

Research on Basic Logic and Strategy of Industrial Technology Innovation Based on Technological Orbit

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Abstract—Technological track can effectively promote the effective integration of technology and economy, judge the development direction and trend of technological innovation, and help industries catch up. Starting from the technological innovation of the technological track, the industry can carry out innovation activities more reasonably and improve the success rate of innovation. This study explores the connotation of technological track from the perspective of technological innovation theory, analyzes the inherent logic and characteristics of technological innovation of industry based on technological track, and finally puts forward the strategy of technological innovation for industry to enter the technological track, that is, to explore the time and way to enter the technological track, and to cultivate and improve the ability of industrial technological innovation. We should establish and improve the industrial technology learning mechanism, and build a technology diffusion system that matches the characteristics of industrial structure.

Keywords—*industry, technological orbit, technological innovation, technological paradigm, technological innovation*

I. INTRODUCTION

The developed countries often attach importance to the study of the law of economic development and form their own theoretical system, of which the more representative is the theory of technological track. It is proposed that the man is Dorsey, an Italian evolutionary economist. In his deep-seated study of the law of economic operation, Kuhn's scientific paradigm concept inspired him to put forward and create this theory. In his theory, he explained the concrete meaning of technological orbit and technological paradigm and the relationship between them. In the process of solving technology problems in the economic field, the same technical skills can be used to solve similar problems. Many successful applications will form a set of mature technical model, called technical paradigm. All activities of technology paradigm in economic operation are technological track. So technology track is made up of technology paradigm. As an important component of the technological track, the boundary and scope of the technological mode are determined by its direction. The criteria for identifying the technological paradigm are mainly to consider the characteristics of the technological paradigm in solving technical problems, as well as the technical and economic scales involved [1].

Accurate market positioning and rapid development of the industry are conditional on being able to identify the direction of the technology track in a timely manner, knowing the market standards. The background conditions for the emergence of the new technology track include the following: firstly, industrial technology or industrial technology has achieved major breakthroughs, and some leading technologies have even had a serious impact on other industries; secondly, the overall change of social group concept has created an urgent bottleneck restriction on such areas as consumption, environmental protection, health care and so on. Third, the trend of domestic and foreign political and economic environment or unpredictable changes suddenly push a related industry or industry into trouble. Such as the ZTE crisis that has impacted the chip industry and technical barriers to trade in other industries. Once a new technological track emerges, the industry can grasp and utilize it in time, and new success will be achieved in technological innovation. The development of each industry needs corresponding industrial standards and product standards to regulate its economic behavior. These standards are formed by many enterprises through a large number of specific business practices. Once the standards are formed, they can be popularized and implemented in industrial clusters or the entire industry. The technological choice and solution adopted in the standard (including technological route, technological mode, technological fusion mode, technological standard, etc.), the relevant industrial policies, industrial standards, the association rules of technological innovation, knowledge integration and the compatible rules of the interface of the cooperation module should all be listed as the new technology of industrial judgment. Orbital factors are the basis for the transformation of technological innovation market [2].

II. INHERENT LOGIC AND CHARACTERISTICS OF TECHNOLOGICAL INNOVATION BASED ON TECHNOLOGICAL ORBIT INDUSTRY

The direction of enterprise's technological innovation depends on the choice of technological track and the choice of technological track which is consistent with its own innovation conditions. It will achieve twice the result with half the effort. Based on the particularity of the industry, there are specific requirements for the choice of technology track. Conversely, the technological development of the industry cannot be divorced from specific technological trajectories and has strong constraints. The two are mutually causation, reflecting the direction and inherent law of technological innovation. So, for a particular

enterprise that focuses on a particular field, the best way to innovate will always be found within its technological track.

Any technological track is formed by a combination of many factors. The technological paradigm is the basic element of the technological track. It superimposes and evolves in the economic activities, and finally reflects the efficiency of the economic operation of enterprises. For an industry, how strong its technological innovation capability is, does not mean that the enterprise's capital possession and R&D investment must be, but refers to the enterprise's technological track for including knowledge, experience, technology accumulation and innovation capabilities, and the active degree of enterprise technological innovation mechanism formed therefrom [3].

