

Research on the High-Quality Development of “New Generation” High-Tech Enterprises in Hengyang under the Background of “Three High and Four New”

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Abstract

As the pioneer of technological innovation in the context of the digital economy, the “new generation” high-tech enterprises are an important new force in the construction of a modern economic system, an important force and Important engine for the continuous development of national technological innovation, industrial transformation and upgrading, and high-quality economic development. The article first analyzes the existing foundation and development results of the high-quality development of Hengyang’s “new generation” high-tech enterprises under the background of “three highs and four new”, and then reveals the current high-quality development shortcomings and urgent needs of Hengyang’s “new generation” high-tech enterprises, Finally, from the government and enterprise levels, ten countermeasures and suggestions were put forward for the high-quality development of Hengyang’s “new generation” high-tech enterprises under the background of “three highs and four new”, so as to help the relevant government departments of Hengyang and a new generation of high-tech enterprises provide theoretical basis and methodological reference about the decision-making.

Keywords: “three highs and four new”, “new generation” high-tech enterprises, high-quality development

1. Research Background

When General Secretary Xi Jinping visited Hunan in September 2020, he encouraged Hunan to focus on building an important national advanced manufacturing industry, technological innovation with core competitiveness, and a highland for reform and opening up in the inland regions, breaking new paths in high-quality development, showing new deeds in the new development pattern, demonstrating new responsibilities in promoting the rise of the central region and the development of the Yangtze River Economic Belt, and striving to write a new chapter in Hunan that develops socialism with Chinese characteristics in the new era (Liuyang, 2020).

The mission of “Three Highlands” and “Four New” is in line with the important instructions of “One Belt, One zone” and “Three Focuses” put forward by General Secretary Xi Jinping to Hunan since the 18th National Congress of the Communist Party of China. The mission of “Highland” and “Four New” embodies the organic unity of “current and long-term”, “overall and one domain”, “goals and paths”, and “opportunities and responsibilities”. At the same time, it positions Hunan’s role in the overall situation of the country in the new era. The responsibility for the mission has been elevated to an unprecedented height, which constitutes the guiding ideology and action plan for the development of Hunan in the “14th Five-Year Plan” and even longer periods (Zhang, 2021).

In 2021, the 12th Plenary Session of the 11th Hunan Provincial Party Committee clearly proposed the vigorous implementation of the “three highs and four new” strategy, and used it as the general traction for striving to build a new modern Hunan. This is a major decision made in response to popular sentiment and the needs of Hunan’s development in the new stage. It is the course of action for Hunan Province to nurture opportunities in the crisis and to open a new game in the face of changes. The magnificent blueprint becomes a beautiful reality in the land of Hunan, and it will have a major and far-reaching impact. As the vanguard of leading technological innovation, high-tech enterprises are an important new force in building a modern economic system and an important engine for promoting high-quality economic development.

“New generation” high-tech enterprises refer to high-tech enterprises with big data, cloud computing, blockchain, 5G technology, artificial intelligence and other technologies as the core technology in the context of digital economy. At present, the development of high-tech enterprises in Hengyang is in the late stage of its infancy, and there are many kinds of constraints encountered in alleviating scientific and technological innovation. How to use the great opportunity of Hengyang to implement innovation-driven development strategies and build Hengyang City to promote the high-quality development of high-tech enterprises and form a competitive advantage in science and technology is a practical problem that urgently needs to be resolved in the economic development of Hengyang under the background of “three highs and four new”.

