DECISION-MAKING MECHANISM OF ENTERPRISES FOR ECOLOGICAL INNOVATION: AN ANALYSIS BASED ON MENTAL ACCOUNTING

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Abstract

From the perspective of behavioral economics, this paper deduces and interprets the decision-making mechanism of ecological innovation of enterprises. Specifically, the decision-making of enterprises for ecological innovation was modeled based on Howard-Sheth model, and the key influencing factors of the ecological innovation of enterprises were identified through the measurement method. The results show that the enterprises’ decision-making for ecological innovation is affected by the green incentive and green supervision of the government, the ecological innovation ability of enterprises, the benefits of ecological innovation, public preference for green products, progress of ecological technology, and the green market competition; the scale and age of enterprises also influence the enterprises’ decision-making of ecological innovation.

Key words: Mental Accounting, Ecological Innovation, Decision-Making Mechanism, Howard-Sheth Model

INTRODUCTION

Global climate and environmental changes have posed severe challenges to the economic and social development of mankind since the beginning of the 21st century. Low carbonization or even zero carbonization has become the inevitable trend of the future development of the world economy. In the contemporary carbon-intensive economy, the "old" way of doing things is not sustainable, and enterprises need creative "new innovation" under the great pressure from resources and environment, which is a new way to solve environmental problems. Therefore, it has become an inevitable trend for enterprises to change their management mode to a low-carbon mode, and the key to realize this change is ecological innovation. In fact, enterprises often do not take the initiative to adopt ecological innovation due to the influence of internal and external factors. In order to solve the above problems of enterprises' ecological innovation, we must clarify the decision-making mechanism of enterprises' ecological innovation and explore the key factors that affect enterprise ecological innovation.

Most of the existing research results considered the decision as rational decision and designed the decision model, and then made the optimal decision process. However, the actual decision-making behavior of enterprises is quite different from the expectation of traditional economic theory. It has been proved that enterprises' decision-making is not completely rational as theoretical derivation and expectation. Such rationality is limited, and the decision maker's own factors and environmental factors may have negative effects on making the optimal choice. Therefore, only by changing the expectation of "rational economic people",...
accepting the reality of "limited rational people", studying the decision-making mechanism of enterprises, and exploring the key factors affecting the decision-making of ecological innovation of enterprises, can the practical guiding significance of the research conclusion be improved. Thaler (1985) believes that mental accounting is ubiquitous and ubiquitous. Using mental accounting to analyze decision-making mechanisms is a more practical analytical method (Soman & Cheema, 2000). At present, the application and research of mental accounting theory mainly focus on decision-making behaviors such as consumption and investment, and there is still a wide research space. The application of this theory in the decision-making of enterprises' ecological innovation has not yet been involved. Therefore, we will deduce and interpret the decision-making mechanism of enterprises' ecological innovation based on mental accounting, and make it connect with the actual needs of enterprises through measurement methods to find out the key factors affecting the ecological innovation of enterprises, and provide a new paradigm for studying the decision-making of enterprises' ecological innovation based on mental account theory. It is hoped that it can reflect and predict the decision-making behavior of enterprises' ecological innovation more truly, and expand the application scope of mental accounting theory, and provide theoretical support for the decision-making of enterprises' ecological innovation.

THEORETICAL BASIS AND MECHANISM ANALYSIS

The decision-making mechanism of enterprises' ecological innovation based on mental accounting

The birth of mental accounting theory is closely related to Simon's subversion of the hypothesis of "rational economic people" in traditional economics. Simon & March (1976) believes that there are no rational economic people in real life, and people in real life are bounded rational men. A mental accounting is a system of written records and summaries of business or economic transactions and the ability to analyze, verify, and report the results of those transactions. The motivation for decision makers of ecological innovation to adopt mental accounting is the same as for enterprises to adopt accounting management, that is, to continuously track the flow of money and ensure that the use of money is under their control. Based on the mental accounting concept, the decision maker of enterprises' ecological innovation will construct multiple accounts, which will divide the decision maker's income or expenditure according to time or type, and each account for special time and classification has budget constraints. When facing a multiple attribute decision-making problems, makers of ecological innovation policy will consider the budget as a constraint condition, and assess the advantages and problems of each option according to a reference point, and the option will be accepted only when the overall advantage of the selected option is greater than the disadvantages, so as to decide whether to adopt ecological innovation.