First, Along the line technology innovation mode. The technological innovation mode of the industry is carried out on a specific technical track. The characteristic of this mode is that it does not deviate from the direction of the main path of the orbit and develops progressively. In the process of its evolution, there will be new technologies, and derive the branch technology related to the specific technology track. We call the track operation mode a "clockwise" technological innovation mode. The advantages of this model are: firstly, there are not too many technical track obstacles, so that the enterprise technology research and development, operating costs and transaction costs greatly reduced; secondly, for the formation of technology clusters to create good financial and technical conditions, including equipment conditions, management conditions, human resources conditions; thirdly, eliminate the technical track. Road selective interference is conducive to taking the lead in locking the selected technological trajectory and becoming the dominant industry technical standards when technological innovation breaks through new achievements, thus achieving the goal of achieving high profit margins. Fourthly, industrial expansion is achieved through monopoly in a certain technological trajectory area to achieve economies of scale and scope. Maximizing efficiency. However, due to the high dependence on the technological track path and the inability to break through the inherent rigidity of the track, the original technological track will have to be abandoned once a major and fundamental technological paradigm change occurs, and the original assets will be reduced to sink costs. Power will be lost.

Secondly, the transition technology innovation mode. When the technological track that the industry is focusing on encounters the following situations, such as breakthroughs or subversive changes in the basic research and core of related industries, major adjustments in market operation mechanism and regulation, major changes in the domestic and foreign environment, and policy and environmental background restrict the further development and evolution of the original technological track, enterprises will be promoted. The technological transformation of technological innovation process is called the technological innovation mode of transition. When the technological paradigm changes fundamentally, the direction of its role will lead the technological track to a new field, the old technological track is abandoned, and the new technological track is formed, which is called the technological track transition. At this time, the core competitiveness of industrial technology innovation has been further improved. Successful transition of technology track is the process of industrial technological innovation mode abandonment and innovation, from technological development to progress, from mode change to revolution, Schumpeter called it creative destruction. This revolution can bring success and risk. The successful transition of technological track indicates that the industry has made breakthroughs in the fields that the technological paradigm focuses on, which is embodied in the aspects of technology and management of enterprises and promotes the rapid growth of key economic indexes. Risk is that if we can't respond in time and adjust our direction, we will be put to death.

Third, the fusion technology innovation mode. The so-called integrated technological innovation mode refers to the transition stage when the industry is in a new technological track yet to be formed and the old technological track has not been abolished. This process is the process of the fusion and game between the old and new technological paradigms. Through the observation and analysis of the interaction between the technological paradigms, enterprises can make a new technological track suitable for themselves. Road screening and selection. The mode of integrated technological innovation is a transitional stage between industrial gradual technological innovation and breakthrough technological innovation. The purpose of the fusion technology innovation mode is obvious, that is, the final technological orbit transition. The process of integration is a process of continuous accumulation and evolution of many technological paradigms, and also a process of mutual integration and interaction between old and new technological paradigms. From quantitative change to qualitative change, a large number of accumulation forms the conditions for technological track transition, enabling enterprises to identify and make the right choice for their own new technological track [4]. The result of industrial technology track transition is an important condition to promote the leap-forward development of enterprises. Therefore, it is of great significance to promote and help industrial technology innovation and actively create the conditions for the leap-forward development of the whole industry and shorten the process of industrialization.

III. ANALYSIS OF TECHNOLOGICAL INNOVATION STRATEGY FOR INDUSTRY ENTERING TECHNOLOGICAL ORBIT

In the process of technological innovation and development, it is not difficult for us to find that there are more than one technology to achieve a certain goal. All roads lead to Rome. The difference is that some are short-cut, some are detours. We compare the near track to the central trunk of the technological track and the edge technology to the branch. Obviously, the enterprises that master the near track have more strength in the competition of the same target market, and the probability of success in the market is very high. The enterprises that choose the branch technology are affected by the subordinate status of the technological track. The technological innovation will be restricted by the space of the field and difficult to achieve. Only when we are familiar with the law of the development and evolution of the technical track and can predict the general direction of the evolution forward-looking, can we grasp the core backbone of the technical track and occupy an active strategic position in the competition. This is the first step to success.

Judging the time to enter the new technology track is not a chance, but a correct judgment made after scientific consideration and assessment of various factors. These factors include: the development of the industry led to a new round of technological innovation, and made the industry or related industries in the field of technological research and development to achieve new results; by the impact of national policies or cultural changes in consumer attitudes and consumer awareness; the overall environment at home and abroad has a great impact on the industry. Different external factors will break the continuity of technological track development. Whether in any historical period, the ups and downs of enterprises, in the final analysis, are due to the discontinuity of technological track change caused. The best timing and mode of judging the industry's entry into the new technology track are as follows:

First, judge whether there are new technological track growth points in the market. From the technical level, it is a professional technical operation process for an enterprise to choose its own technical track. First of all, we should judge whether there is a new track growth point in the market. The basis of judgment comes from a large number of detailed market surveys, specific data for support, technical expertise, industry experts can also be used as an important reference for judgment. However, it is not necessarily appropriate for the market to have a well-recognized technology track, but to combine the economic strength of the enterprise itself, the technical resources it has and the actual position of the technology track. Once it is confirmed that the technical track has a greater advantage over itself, it should be invested decisively and quickly to gain the opportunity to occupy the highest competitive point.

