

The Sustainable Development of Chinese Technology-Based Small and Medium-sized Enterprises under Government Policies Analysis Based on the PEST Model

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Abstract. With the development of the economy and the policy support of the government, China's small and micro enterprises have mushroomed, especially in the field of technology. The National Bureau of Statistics has reported that by 2023, the Chinese government will have fostered around 60000 specialized and high-end technological businesses. From a political perspective, the government will build a policy system conducive to the development of small and micro enterprises. From an economic perspective, government policies will improve the investment and development confidence of small and micro enterprises. From a social perspective, the government promotes small and micro enterprises to improve their soft power through the publicity of innovation culture. From the perspective of science and technology, government documents point out the macro development direction for the scientific research of small and micro enterprises. In addition, this paper points out the problems existing in small and micro technology enterprises under the government preferential policies, and puts forward reasonable suggestions for their development, so as to promote the healthy development of small and micro enterprises.

Keywords: PEST model; technology; government policies; sustainable development.

1. Introduction

1.1. Research Background

With the execution of China's innovation-driven development policy, the Chinese government has significantly increased its support for the scientific and technological fields. To aid in the development of the science and technology industry, it recently produced a number of important documents, including "Made in China 2025" etc. Technology-based small and micro enterprises (SMEs) are vital drivers of advancement in science and technology fields. Supporting SMEs has emerged as one of China's major initiatives. A number of policies that are helpful for the growth of technology-based SMEs were centrally announced in the third quarter of 2023, including easing the value-added tax reduction standard and lowering loan interest rates. At this time, it coincided with the end of the epidemic in China and the entry of fresh graduates into the labor market. The government has released a variety of initiatives that will support the steady growth of SMEs and boost their development confidence. What's more, the policies will encourage SMEs to actively undertake the social responsibility of absorbing employment and scientific and technological progress.

1.2. Literature Review

There have been some research results at home and abroad on how government policies can promote the development of SMEs. For example, WANG Wanqiu have studied the role of government policies in promoting the semiconductor industry. They discovered that while government incentive policies will short-term encourage the growth of science and technology businesses, their long-term effects will first increase and then diminish. This requires the government to constantly adjust policies to promote the sustainable development of enterprises [1]. LUO Pengfei found that compared with tax relief, government financial subsidies play a more obvious role in promoting the development of enterprises. They suggested that the government should constantly adjust policies and use a reasonable combination of policies to promote the development of

enterprises [2]. Taking Norway as an example, some researchers concluded that in small economies, expansionary fiscal policy has a significant impact on enterprise types and industry structure. They also discovered that the combination of tightening monetary policy and expanding fiscal policy will hasten the deindustrialization process [3]. Academics from China and outside have recently paid attention to using different models to analyze the role of government policies on the development of SMEs. For example, Duan Yonghui et al. analyzed the role and shortcomings of government policies on the investment and construction of characteristic towns by real estate enterprises based on the PEST model in macroeconomics and pointed out that enterprises should cooperate with the government to jointly build characteristic towns [4]. WANG Zhigang et al. calculated China's fiscal policy multiplier under different combinations of fiscal and monetary policies based on the extended IS-LM model. They analyzed mathematically that the relationship between the expansion of government expenditure and the growth of consumption and investment was not obvious. They also found that China's fiscal policy multiplier showed a downward trend from 2002 to 2017, which proved that the expansionary fiscal policy had a marginal diminishing effect. They suggested that the government should reasonably match fiscal policy with monetary policy. The government needs to improve the transmission mechanism of macroeconomic policies in order to effectively promote economic development [5]. Foreign scholars linked modern financial capitalism with post-Keynesianism. Taking European countries as an example, they explained that during the period of 2001-2009 and 2010-2019, the monetary policy of the European Central Bank and the policy combination of governments had different effects on enterprises and economic development at different stages [6].

1.3. Research Significance

The PEST model served as the foundation for this paper's research. By studying the policies of the Chinese government on technology-based SMEs in recent years, people can comprehend how the government contributes to the growth of technology-based SMEs. This study is based on the PEST model, which explains how government policies support the expansion of technology-based SMEs from the perspectives of politics, economy, society, and technology in the first section. The next section of this paper explores the issues and difficulties that arise in the growth of technology-based SMEs. This report concludes by making some recommendations for their advancement. This paper shows why the Chinese government's recent measures for technology-based SMEs were necessary. Additionally, people can see how crucial government policies are to the growth of businesses.

2. Analysis Based On Pest Model

2.1. Politics

For many years, the Chinese government has taken steps to encourage the growth of technology-based SMEs. Here are some examples.