The deduction of decision mechanism of enterprises' ecological innovation based on mental accounting

According to the definition of scholars about "consumer decision-making method, the definition of "ecological innovation decision" reflects the decision making process and results of enterprises' ecological innovation according to the principle of utility maximization in order to solve the specific environment inefficient in the innovation, develop new products, new services and new processes with greater value but with significantly environmental impact reduction, stimulate new organization models and business methods, and achieve sustainable development. The enterprises' ecological innovation decision includes the process and results of ecological innovation. Decision-making of ecological innovation is a complex process, which is influenced by many internal and external factors. In addition to a complex set of different supply factors, corporate characteristics and demand factors, the existing literature also highlights the important role of regulation, cost savings and customer benefits. Therefore, we attempt to grasp the basic characteristics of mental accounting closely and derive the decision-making mechanism of ecological innovation based on the decision-making mechanism of mental accounting.

(1) Decision-making process of enterprises' ecological innovation. Based on the mental accounting theory, the enterprise will consider the influence of external factors on the ecological innovation firstly during the decision-making process of ecological innovation: (1) Progress of ecological technology. The enterprise needs the support of all kinds of ecological technology which may produce new green products or green technology in the process of carrying out green innovation in order to achieve efficient use of energy and resources, which could bring new
market space and new economic growth point for the enterprise, or improve the green production capacity of enterprises effectively and save production cost, therefore, the development of the ecological technology plays an important role in ecological innovation decision of enterprises (Fergusson & Langford, 2006). (2) Green market competition. In the current, the competition among enterprises evolved from the original “market competition” into the “green market competition”, the way of enterprises to compete with competitors is how to quickly capture the green market, and how to effectively meet the demand of green market under the green market competition environment, so the enterprises need to adopt ecological innovation in response to market competition actively and increase investment in green technology if they want to win in the fierce competition of green market. Therefore, the competitive pressure of green market may also affect the ecological innovation decision of enterprises. Secondly, the enterprises will consider whether there are incentives: (1) Government’s green incentives. Owning to the output of ecological innovation belongs to a kind of public goods and the strength of economic benefits of enterprises’ ecological innovation is limited, so the government requires to adopt related policies and measures to make up for the “loss” of ecological innovation, and then stimulate the enterprises’ ecological innovation behavior effectively. (2) Government’s green regulation. The enterprises pursuing profit maximization will take measures to improve their behaviors only when they believe that violations of non-compliance with regulations will be found and severely punished. (3) Public’s preference for green products. The change of green consumption consciousness will inevitably extend more blank demands. Therefore, while expanding the green market of enterprises, it also puts forward new directions and requirements for ecological innovation of enterprises and effectively stimulates their ecological innovation behaviors. Finally, the enterprise will consider the influence of internal factors: (1) Green innovation spirit of enterprises. Entrepreneurs with innovative spirit often do not stick to the rules. They will timely adjust the innovation strategy of enterprises according to the dynamic changes of the market, and develop new products or processes, so as to determine the leading advantages of enterprises in green products, improve the green innovation ability of enterprises, and provide important support for the sustainable development ability of enterprises. (2) Enterprise scale. Small enterprises are usually organizations with lower endowments of financial, human and technical resources than large enterprises. As a result, they may lack the internal expertise to develop ecological innovations or the internal capital needed to buy innovations developed by others. (3) Enterprise age. Some scholars believe that old enterprises may have accumulated more knowledge, technology and human capital, while others believe that old enterprises may have more technological and cultural inertia, which makes them less willing to participate in ecological innovation.

(2) The decision-making results of ecological innovation of enterprises. According to the mental accounting theory, the benefits obtained by enterprises after the implementation of ecological innovation should reach their psychological expectations which are reflected in the improvement of enterprises’ ecological innovation ability and the increase of ecological innovation benefits caused by ecological innovation. On the one hand, the enterprises should constantly increase the investment on the research and development of ecological technology with the improvement of the public’s overall awareness of green consumption, and improve the production process of green products with the help of ecological innovation, and improve their ecological innovation ability constantly. The improvement of ecological innovation ability is conducive to the generation of innovation results. The enterprises can expand the green market of enterprises and improve the green competitiveness of enterprises by the transformation of scientific and technological achievements. Therefore, the improvement of enterprise ecological innovation ability is an important psychological factor for the enterprises’ ecological innovation decision. On the other hand, another main purpose of ecological innovation for enterprises is to obtain more benefits of ecological innovation., the enterprise will improve its production cost during the process of implementing ecological innovation in the short term, but the enterprises will gain advantages in various aspects from the perspective of the long-term development of enterprises with the government’s strong support to the development of green, the social public demand for green products, which can largely reduce the ecological innovation costs, achieve long-term benefits. Therefore, obtaining ecological innovation benefits is another important psychological factor for enterprises to consider.
during the process of decision-making of ecological innovation.