2. Literature Review

Since 2017, the 19th National Congress of the Communist Party of China first put forward the expression of “high-quality development”. On the one hand, in terms of national policies and practices, in October 2020, the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China once again pointed out, the Fourth Five-Year Plan period, economic and social development should be based on the theme of promoting high-quality development. In 2021, it is the historical convergence of the “two centenary” goals. During the “two sessions” at this special moment, Xi Jinping successively emphasized “high-quality development”. Now, all walks of life across the country are beginning to explore their own characteristics of the “high-quality development” practice model. On the other hand, with the continuous development of social science and technology, the specific manifestations of high technology are also constantly changing. The “new generation” of high technology with big data, cloud computing, blockchain, 5G technology, artificial intelligence and other technologies as the core continue to emerge, and issues related to their high-quality development have become a hot and difficult point in current theoretical research. Wen and Sisi (2021), Bei (2018) believe that the essence of high-quality development is a way of economic development, which can better meet the real needs of the people’s growing. Therefore, based on the background of high-quality development, realizing the transformation of economic development mode is an important aspect of adapting to the transformation of people’s needs at this stage. Weijun et al. (2020) believe that high-tech companies should seize the important opportunities for high-quality development and carry out technological innovation through measures such as improving R&D efficiency, improving talent mechanisms, promoting cooperation and exchanges, and strengthening patent protection, so as to improve business operations, and performance and strengthen the construction of the national technological innovation system. Yuzhe et al. (2020) believe that when the high-quality development of high-tech industries is facing the dual pressures of cyclical slowdown and structural transformation, it is necessary to emphasize the industrial development model driven by a strong domestic market, and to emphasize the coordination mechanism, the direction of resource allocation focusing on the “stuck neck” field, and emphasizes the innovative development model with enterprises as the main body, and promotes the high-quality development of the industry with more precise policy measures. Luhan (2019) believes that under the background of high-quality development, people’s needs are increasingly and show the characteristics of customization and individualization, and there is an increasing demand for enterprise technological innovation. In the process of innovation, enterprises are increasingly dependent on external high-quality resources, which undoubtedly increases the difficulty of independent innovation for enterprises. The method of cooperative innovation can integrate the high-quality resources of various departments and form the sharing of knowledge and technology. Therefore, high-tech enterprises can switch to the mode of collaborative innovation between enterprises when independent innovation is very difficult. Technological innovation is the fundamental driving force for high-quality development. Technological innovation creates new industries, forms new business formats, promotes industrial transformation and upgrading, and promotes industrial structure optimization and upgrading. Dongxu (2019), Lishan, and Yuanhai (2021) believe that under different conditions, technological innovation has different effects on the high-quality development of enterprises, and there are different time lag effects. Especially under the conditions of financing constraints, it is difficult for companies to innovate and finance to increase the cost of innovation and reduce the quality of enterprise development; therefore, technological innovation under financing constraints, the dynamic characteristics that affect the high-quality development of enterprises may change. Yong (2021) and Yijia (2021) believe that using customer big data can search for and develop gap markets in high-tech industries, and the enterprises uses four stages of technological destruction and market penetration destruction paths to achieve disruptive innovations such as survival, development and subversion. Fuguang et al. (2016) found that venture capital can significantly promote enterprise technological innovation, and the higher the degree of professionalization of the venture capital industry, the higher the level of enterprise technological innovation. Yingqiu (2018) analyzed the challenges and countermeasures faced by high-quality development, and believed that the proportion of basic research institutes was relatively low, indicating that enterprises did not pay enough attention to basic theoretical research, and

introduced more technology than innovation. Innovation activities are facing the challenge of the “bottleneck period.” Xiaohua and Xiaowen (2020) believe that the proportion of government funding for the transformation of scientific and technological achievements is too small, especially the serious lack of intermediate links, which greatly reduces the transformation of innovation achievements efficiency. Dingping (2021), Jianrong and Qing(2019), Hejuan (2018), etc. believe that the blind increase of R&D expenditure by high-tech companies does not necessarily have a significant impact on the improvement of business performance. Human capital intensive is one of the basic characteristics of high-tech industries, and high-tech talents constitute the core resources for the development of high-tech industries. However, Shaofang and Fangcheng (2018) studied scientific and technological innovation from the perspective of innovation ecology, and the results showed that knowledge governance mechanisms such as modular division of labor, selective knowledge disclosure, collective identification of the innovation ecosystem, external legality of innovation, and cross-patent licensing help resolve the knowledge risks of the innovation ecosystem of high-tech enterprises and improve the performance of knowledge governance. Yunsheng and Siming (2010) believe that opportunistic behaviors such as hold-up, free-riding, exit threats, concealment and false release of information, as well as market risks of innovation, can easily lead to technology leakage problems and lead to enterprise innovation failures in the high-tech enterprise innovation ecosystem. Jingkun and Junxia (2021) believe that enterprise innovation will be rapidly eroded by the dynamic environment, and its innovation process is rooted in environmental factors, and environmental dynamics has become an important contingency factor affecting enterprise innovation. Therefore, in the innovation ecosystem of high-tech enterprises, the influence of the external environment on the knowledge activities of the ecosystem should be considered. In summary, domestic and foreign scholars have many research documents on the characteristics of the development of high-tech enterprises and the contribution of high-tech industries to economic growth. These documents provide methodology and experience for studying the high-quality development of high-tech enterprises in the context of the digital economy.