Table 1. Policies Favorable to Technology-based SMEs (2015-2023)

Source	Content
<i>Made in China 2025(2015)</i>	Optimize the spatial layout of industries, cultivate a number of industrial clusters and enterprise groups with core competitiveness, create an atmosphere of entrepreneurship and innovation for the masses, build a manufacturing talent team with good quality and reasonable structure, and follow the talent-led development path.
<i>Outline of National Informatization Development Strategy (2016)</i>	Enhance the enterprise incubation and technology trade mechanisms, and provide a policy framework for broad innovation support. By enhancing public service platforms, it will also help technology-based micro, small, and medium-sized businesses innovate on their own and grow sustainably.
<i>Notice on Creating a Better Environment to Support the Research and Development of Scientific and Technological SMEs (2022)</i>	At the end of the "14th Five-Year Plan" period, there will be an institutional system in place to support the research and development of technology-based SMEs, as well as an environment for the entire society to support these businesses. Additionally, there will be an increase of 20,000 such businesses.
<i>Speech by President Xi Jinping at the Deliberation of the Jiangsu Delegation to the First Session of the 14th National People's Congress(2023)</i>	Strengthening the dominant position of businesses, fostering the deep integration of innovation chains, industrial chains, capital chains, and talent chains, maximizing the leadership and supporting roles of technology-based backbone businesses.

These measures demonstrate the significance the Chinese government places on the growth of micro and small businesses. These rules also acknowledge the significant role that technology-based SMEs play in the Chinese economy. The government's initiative is to create a mechanism system that is supportive of the expansion of technology-based SMEs from a policy perspective and ensures that there is enough policy and financial support for the development of firms. These measures will increase the technology-based SMEs' development confidence and innovation capacity, enhancing the soft power of enterprise development. Additionally, the government places a strong emphasis on expanding the talent pool and emphasizing the crucial role that talent plays in advancing science and technology. China's colleges and universities have evolved quickly in recent years with the help of government regulations, and the country now has enough innovative talent to staff businesses. In other words, the government will use the macro-control function to encourage the flow of resources into the science and technology fields, which will be helpful for the long-term expansion of technology-based SMEs.

2.2. Economy

A number of fiscal and monetary policies have been released in recent years by the Central Bank and the Ministry of Finance to aid in the growth of SMEs. For instance, the conditions for small and micro enterprises to postpone the payment of taxes and fees have been loosened as a result of the announcement by the State Administration of Taxation and the Ministry of Finance regarding the continuation of the implementation of issues related to the postponement of payment of part of taxes and fees by small and micro enterprises in the manufacturing industry [7]. According to the Ministry of Finance's announcement on the policy of value-added tax exemption on interest income from financial institutions' loans to SMEs, interest income from small loans made by financial institutions to SMEs and individual businesses is tax-free [8]. The central bank also adjusted the lending rates of financial institutions to SMEs many times in 2023. From the perspective of Keynesian macroeconomics, the decline of loan interest rate will increase the desire of enterprises to lend, thus

stimulating the increase of investment demand. Reducing taxes on enterprises will reduce the institutional transaction costs of enterprises and enable enterprises to have more funds to consume and expand production scale. These two measures will support the growth of technology-based SMEs.

2.3. Society

The Chinese government adheres to the innovation-driven development strategy. This policy has enabled Chinese youth to establish innovative ideas from an early age by integrating innovative ideas into school curricula and conducting social publicity. The National Mass Entrepreneurship and Innovation Week, the easing of restrictions on market access, and the creation of networks of businesses have all helped to gradually implant the idea of mass entrepreneurship and innovation in people's minds. These measures provide good cultural and talent support for the synchronous growth of the quantity and quality of technology-based SMEs. These actions will support the growth of more innovative, high-quality businesses as well as the enhancement of technology-based SMEs' capacity for innovation. This will hasten the development of a social climate that supports creativity.

2.4. Technology

The Chinese government issued "Made in China 2025" in 2015, aiming to promote China to make breakthroughs in key areas of the science and technology industry. The Communist Party of China's 20th National Congress's report made the strategic objective of advancing the development of a technologically advanced nation very apparent. With the implementation of these policies, the government will open up the upstream and downstream industrial chains of the science and technology industry. These measures will make the division of labor of technology-based SMEs clearer, the leading role of large science and technology enterprises more obvious, and the technical cooperation and exchange between enterprises more convenient. Additionally, the government has indicated in a number of documents the direction in which the science and technology sector will expand as well as its main areas of attention over the next ten years. This will enable science and technology businesses to refocus their resources and adjust their development priorities in order to overcome significant technical obstacles. Simultaneously, it is advantageous for emerging technology-based SMEs to recognize the development priorities of companies, enabling them to cut the initial establishment costs of scientific research while increasing its effectiveness. The advancement of China's science and technology sector will benefit from these rules, which will encourage businesses to make technological advances in segmented fields.