MATERIALS AND METHODS

Decision model of enterprises’ ecological innovation based on mental accounting

Here, we mainly refer to the Howard-Sheth model which is a fusion and modification of the previous multi-consumer purchase decision-making model. In this model, the stimulus and input factors refer to various kinds of information existing in the outside world.

After the decision makers obtain the information related to the stimulus and the ecological innovation decision, the information enters the brain of the decision maker, and the decision maker deals with the information and produces different reaction behaviors according to past experience and own preference criteria. The Howard-Sheth model integrates a variety of previous consumer purchase behavior models, and explains the consumer’s purchase behavior in a more comprehensive way. The model has many variables, including sociology, psychology, management and other multi-disciplinary variables, which makes the model has great practical significance, especially suitable for empirical research model of decision-making behavior analysis.

For the enterprises’ ecological innovation decision, the decision-making is affected by the characteristics of the enterprise (enterprise size and enterprise age). In addition, external factors including government green incentives, government green regulation, green market competition, progress of ecological technology and public preference for green products all affect the decision-making behavior of enterprises’ ecological innovation. These can correspond to external factors, stimuli and input factors in the model. Mental accounting as a psychological activity of decision maker should exist as a mediator variable like the internal factor, so the internal factors can be integrated into the model. Therefore, we made the following modifications based on the Howard-Sheth model as the research hypothesis model of this paper (Figure 1).

Hypotheses

(1) External factors. Rehfeld, Rennings, & Ziegler (2007); Horback (2008) believed that technology driving factors were particularly important for the initial development stage of ecological innovation. Machiba (2010) pointed out that non-technical changes would lead to higher environmental benefits. Ekins (2010) believed that green technology mechanism was related to clean

Figure 1. Decision-making model of Enterprises’ Ecological Innovation Based on mental accounting
technology and environmental research and development or green product innovation. In the aspect of green market competition, domestic scholars thought that they needed to take the initiative to adopt the ecological innovation strategy to deal with the market competitors, enhance the investment accumulation of green technology, and vigorously carry out ecological innovation if enterprises wanted to win in the fierce competition of green market.

Therefore, we proposed the following hypothesis:

H1a: The progress of ecological technology will affect the ecological innovation decisions of enterprises

H1b: The green market competition will affect the ecological innovation decisions of enterprises

(2) Stimulus and input factors. At present, many scholars regarded regulation as an important determinant of ecological innovation. Horbach (2008) concluded that environmental regulation and cost reduction were the main determinants of ecological innovation based on the analytical perspective of patent data. Leitner, Wehrmeyer, & France (2010) argued that rational environmental regulation could stimulate innovation and compensate for innovation costs and competitive advantage. Ambec, Cohen, Elgie et al. (2013) believed that well-designed regulations could inspire innovation, and these innovations could offset the cost of the code in many cases. Lanoie, Laurent-Lucchetti, Johnstone et al. (2011) found that environmental regulation could stimulate innovation, and the increased costs due to regulation could be partially offset by this new innovation. Chen, Chang, & Wu (2012) believed that environmental regulations were the external driving force for enterprises to carry out ecological innovation. Xu, He, & Long (2012) believed that environmental regulation measures would affect enterprises to carry out ecological innovation. Kammerer (2009) analyzed the decisive factors of ecological innovation and believed that consumer interests played a very important role in the process of ecological innovation based on the perspective of consumer interests. Weng & Lin (2011) found that consumers and the market would have a significant impact on the enterprises’ ecological innovation.

