of risk, thereby promoting the optimal development of leisure industry.

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