3. The Foundation and Results of High-Quality Development of Hengyang “New Generation” High-Tech Enterprises

3.1 Outstanding Location Features

Hengyang is the second largest city in Hunan Province, the economic and cultural center of southern Hunan, the intersection of Beijing-Guangzhou and Xianggui railways, the southern Hunan water and land transportation center and the transportation hub connecting the north and the south. It is the country’s 45 major public and railway transportation hub cities, an important node city for the Internet broadband backbone network. Hengyang Nanyue Airport has opened more than 20 air routes, including the Xiangjiang 1000-ton golden waterway, Beijing-Zhuhai, Hengzao, Hengda, Hengyan, Hengshao, Henggui, Tan Hengxi, Hengyue 8 expressways, Jingguang, Xianggui 9 railways, including Hengchaji, etc., Hengyang have constructed a comprehensive transportation network of water, land and air, three-dimensional coverage, and extending in all directions.

At the same time, Hengyang is one of the 26 old industrial bases in the country, and 186 types of industrial products have the title of famous and excellent above the provincial level. In October 2011, the Xiangnan Undertaking Industrial Transfer Demonstration Zone became the fourth national-level industrial transfer undertaking demonstration zone in China.

3.2 The “New Generation” High-Tech Enterprise Quality Brand Building Work Has Achieved Remarkable Results, and the Level of Intellectual Property Management Has Been Continuously Improved

The first is to cultivate pilot demonstration enterprises for brand cultivation. Some pilot enterprises have realized the effective operation of the brand management system and achieved obvious results. Up to now, Hengyang has obtained 22 national industrial brand cultivation pilot entrepreneurs and 1 national industrial brand cultivation demonstration enterprise (Hengyang Transport Machinery Co., Ltd.), 5 industrial brand cultivation demonstration enterprises in the province (TBEA, Jinbei Cable, Oil Pump, Jianheng Industrial, Hengfei Cable). The second is to cultivate industrial quality bench-marking enterprises and bench-marking enterprises for the use of intellectual property rights in Hunan Province. At present, Hengyang has obtained 16 pilot enterprises of the “Industrial Enterprise Intellectual Property Application Ability Cultivation Project” by the Ministry of Industry and Information Technology. The third is to implement the “Double Hundred” project promotion plan. At present, Hengyang City has included 60 items in the province’s “Hundred Key New Product Promotion Plan” and 35 items in the province’s “Hundred Patent Transformation Promotion Plan”.

3.3 The Technological Innovation System of “New Generation” High-Tech Enterprises Has Been Gradually Improved, and Major Product Innovation Projects Have Been Steadily Advanced

One is to actively create a national technological innovation demonstration enterprise. At present, there are 2 national technological innovation demonstration enterprises in Hengyang City (TBEA, oil pump). The second is to actively promote the construction of provincial-level enterprise technology centers. The city has established 71 enterprise technology centers (including 5 national-level enterprise technology centers, 24 provincial-level enterprise technology centers, and 42 municipal-level enterprise technology centers). The third is to guide the R&D and development of key common technologies. At present, 9 key common technologies of Hengyang City are listed in the development-oriented catalog of major key common technologies of strategic emerging industries in Hunan Province. Fourth, the annual evaluation of industrial project construction has a good effect. Hengyang City attaches great importance to it, carefully benchmarks, and actively does a good job in the inspection work. 100% of all major product innovation projects have completed the annual planned investment.

3.4 The Financial Service Environment of “New Generation” High-Tech Enterprises Has Been Continuously Optimized, and the Financing of Technological Innovation Has Achieved Good Results

One is the continuous increase in credit investment. In order to solve the problem of financing difficulties or even lack of financing for high-tech enterprises in Hengyang City, the Central Branch of the People’s Bank of China in Hengyang City comprehensively used a variety of monetary policy tools such as re-lending and re-discount to guide credit and effectively solve the problem of corporate financing. The second is the continuous promotion of direct financing. Promulgated the “Promoting the Initial Listing of 30 Companies Action Plan”, focusing on screening 50 superior companies to form the municipal key listed reserve enterprise resource database, of which 21 high-tech companies entered the provincial key listed reserve enterprise resource database. The third is the continuous strengthening of financing docking. In order to solve the problem of asymmetry in financing information for high-tech enterprises, through the “government setting up a platform and banks and enterprises singing”, regular activities such as “one-month connection between banks and enterprises” and “one-county connection” were organized. Fourth, Hengyang’s financial investment in science and technology has been increasing year by year. Hengyang has learned from the current technology plan layout and the main practices of brother cities to form eight special expenditure items, and established research and development, application promotion, achievement transformation, demonstration guidance, platform construction, and industry funds. , Military-civilian integration and other all-round financial technology funding system.