Therefore, we proposed the following hypothesis:

H2a: The green incentives of governments will affect the ecological innovation decisions of enterprises

H2b: The green regulations of governments will affect the ecological innovation decisions of enterprises

H2c: The public preference for green products will affect the ecological innovation decisions of enterprises

(3) Internal and psychological factors. Leenders & Chander (2013) found that environmental awareness of enterprises and quality management of products and other factors could more stimulate enterprises’ ecological innovation behavior. Sarkar (2013) showed that small enterprises might suffer from scale disadvantage which means that larger companies were often associated with more aggressive adoption of clean technologies. Horbach (2008) thought that the implementation of environmental management system (EMS) reflected the strong organizational ability of enterprises in environmental management which made ecological innovation easier. Eliadat, Kelly, Roche et al. (2008) believed that the importance of corporate managers to the environment was one of the key factors for companies to adopt ecological innovation strategies and implement ecological innovation. Horbach (2008) found that companies that expect to increase their turnover were more likely to engage in ecological innovation in German manufacturing companies. Some scholars also believed that ecological innovation could increase the market share of existing products, reduce production costs, and increase corporate profits by increasing the price of green products to improve the company’s green competitiveness and ecological innovation benefits. Therefore, we proposed the following hypothesis:

H3a: The green innovation spirit of enterprises will affect the ecological innovation decisions of enterprises

H3b: The enterprises scale will affect the ecological innovation decisions of enterprises

H3c: The enterprises age will affect the ecological innovation decisions of enterprises

H3d: The ecological innovation abilities of enterprises will affect the ecological innovation decisions of enterprises

H3e: The ecological innovation benefits of enterprises will affect the ecological innovation decisions of enterprises

Data source
In order to collect data for research institutes, we conducted surveys of high-tech enterprises in Beijing, Guangzhou, Wuhan, Guiyang, Jinan, and issued 575 questionnaires and 484 questionnaires.
The effective recovery rate was 84.17%. The basic information is shown in Table 1.

RESULTS ANALYSIS

Reliability and validity test
(1) Reliability test. The results of the reliability test are shown in Table 2. The variable of the Cronbach’s is greater than 0.7. The reliability test is passed, which also indicates that the design of the scale is in accordance with the reliability requirement. It can be seen from the “CITC value” that the CITC values corresponding to the analysis items are all higher than 0.4, which indicates that there is a good correlation among the analysis items, and also indicates that the reliability level is good.
(2) Validity test. We used the exploratory factor analysis to test the validity of the empirical scales that influence the influencing factors of enterprises’ ecological innovation decisions. The results of the validity test are shown in Table 3. The test results show that the KMO value is 0.827 which also indicates that the variable measure is effective.

It can be seen from Table 3 that the common value corresponding to all the research items is higher than 0.4 which indicates that the research item information can be effectively extracted. At the same time, the variance interpretation rate values of the two factors are 62.476% and 20.538% respectively. The cumulative variance interpretation rate after rotation is 83.015%, which is greater than 50% indicating that the information amount of the research items can be effectively extracted. Therefore, the above analysis results show that the scale design meets the requirements of reliability and validity.

Table 1. Sample description

| Variable                  | Attribute                             | %    |
|---------------------------|---------------------------------------|------|
| Enterprise scale          | Within 100 people                     | 32.26|
|                           | 100-500 people                        | 38.71|
|                           | 500-1000 people                       | 3.23 |
|                           | More than 1000 people                 | 25.81|
| Industry                  | Machinery / equipment manufacturing   | 12.9 |
|                           | Leather / textile clothing            | 3.23 |
|                           | Electronic product                    | 9.68 |
|                           | Chemical industry                     | 0    |
| Nature of ownership       | Service industry                      | 16.13|
|                           | Environmental protection industry     | 19.35|
|                           | Pharmacy                              | 6.45 |
|                           | Other                                 | 32.26|
|                           | Multinational enterprises             | 12.9 |
|                           | State-owned enterprise                | 22.58|
| Enterprise age            | Within 1 year                         | 3.23 |
|                           | 1-3 years                             | 32.26|
|                           | 3-5 years                             | 29.03|
|                           | 5-10 years                            | 16.16|
|                           | More than 10 years                    | 19.35|

