Research on Innovation and Practice of Enterprise Economic Management Based on Limited Rationality Hypothesis

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Abstract: Knowledge economy is playing an increasingly important role in social economy, and the development of enterprises must conform to the trend of the times. Because of the existence of uncertainty, individuals must consider other people's choices while pursuing the behavior of maximizing utility. It is this endogenous fundamental uncertainty that really constitutes the essence of bounded rationality. Under this background, if enterprises want to win enough competitiveness and achieve sustainable development, they must change their economic management mode and explore innovative economic management mode that suits their own development needs. Therefore, this paper makes a brief analysis of the innovation and practice of enterprise economic management based on the bounded rationality hypothesis, and makes specific analysis of specific problems, and puts forward corresponding effective suggestions for enterprise economic management innovation.

1. Introduction

Knowledge has become an important element to promote economic development. Under the background of world economic integration, knowledge innovation ability has become the main factor that marks the economic level [1]. Knowledge economy plays a more and more important role in social economy, and the development of enterprises must conform to the trend of the times, attach importance to the innovative consciousness and practice of economic management, effectively combine knowledge economy with management, and strengthen personnel training and human resource management, so as to strengthen the competitiveness of enterprises and improve their economic benefits.

In economic theory, the analysis of uncertainty is not only an important content of Arrow-Debru general equilibrium theory, but also an important content of emerging theories such as information economics, behavioral economics, experimental economics and evolutionary economics [2-3]. Nowadays, the development of enterprises is facing an era of economic globalization, with the rapid development of economy and science and technology, and the increasingly fierce competition in the world. How to adapt to this brand-new development environment and obtain the potential of

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enterprise development under the fierce competition in the world is an unavoidable problem for all enterprises. Therefore, the innovation of enterprise economic management under the new situation has been put on the agenda by many enterprises. Therefore, the research idea of this paper is to summarize the general behavior theory applied by operation management in the study of bounded rationality, and then put forward specific strategies for innovation and practice of enterprise economic management based on bounded rationality hypothesis.

2. The Joint Point of Uncertainty and Behavioral Economics-Bounded Rationality

2.1 Evolution of Rational Hypothesis

Hayek expounded the theory of limited knowledge by establishing a psychological foundation. In his view, everyone's knowledge is limited. Under the constraint of limited knowledge, even if a person can make rational calculations, he will inevitably make mistakes. In the traditional economic analysis, rationality refers to the fact that after the actor has certain information, he updates his belief according to the transcendental belief and certain rules, and forms the posterior belief. The rules here are Bayesian rules.

For the mathematical characterization of bounded rational behavior based on random selection, the MNL model proposed by McFadden was used in previous studies. In the MNL model, if the alternatives are discrete, the probability that the alternatives i are selected is:

$$\phi_i = \frac{e^{\lambda U_i}}{\sum_{j=1}^{n} e^{\lambda U_j}} \quad (1)$$

If the alternatives are continuous, the selected probability density function is:

$$\phi(x) = \frac{e^{\lambda u(x)}}{\sum_{j=1}^{n} e^{\lambda u(y)} dy} \quad (2)$$

The λ parameter represents the rational degree of the decision maker. When $\lambda = 0$, the decision-making obeys the uniform distribution in the selection space, which means that the decision-maker can't distinguish the difference between the alternatives, so he chooses randomly according to the same probability. When $\lambda \to \infty$ is used, the decision-maker chooses the best result under complete rationality with probability 1.

Compared with the rationality in neoclassical economics, Hayek correctly pointed out the rational state of the parties' realistic decision-making: irrational and irrational ignorance [5-6]. The limitation of knowledge leads to the limitation of rational decision-making by the parties, and then leads to rationality; The parties realize the dispersion of knowledge in society, consciously give up their understanding of some knowledge, and even consciously adopt an intuitive or impulsive way of action, which is rational ignorance.

2.2 A New Theory of Bounded Rationality Hypothesis

There is a big gap between rational hypothesis and investors' actual behavior. Behavioral economics demonstrates the bounded rationality of behavior subject from various angles, and thus behavioral economics relaxes the rational hypothesis of behavior subject to bounded rationality hypothesis. In recent years, the game theory developed rapidly, most of which considered incomplete information and information asymmetry. They were not bounded rationality model, but

super infinite rational models. Information processing cost itself is not the essence of bounded rationality, and some improved non-traditional objective functions of decision makers are not bounded rationality when optimal decision is made under the constraint of computing cost.