3.5 The Technological Innovation Carrier and Platform Are Continuously Optimized and Upgraded

First, the platform construction has achieved remarkable results, which has played an important leading and demonstrative role for the technological innovation of “new generation” high-tech enterprises. The technological innovation platform is the origin, agglomeration and capital pool of high-tech development, and it is also a policy depression that promotes the development and industrialization of high-tech. The second is to fully integrate national policies and contribute to the development of science and technology carriers. The Hengyang Development and Reform Commission conscientiously integrated major national strategies such as “Double Innovation” and “Internet +”, carefully packaged projects, and sought national and provincial funding support. The number of funded projects and total amount of funds in the national and provincial budgets each year are among the highest in the province. The third is to give full play to the role of bridges and bonds, and make every effort to promote industry-university-research cooperation. Give full play to the bridging role of government functional departments, be a good medium between universities, scientific research institutes and enterprises, adopt the forms of establishing innovation alliances, organizing emerging industry forums, exhibitions, etc., and actively transform new technologies into new projects and help new projects find the source of funds. Hengyang has formed a good atmosphere for industry-university-research cooperation, and good results have been achieved.

4. Analysis of Shortcomings and Problems of High-Quality Development of Hengyang “New Generation” High-Tech Enterprises

Since the reform and opening up, China’s high-tech enterprises have risen rapidly and have become an important force in my country’s economic development. In the new century, if the development of high-tech enterprises is to reach a new level, they must take the path of connotation development centered on technological innovation. However, judging from the current situation, the technological innovation of high-tech enterprises is still facing many difficulties.

4.1 The “New Generation” High-Tech Enterprises Lack Long-Term Plans and Goals, Have Weak Scientific Research Willingness, and Insufficient R&D investment

The vast majority of high-tech business operators, due to their own educational background and entrepreneurial background and other factors, in the process of considering the development of the enterprise are often based on their own feelings and sensitivity to the industry, and they have no influence on the long-term development of the enterprise, and the enterprise pays too much attention to the profit and income of the enterprise in the entire operation process of the enterprise, and seldom considers the construction of brand image and corporate culture.

4.2 Poor Cooperation Between Industry, University and Research Is an Important Reason That Restricts the Development of “New Generation” High-Tech Enterprises

It can be seen from “Table 1” that when investigating the effect of cooperation with scientific research institutions and universities on the independent innovation of enterprises, the proportions that think “very large” and “relatively large” account for 50.84% and 38.98%, respectively, and those that think “little” or “have no effect” are 0. These data show that enterprises still recognize the effect of cooperation with scientific research institutions and universities on independent innovation of enterprises. However, in fact, the cooperation between industry, university and research is still not smooth.

Table 1. Statistics of “Do you think the role of cooperation with scientific research institutions and universities on independent innovation of enterprises”

options	Number of enterprises that answered the question	Percentage (%)
Very useful	60	50.84
Bigger effect	46	38.98
Generally	12	10.17
not so useful	0	0
Doesn't have much effect	0	0

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

The reasons are as follows: One is the information asymmetry between universities, research institutes and SMEs. Universities and research institutes do not understand the needs of SMEs, and SMEs do not understand the partners that suit their needs. Market competition is often changing rapidly, and information asymmetry will reduce the efficiency of industry-university-research cooperation and lose the effect of cooperation; second, the market for scientific and technological achievements has not formed, and a large number of scientific and technological achievements of universities and scientific research institutes are often shelved and transformation of technology results cannot be realized.

In recent years, the municipal party committee and government have issued the “Opinions on Promoting the Combination of Industry, University and Research and Strengthening Independent Innovation Capability” to actively promote the transformation of the results of universities and scientific research institutes, and explore ways to promote industry, education and research cooperation. However, the limitations of long-term fragmentation, affected by backward concepts, the implementation of policies insufficient and some measures are difficult to implement. At present, enterprises have not really become the main body of decision-making, input, interest and risk-taking in joint innovation. The focus of industry-university-research cooperation has not fallen to the enterprise, and the resource advantages of universities and research institutes such as technology, talents, results, and equipment are difficult to effectively gather in the industry.