Table 2. Variable measurement and reliability test results

| Variable                         | Corrected item total correlation (CITC) | Item deleted factor | Cronbach coefficient |
|----------------------------------|----------------------------------------|---------------------|----------------------|
| Ecological innovation decision making | 0.931                                  | 0.95                |                      |
| Green market competition         | 0.937                                  | 0.951               |                      |
| Progress of ecological technology | 0.914                                  | 0.951               |                      |
| Public preference for green products | 0.798                                  | 0.954               |                      |
| Ecological innovation benefits   | 0.8                                    | 0.954               |                      |
| Ecological innovation ability    | 0.871                                  | 0.952               | 0.958                |
| Green innovation spirit          | 0.866                                  | 0.953               |                      |
| Green regulation of government   | 0.828                                  | 0.954               |                      |
| Green incentive of government    | 0.619                                  | 0.96                |                      |
| Enterprise scale                 | 0.592                                  | 0.96                |                      |
| Enterprise age                   | 0.455                                  | 0.964               |                      |
Table 3. Variable measurement and factor analysis results

| Variable                                      | Component coefficient | Component |
|-----------------------------------------------|-----------------------|-----------|
|                                              | Factor 1 | Factor 2 |          |
| Ecological innovation decision making        | 0.934    | 0.231    | 0.926    |
| Green market competition                     | 0.918    | 0.288    | 0.926    |
| Progress of ecological technology            | 0.836    | 0.415    | 0.87     |
| Public preference for green products         | 0.786    | 0.299    | 0.707    |
| Ecological innovation benefits               | 0.772    | 0.315    | 0.695    |
| Ecological innovation ability                | 0.902    | 0.197    | 0.853    |
| Green innovation spirit                      | 0.934    | 0.107    | 0.884    |
| Green regulation of government               | 0.847    | 0.221    | 0.767    |
| Green incentive of government                | 0.731    | 0.004    | 0.535    |
| Enterprise scale                             | 0.285    | 0.932    | 0.95     |
| Enterprise age                               | 0.134    | 0.951    | 0.922    |
| Characteristic root value (before the rotation) | 8.493   | 1.469    | -        |
| % of Variance (before the rotation)          | 70.78%   | 12.24%   | -        |
| Cumulative % (before the rotation)           | 70.78%   | 83.02%   | -        |
| Characteristic root value (after the rotation)| 7.497   | 2.465    | -        |
| % of Variance (after the rotation)           | 62.48%   | 20.54%   | -        |
| Cumulative % (after the rotation)            | 62.48%   | 83.02%   | -        |
| KMO Measure of Sampling Adequacy             | 0.827    |          | -        |
| Bartlett's Test of Sphericity                | 470.207  |          | -        |
| df                                           | 66       |          | -        |
| sig.                                         | 0        |          | -        |

Table 4. Descriptive statistics and correlation analysis

| Variable                                      | Mean | S.D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|-----------------------------------------------|------|------|---|---|---|---|---|---|---|---|---|----|----|----|----|
| Ecological innovation decision making         | 3.441| 1.005| 1 |  |   |   |   |   |   |   |   |    |    |    |    |
| Green market competition                      | 3.71 | 1.111| 0.795** | 0.537** | 0.374* | 0.918** | 1 |   |   |   |   |    |    |    |    |
| Progress of ecological technology             | 3.677| 1.318| 0.754** | 0.598** | 0.510** | 0.825** | 0.887** | 1 |   |   |   |    |    |    |    |
| Public preference for green products          | 3.637| 1.261| 0.635** | 0.541** | 0.302 | 0.713** | 0.858** | 0.718** | 1 |   |   |    |    |    |    |
| Ecological innovation benefits                | 3.46 | 1.333| 0.666** | 0.488** | 0.386* | 0.656** | 0.733** | 0.712** | 0.716** | 0.813** | 1 |    |    |    |    |
| Ecological innovation ability                 | 3.744| 1.135| 0.797** | 0.429* | 0.296 | 0.513** | 0.923** | 0.883** | 0.785** | 0.864** | 0.705** | 1 |  |    |    |
| Green innovation spirit                       | 3.993| 1.139| 0.844** | 0.931* | 0.241 | 0.830** | 0.884** | 0.789** | 0.906** | 0.877** | 0.866** | 1 |    |    |    |
| Green regulation of government                | 3.5  | 1.252| 0.746** | 0.442* | 0.326 | 0.803** | 0.831** | 0.787** | 0.725** | 0.846** | 0.648** | 0.753** | 0.812** | 1 |    |
| Green incentive of government                 | 3.763| 1.13 | 0.634** | 0.189 | 0.227 | 0.498** | 0.556** | 0.411** | 0.454* | 0.644** | 0.559** | 0.541** | 0.602** | 0.560** | 1 |    |