Second, buy or annex small businesses that succeed in the new technology track. The purity of small business operation mode makes it have certain advantages on the technical track and easy to succeed. Buying or merging small companies to do their own business on the track of new technology is a short cut to the long-term viability of large companies. The technological innovation of the industry has chosen the central backbone of the technology track accurately, and it is only the first step of success. If we want to achieve sustainable development, we must let the central channel derive new branch technology, develop branch series products with the central channel as the core technical support, and form product innovation clusters, in order to expand market segmentation to form a deterrent of scale efficiency, and become the industry leader in this technology field.

First of all, accurately identify technology tracks, and correctly grasp the core leading technology.

The premise of industry development is to be able to accurately identify and grasp the most viable technology track, otherwise, even if we make great efforts, it will lead to the waste of enterprise resources and miss the serious consequences of development opportunities. In the initial use of the technology track, the related branch technology will be derived. The enterprise must not be disturbed by this, but should be able to correctly identify and closely around the core of the technology track center leading technology innovation and development, in order to achieve success. Otherwise, it will lead to a strategic error in the development of technological innovation of enterprises because of deviating direction [5].

Secondly, we should actively promote the technological innovation of "along the border", and strive to expand and extend the specific technology track.

As for the industry, the technological innovation is based on a specific technological track, highly dependent on the track path, and evolves gradually on the main track. Therefore, the effect of technological innovation embodied by the model is more obvious. On the basis of continuous technological achievements achieved by "along-the-line" innovation, enterprises will increase the investment of funds and talents, and extend the specific technological track to deeper and wider areas, which will occupy a dominant position in the field of technological innovation in the same industry.

Third, scientifically determine the cut in path and successfully achieve "jump" technological innovation.

It is the result of the game between the old and new technology tracks that the industry has successfully realized the leap of "leap-forward" technological innovation. This result indicates that the enterprise has gone out of the chaotic period in which the old and new technology tracks alternate. It is of great significance to the innovation and development in the future. Compared with the old enterprise, the new enterprise has more advantages in the aspects of "switching cost" and "breaking through barriers", and all the advantages are reflected in the comparison of net income and "a threshold". When the "net profit" brought by the technology track transition is greater than "a certain threshold", it is the best time for the technology track transition, and the enterprise will quickly respond to the technology track transition and break away from the chaotic zone. Because each enterprise's "net income" is different, it is the difference between the respective threshold values. According to the comparison between "net income" and "threshold value", enterprises can determine the time and technological innovation strategy of the new track transition.

Fourth, timely search, early detection and early entry, occupy the commanding heights of industrial competition.

When the industry is in the "integration" mode of technological innovation, it is the key period to find and determine the track of new technology. At this time, enterprises should be able to maintain a clear understanding of their own and sensitive sense of smell of the external environment, grasp the best time to enter the new technology track.

IV. CONCLUSIONS

Throughout the development status of China's technology industry, many high-end industries are not "high" themselves, and their high-tech technology is out of the traditional industrial technology transfer and diffusion channel mechanism, so only through the sticker to maintain development, there is no further benefit to the low-end strength. In addition, most high-end

technology industries are keen to participate in the global circulation chain of international capital, neglecting the technology spillover effect of local industrial clusters and the diffusion channels of technology transfer. The key elements of technological innovation track are missing and become the short board in the "barrel effect". It has become an obstacle to the integration of high technology and traditional technology.

Because the industry does not have the corresponding strength and is limited by the scale, human capital accumulation, financing capacity and other objective conditions, it is often unable to establish a conventional, specialized and innovative sector. Moreover, due to the low technical threshold and more similar technologies, technology spill overs and transfer are very difficult. Industry will not be interested in backward technology, and there is fierce industrial isomorphism and excessive competition among enterprises with the same level of technology. Enterprises that rely on low-end technology to operate and develop are locked in the path and have no way out. Therefore, only by establishing a technology diffusion system that matches the characteristics of industrial structure can we constantly promote technological innovation.

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