3. Technology-based SMEs Are Facing Challenges

3.1. Internal Challenges

The Chinese government supports the expansion of technology-based SMEs strongly. However, due to the late start of China's science and technology industry, there are still problems such as low science and technology content, talent shortage, lack of funds, incomplete industrial chain, and homogeneous competition among enterprises. Additionally, although the government's incentive programs and financial subsidies may support the creation of new businesses in the short term, in the long run, their ability to support business growth will be undermined [9]. Some enterprises even cheat subsidies and corruption, which is not conducive to the capital flow and technological innovation of the science and technology industry.

3.2. External Challenges

After the pandemic, the global consumer market shrank, and the consumption of electronic products in the downstream of the technology industry decreased, which hindered the development of the upstream. Take the semiconductor industry as an example, based on information made available in May 2023 by the World Semiconductor Trade Statistics Association, the Global

Semiconductor Market is predicted to decline 10.3 percent in 2023. Discrete and Optoelectronics will increase by 5.6 percent and 4.6 percent respectively. However, other categories will decline. Memory will decline by 35 percent year over year [10]. The worldwide market's decline will result in higher operational costs for businesses and lower earnings for technology-based SMEs. Especially in the semiconductor industry monopolized by technology giants, Chinese technology-based SMEs are more difficult to seize the international market and face greater competitive pressure.

4. Measures of Policy Support for Sustainable Development of Technology-Based SMEs

4.1. The government should keep its policies optimized and monitor the direction

First, the technology industry is developing rapidly. Policies formulated by the government may not be able to adapt to the expansion of technology-based SMEs. It will lead to the opposite effect of the policy and will not be conducive to fair competition. The government should improve the information statistical mechanism of the technology industry, regularly collect the opinions of SMEs, conduct in-depth internal investigations, analyze the development status of the industry, and modify policies according to the actual situation. Secondly, the technology field is highly specialized, and it's difficult for non-professionals to accurately assess the current development status of the industry. The government should improve the policy-making process and actively listen to the opinions of various parties. When formulating policies, it is necessary to not only listen to the opinions of relevant experts and industry giants in the industry but also pay attention to the opinions of SMEs to ensure that the policy formulation is fair and meets the reasonable needs of most enterprises in the industry.

4.2. Strengthen Oversight And Review Of SMEs And Enhance The Incentive System

The science and technology sector has a lot of patents because it is a technologically advanced sector of the economy. To foster a competitive business environment, the government should strengthen the patent protection system and safeguard businesses' legal rights and interests. Secondly, due to the limitations of capital, research and development capacity and other aspects, the transformation of achievements of SMEs is usually more difficult than large enterprises. The government should establish a multi-level incentive mechanism and set up different standards of preferential tax policies for large and small enterprises [11]. Let small enterprises feel the government's attention, to enhance the confidence of SMEs' development. Finally, the government should conduct periodic supervision and review for SMEs that enjoy preferential policies. Through quantitative evaluation of enterprise innovation ability and achievement transformation ability, preferential policies will be canceled for enterprises that do not meet the standards. The government should punish the enterprises that cheat the government financial subsidies to ensure the effectiveness of the flow of public funds. Through these measures, the effectiveness of financial subsidies will be improved, to cultivate more technology-based SMEs with innovation potential.

5. Conclusion

To sum up, this paper found that against the backdrop of a global economic downturn, The government released a number of regulations that will support the growth of technology-based SMEs. First, from a political perspective, the government's emphasis on technology-based SMEs will promote the construction of a governance system conducive to their development. Second, from an economic perspective, the government and the central bank have introduced a series of tax cuts and loan interest reduction policies, which will help improve the development confidence and investment desire of SMEs. Third, from a social perspective, the government will use public relations to deeply instill the idea of mass entrepreneurship and innovation in the minds of the populace, which will be beneficial for the development of innovative talent and the synchronized growth of the quantity and quality of technology-based SMEs. Finally, from the technological perspective, a series of positive

policies issued by the government will open up the upstream and downstream industrial chains of the science and technology industry. It will be conducive to the technological exchange and innovation of upstream and downstream enterprises. However, the government should also realize that with the support of the government's policies, there may be phenomena such as fraudulent subsidies and corruption, and the policy itself may not meet the requirements of enterprises, which requires the government to deeply understand the development of the industry and constantly adjust the policy.

There are also some deficiencies in the research process of this paper. For example, in reality, the development of technology-based SMEs is also affected by many factors that are difficult to quantify, such as the industrial revolution brought about by major technological breakthroughs and the influence of technology giants. In addition, the technology industry is developing rapidly. With the development of the technology industry, the government's policies will be constantly adjusted. Therefore, there is still a lot of future research space in this field.

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