Table 5. OLS regression results

| Variable                                      | Unstandardized Coefficients | Standardized Coefficients |
|-----------------------------------------------|----------------------------|---------------------------|
|                                              | B   | Std. Error | t     | p    | VIF | R²   | Adjusted R² | F   |
| constant                                      | 1.174| 0.416      | -    | 2.821| 0.011* | 9.764 |            |     |
| Enterprise scale                              | 0.511| 0.232      | 0.597 | 2.205| 0.041* | 9.764 |            |     |
| Enterprise age                                | 0.306| 0.192      | 0.361 | 1.595| 0.128 | 8.245 |            |     |
| Ecological innovation decision making         | 0.276| 0.396      | 0.305 | 0.697| 0.495 | 3.75  |            |     |
| Green market competition                      | 0.329| 0.229      | 0.399 | 1.44 | 0.167 | 8.321 |            |     |
| Progress of ecological technology             | 0.253| 0.189      | 0.318 | 1.337| 0.198 | 9.06  | 0.888 | 0.813 | 11.875 (0.000**) |
| Public preference for green products          | 0.019| 0.137      | 0.023 | 0.136| 0.893 | 4.561 |            |     |
| Ecological innovation benefits                | 0.728| 0.281      | 0.834 | 2.594| 0.018* | 6.61  |            |     |
| Ecological innovation ability                 | 0.142| 0.223      | 0.161 | 0.635| 0.533 | 9.258 |            |     |
| Green innovation spirit                       | 0.171| 0.152      | 0.213 | 1.13 | 0.273 | 5.732 |            |     |
| Green regulation of government                | 0.184| 0.107      | 0.237 | 1.71 | 0.305 | 3.093 |            |     |

Dependent variable: enterprise ecological innovation decision
D.W.:2.331
*p<0.05, **p<0.01
Analysis of empirical results

We used SPSS17.0 to analyze the correlation among variables. It can be seen from Table 4 that there is no collinearity among the dependent variables, and the VIF values are less than 10 with a correlation coefficient of 0.8 as the initial judgment. In addition, the average value of ecological innovation decision-making of enterprises is 3.441, and the average value of the green incentives of government, green regulation of government, green innovation spirit of enterprises, ecological innovation ability of enterprises, ecological innovation benefits, public’s preference for green products, progress of ecological technology, green market competition is 3.763, 3.5, 3.593, 3.774, 3.46, 3.637, 3.677, 3.71, both higher than 3.

We used OLS regression to analyze the impact of variables on enterprises’ ecological innovation decisions. It can be seen from Table 5 that the enterprises’ ecological innovation decision-making and all variables are significant, and the correlation coefficient values are all greater than 0, which means that there is a positive correlation between the enterprise’s ecological innovation decision-making and each variable. It means that our previous assumptions H1a, H1b, H2a, H2b, H2c, H3a, H3b, H3c, H3d, H3e have been verified.

According to the above analysis results, we believed that the main factors affecting the decision-making of ecological innovation were the green incentive of government, the green regulation of government, the green innovation spirit of enterprises, the ecological innovation ability of enterprises, the ecological innovation benefits, the public’s preference for green products, the progress of ecological technology and the green market competition. Of course, enterprise scale and enterprise age will also affect the ecological innovation decision.

CONCLUSIONS

Due to the influence of internal and external factors, enterprises often do not take the initiative to adopt ecological innovation. In order to solve the above problems of enterprises’ ecological innovation, we must clarify the decision-making mechanism of enterprises’ ecological innovation and explore the key factors that affect enterprises’ ecological innovation. From a new perspective of behavioral economics, we deduced ecological innovation decision-making mechanism based on mental accounting, and we found out the key factors influencing the ecological innovation including green incentives of government, green regulations of government, green innovation spirits of enterprises, ecological innovation abilities of enterprises, ecological innovation benefits, public preference for green products, progress of ecological technology, green market competition, enterprise scale and enterprise age. The research results more truly reflect and predict the decision-making behavior of enterprises’ ecological innovation, expand the application scope of mental accounting theory, and provide theoretical support for the decision-making of enterprises’ ecological innovation.

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