The interaction between individuals will make the number of participants who choose different strategies evolve with time, so these irrational strategies and so-called rational strategies appear and exist together in the evolution process. Therefore, we believe that the root of bounded rationality is fundamental uncertainty, which is different from incomplete information. Keynes called this endogenous uncertainty the uncertainty of luck [7]. Therefore, the author thinks that because individuals must consider other people's choices while pursuing the behavior of maximizing utility, it is this endogenous fundamental uncertainty that really constitutes the essence of bounded rationality.

3. Conceptual Analysis of Knowledge Economy

3.1 The Concept of Knowledge Economy

Knowledge economy is an economy based on knowledge, which can also be called intelligent economy. Knowledge economy mainly refers to the production, distribution and exchange of knowledge and information. Knowledge-based economy can make up for the shortcomings of the past economy, promote the optimization and reform of the distribution of production resources, improve the quality of the economy on the basis of the existing environmental carrying capacity, and promote the stable and scientific development of the economy.

3.2 The Value of Knowledge Economy

Knowledge economy is an important economic form to promote social and economic development, and it plays an increasingly important role in the world economic system. At present, knowledge innovation, harmony between man and nature and economic integration advocated by the whole world are closely related to the development of knowledge economy. Knowledge-based economy is an important condition for optimizing the operation mode of enterprises, improving the efficiency of enterprise management and promoting the rapid development of enterprises. We should strengthen the application of knowledge-based economy, improve the development efficiency of knowledge-based economy and promote the continuous innovation and development of knowledge-based economy. It can provide better support for enterprise talent innovation, so as to meet the needs of enterprise personalized development.

4. Problems in Current Enterprise Economic Management

4.1 The Economic Management System of Enterprises is Imperfect

At present, China's enterprise economic management system is not perfect and standardized, and lacks a unified management standard and supervision system. Without a unified economic management standard and evaluation index system, it will not only make it difficult to form a standard unified management in the production process of enterprises, but also make the quantification of internal funds and the implementation plan have different degrees, resulting in unclear responsibilities, unclear powers and obligations of relevant staff and lack of pertinence of posts. Imperfect economic management system of enterprises can not meet the needs of the times, which will restrict the development of enterprises, resulting in low production quality and huge waste of resources.

4.2 Old Enterprise Economic Management Organization

In the process of enterprise development, economic management departments will have a great impact on the development level of enterprises. At present, the economic management organizations of some enterprises are still relatively old, which results in the constraint of economic management of enterprises. To some extent, due to the influence of traditional management methods, the economic management organization model of some enterprises is relatively simple, and the main mode is based on linear functional management organization system. The assignment of enterprise employees' tasks is not scientific, and the responsibilities are not distributed to individuals. This kind of phenomenon causes the economic management mode of enterprises to be too aging and loose, and the information sharing among various departments of enterprises can not be realized, which further makes it difficult for enterprise leaders to make accurate decisions, thus affecting the scientific nature of enterprise economic management [8].

4.3 The Management Concept is Unscientific

At present, many enterprises in our country still have the characteristics of extensive development in the development process, and the concept and management mode of knowledge economy have not been fully popularized. Many enterprises regard the expansion of scale as the top priority, and they often pay more attention to short-term profit and loss, failing to judge the future growth point of enterprises.

The existing economic management mode of enterprises is difficult to effectively implement the development strategy of enterprises, which hinders the continuous innovation and upgrading of enterprises. At present, most enterprises have not deeply understood the meaning of knowledge economy, failed to put forward innovative management strategies based on the needs of the times, and failed to attach great importance to the innovation of economic management and the problems exposed in practice, which made it difficult for enterprises' economic management to play an effective role. Enterprises have insufficient capital investment in knowledge updating and do not pay attention to knowledge updating, which can not promote the active upgrading of enterprise products, thus making the market competitiveness of enterprises insufficient and seriously affecting the follow-up force of enterprise development.

5. Strategies of Innovation and Practice of Enterprise Economic Management under the Guidance of Bounded Rationality Hypothesis

With the development of market economy era, the pressure of market competition is increasing. In the economic management of enterprises, managers should be able to effectively introduce advanced management concepts and technologies and try to innovate traditional management methods, so that they can effectively improve the economic management of enterprises, adapt to the development of economic market and provide technical support for the sustainable development of enterprises.