4.3 “New Generation” High-Tech Enterprises Need to Improve Their Technological Innovation Methods and Organizational Forms, and the Training and Incentive Mechanisms for Scientific and Technical Personnel Need to Be Strengthened

Analyzing the data in Table 2, Table 3 and Table 4, we can find that 72.88% of enterprises did choose independent innovation, 5.08% of integrated innovation, 18.64% of introduced, absorbed, digested and re-innovated, and 57.63% of enterprises independently established R&D institutions, 57.63% of the existing products are improved by R&D projects. Under the conditions of weak basic research and limited R&D funds, this overall innovation structure obviously needs to be improved.

Table 2. Statistics of “What are the main technological innovation methods of your enterprise”

options	Number of enterprises that answered the question	Percentage (%)
Independent original innovation	86	72.88
Introduce foreign technology	0	0
Integrated innovation	6	5.08
Introduction-absorption-digestion-re-innovation	22	18.64
Other (specify the situation)	4	3.39

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

Table 3. Statistics of “What is the organizational form of your enterprise’s R&D institutions”

options	Number of enterprises that answered the question	Percentage (%)
Improve existing products	68	57.63
New products to be put into production in the next 2 years	34	28.81
New products to be put into production in the next 3-5 years	14	11.86
Other (specify the situation)	0	0
Not yet	2	1.69

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

Table 4. Statistics of “Your enterprise is researching and developing projects”

options	Number of enterprises that answered the question	Percentage (%)
The enterprise is formed by itself	68	57.63
Established in cooperation with universities and institutes	48	40.68
Formed in cooperation with foreign institutions	0	0
Other (specify the situation)	2	1.69

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

At the same time, enterprises in Hengyang are dominated by traditional manufacturing, and their product technology content is generally low. They are in the downstream position in the industrial chain and the market. It is often the upstream enterprise or market that puts forward a new standard or new requirement, and the enterprise passively develops technology to match new products. Although this kind of processing technology innovation can reduce risks, it lacks foresight and systemicity. It is unable to form an enterprise’s own innovation chain and standard system, and it is difficult to improve the enterprise’s position in the industrial chain and market.

4.4 The “New Generation” High-Tech Enterprises Lack of Highly Educated Scientific and Technological Innovation Talents and Funds, and the Structure Is Unreasonable, Which Restricts the Development of Scientific and Technological Innovation of Enterprises

It can be seen from Table 5 that the main internal factors that are not conducive to independent innovation of enterprises are the lack of senior technical talents (59.32%), insufficient corporate funds (61.02%), high innovation costs, excessive costs (50.85%), and talents is always the first factor restricting the technological innovation of “new generation” high-tech enterprises. Technological innovation is inseparable from talents, especially professional technical talents.

Table 5. “In your opinion, what are the main internal factors that are not conducive to independent innovation of enterprises” statistics

options	Number of enterprises that answered the question	Percentage (%)
Lack of senior technical personnel	74	59.32
Insufficient corporate funds	72	61.02
Lack of equipment and conditions for technology research and development	41	34.75
The cost of innovation is too high, the cost is too high	60	50.85
Difficult to obtain effective market information	22	18.64
Imperfect internal incentive system	14	18.86
Weak independent research and development capabilities and lack the basis for continuous innovation	24	20.34
Innovative consciousness is not strong	10	8.47

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

In terms of capital investment, the government's financial investment in science and technology is relatively low. In the past five years, although the city's fiscal science and technology expenditures has been increasing every year, it is still far below the national average (4.39%). The proportion of basic applied research in enterprise R&D activities is too low, which restricts the improvement of Hengyang enterprises' high-level research and development capabilities, leading to serious shortages of enterprise technology accumulation, knowledge creation and application capabilities.

4.5 The Industrialization of Technological Achievements of "New Generation" High-Tech Enterprises Is Relatively Difficult

Local governments lack innovation policy and technological innovation service platforms. Analyzing the relevant survey data in Table 6, it can be seen that the most important external factor that is not conducive to independent innovation of enterprises is the difficulty in the industrialization of technological achievements (54.24%). Other major influences are the lack of innovation policy and technology from local governments. The market is not sound, lacks a fair competitive environment, and technological innovation service platforms. The difficulty in the industrialization of technological achievements is mainly due to the lack of young technical personnel with practical experience in enterprises. In addition, the current management system and incentive mechanism have low rewards for the transformation of achievements, which cannot effectively motivate scientific and technological personnel to carry out the transformation of achievements.