5.1 Grasp the Basic Content of Enterprise Economic Management

Understanding the basic content of enterprise economic management is one of the important factors affecting the quality and efficiency of enterprise economic management. Therefore, to implement the innovation of enterprise economic management, we should first fully understand and grasp the basic contents of enterprise economic management. It is necessary to innovate ideas and change management ideas, so that they can be used as an important way of economic management

innovation in enterprises, and actively implement the basic content of economic management in enterprises.

In actual decision-making, it is not necessary for decision-makers to consider all possible solutions, and it is not necessary to prioritize all the solutions, but only to consider several alternatives and find satisfactory solutions. On the one hand, this decision-making method can improve the decision-making efficiency of decision-making; On the other hand, it can also provide solutions to some decision-making problems in life. As early as 1972, Mesarovic and Takahara made a systematic study on satisfactory decision, and gave the definition of satisfactory decision [9], which is shown in formula (3):

Assuming that the given alternative set is M and the condition set is Ω, there is a function

$$g: M \times \Omega \to R, \tau: \Omega \to R \quad (3)$$

g is a cost (or attribute) function, and τ is a function of expectation level (or tolerance level). Satisfactory decision-making problem is to find $\hat{m} \in M$. Making $\hat{m}$ satisfy $(\forall \omega)(\omega \in \Omega \Rightarrow g(\hat{m}, \omega) \geq \tau(\omega))$.

Under the subject assumption of bounded rationality, because the decision-maker has limited computing power, limited memory ability, limited logical reasoning ability and only incomplete information, it can't sort all the strategies in the alternative strategy set, and even when making decisions, the decision-maker won't take all the strategies in the alternative set into consideration, so the consideration set is a set composed of those strategies that will be taken into consideration when making decisions by bounded rational decision-makers. Therefore, in the stage game, the strategy of considering the concentration has a dynamic increase process until the end of the game, and the process of considering the dynamic increase strategy of the set also indicates that the rational degree of the decision-maker is increasing (Figure 1).

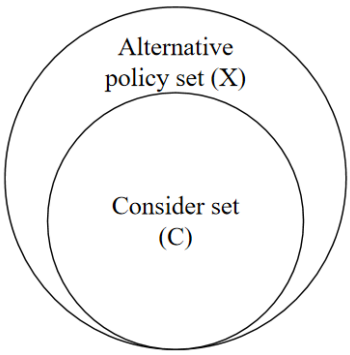

Fig.1 Relationship between Alternative Policy Set and Consideration Set

By investigating the cognition of uncertainty, we can see that bounded rationality is the key to restrict the development of human cognition, and the deep understanding of bounded rationality promotes the study of uncertainty. To some extent, bounded rationality can be regarded as the logical premise of the study of uncertainty. From the evolution law and complexity law of the system, the instability, uncertainty, nonlinearity and contingency of the system are revealed. Therefore, we should combine the actual situation of enterprises, guide the economic management of enterprises from a macro perspective and scientific management methods, and let enterprises move towards the road of economic management reform and innovation. In the process of reform, we should adjust in real time to continuously improve the external competitiveness of enterprises.

5.2 Realize the Innovation of Management System

The focus of enterprise economic management is to realize the innovation of management system, and realize the optimal allocation and upgrading of enterprise resources based on innovative management system, so as to improve the efficiency and quality of enterprise production.

Human cognition of things is inseparable from its own cognitive structure, that is, the way and ability to recognize things in the past. Whether through inductive analysis of experience or rational logical reasoning, we try to find out the essential laws behind the changing things and seek certainty in the uncertain world. If the utility brought by uncertainty is greater than the loss brought by risk, people tend to make risky decisions. Economist Keynes explained uncertainty with psychological law. In his view, uncertainty is related to people's consumption tendency, liquidity preference and the law of marginal utility of capital.

Enterprises should set up the idea of keeping pace with the times, constantly update their ideas, and meet the new requirements of enterprises in the era of knowledge economy. It is necessary to constantly innovate in management, innovation and operation, change passiveness into initiative, and actively explore new management concepts and models by using rich business experience. Deeply tap the potential of enterprises, continuously improve the management system, perfect the existing management structure, realize the optimal allocation of resources and the reorganization of the central power structure, and further improve the development ability of enterprises.