Table 6. "In your opinion, what are the main external factors that are not conducive to independent innovation of enterprises?" Statistics

options	Number of enterprises that answered the question	Percentage (%)
Inadequate implementation of relevant national and provincial policies	20	16.95
Lack of support for innovation policies by local governments	42	35.59
Difficulties in the industrialization of technological achievements	64	54.24
The technology market is not sound and lacks a level playing field	36	30.51
Lack of technical innovation service platform	38	32.20
Insufficient protection of intellectual property rights	24	20.34
Insufficient social and cultural atmosphere	24	20.34
Other (specify the situation)	6	5.08

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

5. Countermeasures and Suggestions for the High-Quality Development of Hengyang "New Generation" High-Tech Enterprises

After analyzing the status quo of technological innovation in high-tech enterprises and digging deeply into the causes of the bottleneck, a targeted solution to the problem is proposed. Cracking the bottleneck from the root is a matter of course. Next, from the two aspects of the government and high-tech enterprises, the research team put forward countermeasures and suggestions to improve the independent innovation capability of Hengyang "new generation" high-tech enterprises.

5.1 Government Perspective

In order to further understand the extent to which enterprises understand the preferential support policies of the national, provincial and local governments for enterprise independent innovation, and what role the government should play in improving the independent innovation capabilities of high-tech enterprises, the research team conducted a series of investigations. The survey results are shown in Table 7 and Table 8.

Table 7. Statistics on "Your preferential support policies for enterprises' independent innovation by national, provincial and local governments"

options	Number of enterprises that answered the question	Percentage (%)
Know very well	12	10.17
knowledge	64	54.24
do not know much	36	30.51
Don't understand	6	5.08

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

Table 8. “What role do you think the government should play in improving the independent innovation capability of high-tech enterprises?”

options	Number of enterprises that answered the question	Percentage (%)
Help build a platform for scientific and technological cooperation	74	62.71
Improve the financial service system that promotes technological innovation of enterprises	66	55.93
Establish a complete multilevel intermediary service system (such as information consultation, talent training, technical guidance, loan guarantees, etc.)	56	47.45
Improve work style	8	6.78
Improve work efficiency	18	15.25
Introduced an innovation support policy that favors high-tech enterprises	82	69.49
Establish and improve a social environment conducive to the development of high-tech enterprises	64	54.24
Protect intellectual property rights and create a fair and competitive market environment	42	35.59
Other (specify the situation)	0	0

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

The data shows that companies believe that the government should introduce innovation support policies that favor high-tech companies (69.49%), help build technological cooperation platforms (62.71%), improve the financial service system that promotes corporate technological innovation (55.93%), and establish perfect social environment that is conducive to the development of high-tech enterprises (54.24%), the establishment of a complete multi-level intermediary service system (such as information consultation, talent training, technical guidance, loan guarantees, etc. (47.45%). At the government level, the research team puts forward the following countermeasures and suggestions on the high-quality development of Hengyang’s “new generation” high-tech enterprises.

5.1.1 Continue to Implement the Relevant National Science and Technology Innovation Policies, Promulgate and Improve the Hengyang Series of Related Science and Technology Innovation Management Measures, and Innovate the Hengyang Science and Technology Guarantee Mechanism

In order to further strengthen the technological development capacity of service enterprises, Hengyang City has successively issued the “Opinions of Hengyang City on Promoting the Combination of Industry, Education and Research to Enhance Independent Innovation Capability”, “Hengyang City’s Decision to Accelerate the Cultivation and Development of Strategic Emerging Industries”, and “Hengyang City’s Decision to Accelerate the Cultivation and Development of Strategic Emerging Industries”. “Implementation Measures for the Introduction of High-level Talents”, “Hengyang Science and Technology Award Measures”(revised),”Opinions on Encouraging and Supporting Enterprises’ Independent Innovation”, “Opinions on Accelerating the Implementation of Innovation-led Development Strategies to Build a Strong Science and Technology City”, “Hengyang City Support A series of documents such as the “Detailed Implementation Rules for the Development of Maker-space”, the “Three-year Action Plan for the Strong Foundation Project of Hengyang High-tech Industry (2017-2019)” and other documents, and pay attention to the implementation of reform policies, and provide Hengyang in terms of policies, funds, and talents. The city’s innovative development provides a good environment, which effectively stimulates the innovation and entrepreneurship of enterprises, scientific research institutes, universities and the general public.

However, with the continuous advancement and continuous development of the digital economy, it is necessary to comprehensively promote the high-quality development of Hengyang’s “new generation” high-tech enterprises. The Hengyang Municipal Government continues to implement the national science and technology innovation policies, and promulgates and improves Hengyang series of related science and technology innovation management measures, Innovate Hengyang science and technology guarantee mechanism.

5.1.2 Taking the Construction Project of Innovation Carriers as the Starting Point, Activating the Service Channels of Third-Party Innovation Carriers

(1) Promote the construction of innovation capabilities of science and technology parks, integrate park resources such as Hengshan Science City, and improve the development quality of science and technology parks. (2) Construct a technological innovation service platform system based on the principle of combining production, education and research. (3) Introduce advanced technology incubation models, build innovation and

entrepreneurship demonstration bases, and create regional innovation demonstration leading highlands. (4) Broaden the channels for technology transfer cooperation and build a technology intermediary service platform system. (5) Build a technological innovation chain of “government, industry, university, research and funding”, and innovate the transfer and transformation mechanism of scientific and technological achievements. (6) Establish a technology financial service center and innovate the technology financial service system.

5.1.3 Increase Financial Policy Support, Increase Financial Supply for High-Tech Enterprises, Expand Financing Platforms for High-Tech Enterprises, Guide High-Tech Enterprises to Go Public, Optimize the Financing Environment for High-Tech Enterprises, and Promote the Gathering of High-Level Innovative and Entrepreneurial Talents to Enterprises

Promote the “new generation” of high-tech enterprises to accelerate the construction of high-level R&D institutions, and comprehensively improve the R&D organizational capabilities of enterprises. The biggest constraint on the independent innovation capabilities of enterprises is the lack of R&D links. The government must strengthen financial support for corporate R&D institutions, and use the construction of high-level corporate R&D institutions to promote the improvement of enterprises’ independent innovation capabilities.

5.1.4 Take the Innovation Environment Construction Project as the Starting Point to Activate the Ideological and Cultural Innovation Ecology of High-Tech Enterprises

Vigorously promote the construction of an innovative urban environment, form an urban environment that is conducive to innovation and development, and enhance the soft power of the city. (1) Based on the concept of fast and green, do a good job in the construction of high-quality modern new towns. (2) Based on the rule of law and system concepts, do a good job in the construction of intellectual property rights. (3) Based on the spirit of Huxiang culture, do a good job in building an innovative culture.

5.2 *The Perspective of “New Generation” High-Tech Enterprises*

5.2.1 Focus on the Top-Level Design of Enterprise Development and Formulate Long-Term Enterprise Technological Innovation Development Strategies

Innovating only from the technical level can be regarded as the core technological competitiveness of contemporary enterprises to occupy the market. However, if an enterprise wants to transform the quantified core competitiveness into the overall internal development of the enterprise, and hopes to regain market share and reposition the external driving force of the market to accelerate the development of the enterprise, then it is very necessary for the enterprise to construct corresponding strategies and countermeasures. (1) Independent innovation strategy. The issue of independent innovation should be analyzed from several factors: one is that the technology belongs to oneself; the other is that the technology is created; and the third is that the technology is new. Fourth, the emergence of a product that has not been verified by the market, to become a commodity and be able to circulate in real terms is an innovation in production. (2) Introduce improvement strategies. On the basis of the introduction of technology, in certain existing technical fields, and on the basis of utilizing domestic technical strength, independently research new technologies and develop new products. Independent development is the ultimate goal of an enterprise when technology is introduced. (3) Follow and imitate strategy. The initial stage of enterprise development will start with imitation, but imitation is not about copying, but about improving technology and finding new technologies suitable for its own products. (4) Transform the business model. The transformation of the business model is to enable the enterprise to find its own market position, which plays a vital role in the development of the enterprise. Such a change is like a butterfly. Only when the enterprise finds a way out can it win the market competition. The survey results are shown in “Table 9”.

Table 9. “What role do you think enterprises should play in improving their independent innovation capabilities?”

options	Number of enterprises that answered the question	Percentage (%)
Attract more senior technical talents	90	76.27
Actively obtain effective market information	64	54.24
In the enterprise, employees should be more motivated to carry out independent innovation	68	57.63
Improve staff’s innovation awareness	52	44.07
Participate more in cooperation with scientific research institutions and universities	78	66.10
Other (specify the situation)	0	0

Note. The total number of surveyed companies is 125, and 118 questionnaires have been returned.