5.3 Innovate the Economic Management Concept of Enterprises

Concept determines the development direction of enterprises or managers to a great extent. Only by continuously adopting advanced management ideas can enterprises survive in the fierce competition. Managers can keep up with the pace of enterprise development and ensure the long-term operation of the company only by constantly innovating their own business philosophy.

The external environment interacts with individual decision-makers, and the external environment acts through individual decision-makers. As a large system, external environmental factors interact and influence with the small system of individual decision-makers. In the process of interaction between the two systems, the external environment acts as an external cause through the internal cause of individual decision-makers, and the internal cause reacts on the external cause. The uncertainty of external environment first interacts with the cognition of individual decision-makers, and the result is filtered by the mentality and emotion of individual decision-makers. Like the philosophical point of view, “people's feelings are the reflection of the outside world”, but this reflection is limited and incomplete. As shown in fig. 2.

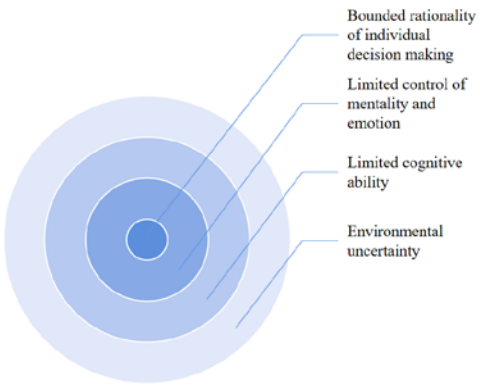

Fig.2 Finite Rational Decision Model

In fact, the understanding of uncertainty has a complicated process. First of all, the subject of cognition should not only choose the object of cognition and grasp the result and knowledge of

cognition, but also have an overall grasp of the knowledge state of the whole world. Although these knowledge are independent, they are logically related to each other, and they should be sorted according to the main body's estimation of utility. Secondly, this knowledge only involves the subject's understanding, but not the characteristics of the object itself, regardless of whether the object itself is uncertain or not. Finally, in a specific time and space, the uncertainty of the things should be classified and described according to functions or structures. The complexity of this cognitive process makes it more difficult to pursue certainty.

For Chinese enterprises, the concept of economic management is the core factor that determines the overall development direction of enterprises. Therefore, the top management of the company must be leaders with advanced ideas and strategic vision, and always maintain a keen sense of competition and crisis. Enterprises regularly train managers on modern management concepts and receive new economic management education. This is the only way for enterprises to achieve healthy and steady development.

5.4 Realize the Informationization of Enterprise Economic Management

At present, the development of modern enterprises is facing the development trend of increasing informationization and technology. For the economic management of enterprises, it should also conform to the development of the times, and combine this economic model to increase the improvement of enterprise science and technology and realize the modernization and informationization of enterprise management.

The nature of uncertainty is subjective. According to the viewpoint of quantum mechanics, the world itself is uncertain, and uncertainty is subjective, which is related to people's choice. Generally speaking, there are two opposite formulations about uncertainty in modern economics. One is exogenous uncertainty, such as consumer preference; The other is endogenous uncertainty, which is related to the operation of the economic system itself and comes from the decision-making of economic operators. Using modern resources and adopting scientific means to effectively protect enterprise information resources can avoid the economic risks faced by enterprises, improve the management ability of financial information, provide reliable basis for managers to make scientific investment decisions, avoid financial crisis, and ensure the reliability of enterprise information and the strong competitiveness of enterprises in market competition.

6. Conclusion

Enterprises in the era of knowledge economy are faced with the task of transforming from extensive development to intensive development, and knowledge economy poses new challenges to the innovation of enterprise economic management. How to integrate the innovation of enterprise economic management and knowledge economy organically, serve enterprises better with innovative ideas, and promote the development of enterprises is a problem that needs close attention at present. Limited rationality is the foundation of uncertain cognition and the objective response of human cognitive ability. Through the analysis of bounded rationality, we can objectively evaluate our cognitive ability, make an inner understanding of uncertainty in the uncertain world, and internalize the objective understanding of uncertainty into the knowledge structure of human beings. Therefore, starting from the current problems of enterprise economic management, this paper puts forward the measures of enterprise economic management innovation and practice based on bounded rationality hypothesis, so as to realize the goal of promoting enterprise economic management innovation and practice with knowledge economy.

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