5.2.2 Strengthen the Awareness of Technological Innovation

Many companies believe that the most important strategic task at this stage is innovation. Innovation in the true sense should be reflected in two aspects. First, it is what the enterprise needs, which is the so-called “new thing”. “New thing” is not easy to find. Even if it is found, it is not easy to expand at the grassroots level. To a certain extent, it does require a certain level of management to come forward, and he can deal with such problems. The second aspect is the ability to implement, and it is more directly and effectively reflected in the practical meaning of the enterprise, which requires the elimination of existing work processes, working methods, and inter-departmental collaboration. At the same time, it is necessary to clarify the meaning to each employee, so that we can truly mobilize the grassroots employees, and at the same time, we must tell them that we must discover innovative projects from around.

5.2.3 Attract, Train and Retain Technical Talents

High-tech enterprises' own requirements for high technology also determine that their development needs a large number of professional talents who have received systematic education. The basis of the implementation of the talent strategy is to attract outstanding talents. How to train and retain talents is an important issue in the process of enterprise development. First of all, the corporate culture and cohesion of the enterprise need to be improved, and there must be a good welfare policy for the old employees. Secondly, while understanding the real needs of employees, communicate with employees in a timely and effective manner.

In practice, some technologically advanced high-tech enterprises in Hengyang City have created many incentive mechanisms for scientific and technical personnel in line with their actual conditions, including material incentive mechanisms (project dividend incentives, equity incentives, and risk incentives) and spiritual incentive mechanisms (emotional incentives, career incentives, “Participation” incentives) two categories. In practice, these companies have implemented different incentive methods for different scientific and technological personnel. These methods mainly include: technical job subsidies, career incentives, major technical project awards, high wage incentives, performance wages, technical achievement commissions, and technology shareholding, Technology (knowledge) shares, etc.

5.2.4 Promote “New Generation” High-Tech Enterprises to Improve Their Ability to Integrate Global Innovation Resources

Hengyang is a large open province. Undertaking international industrial transfer and absorbing international capital are important reasons for the rapid economic development of Hengyang. Similarly, in the new stage of innovation-driven development, openness is still the biggest dividend of Hengyang's development. We know that the key to the globalization of innovation is to promote enterprises to become leaders in international cooperation and to create an institutional mechanism and operating environment for enterprises to integrate global innovation resources. However, it can be seen from “Table 2” and “Table 3” that Hengyang's “new generation” high-tech enterprises are not well in line with international standards. Therefore, it is necessary to expand the international development channels of Hengyang “new generation” high-tech enterprises ,to integrate and strengthen Hengyang's foreign economic liaison agencies ,adjust their regional distribution and give them scientific and talent liaison functions;

It is necessary to build a cooperative innovation platform with a global perspective, and vigorously develop strategic cooperation with key countries, internationally renowned universities, and influential R&D institutions, and establish a stable technology cooperation mechanism; encourage and support enterprises to “go global”, establish or merge overseas research and development institutions, explore the establishment of joint laboratories, research centers or overseas scientific research bases; increase support for international industry-university-research cooperation, expand the scale of special funds for overseas achievement transformation, and promote the transfer and transformation of international advanced technological achievements in Hengyang. Enhance the ability of independent innovation from the starting point.

5.2.5 Improve the Overall Quality of “New Generation” High-Tech Enterprises

1) The property rights system and corporate governance structure of “new generation” high-tech enterprises must be regulated by modern enterprise systems. We know that in the period of enterprise entrepreneurship, the management model based on blood relationship and nepotism provided strong organizational guarantee and management support for the initial development of the enterprise. However, with the development of the enterprise to a certain stage, due to the expansion of the scale of the enterprise and the increase of the management level, the past business model without separation of management rights and ownership has made the decision-making of the enterprise lack of reasonable constraints and cannot form a scientific and democratic

decision-making mechanism. Therefore, the “new generation” high-tech enterprises must carry out property rights system innovation, realize the transformation from the natural person property rights system to the legal person property rights system, realize the separation of ownership and management rights, realize the transformation from investor management mode to professional manager management mode, and realize the sustainable and large-scale development of a new generation of high-tech enterprises.

2) Pay attention to the internal cultural construction of “new generation” high-tech enterprises. Corporate culture is a unique value system and formed through education and integration in the long-term development process of an enterprise. It is a series of norms and behaviors that influence the strategy of an enterprise, and adapt to the market and deal with internal contradictions within the enterprise. A unique corporate culture is a valuable asset of an enterprise. It can enhance the cohesion of the enterprise and fully mobilize the enthusiasm and creativity of employees. Establishing a unique corporate culture is one of the key ways for “new generation” high-tech enterprises to cultivate and enhance their core competitiveness.

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