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CHALLENGES OF THE INNOVATIVE CHINESE SMALL- AND MEDIUM SIZED ENTERPRISES (SME'S) IN THE LAST DECADE

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DOI [10.47273/AP.2022.24.19-35](https://doi.org/10.47273/AP.2022.24.19-35)

ABSTRACT

China managed to built-up a working market economy transforming itself into dominant player on global scale and put more emphasize on innovation-driven growth. In the course of this unprecedented process, Chinese Small and Medium sized Enterprises (SMEs) have established in huge numbers and become the most dynamic actors in the market economy. They have significant role in the domestic economy in profit creation, employment absorption, taking into practice different types of innovations largely contributing to the social stability and raising of well-being of the local communities. Furthermore, internationalization has also become important factor for the continuously developing SMEs in China. Beyond the observed negative tendencies- significant shrinkages of the SME's profits - can be many different reasons. The central government has tendency to prioritizing the large size state enterprises in certain industrial and service sectors, the insufficient size and frequency of the strategic innovations largely due to the lack of know-how, information, skills, competencies, attitude, network-based co-operations and experience of domestic and international markets. These also pointed out the relevance on the strategic innovation and how to impact on the product and process innovation on the SME's technologies, business models, reshaping the corporate cultures and values as well to stop and reverse his negative trends. It means a defined product strategy, adequate financial and human resources, New Product Development (NPD) R&D resources, high quality project teams, senior management commitment, innovative environment and culture. Cross-functional teams and top management should responsible for the implementation. This review paper is aiming to give a comprehensive landscape about the current situation of and the special features of the Chinese SME sector and the obstacles that can hindering or slow down their successful innovation processes. These challenges are particularly difficult for SMEs with smaller scale and weaker risk tolerance. Chinese domestic firms have comparative advantages, such as cheap labour resources, better knowledge about Chinese local market comparing to foreign MNEs from developed countries. Facing strong competition both from large-sized State Owned Enterprises (SOEs) and foreign Multinacional Enterprises (MNEs), Chinese SMEs should pay more attentions to indigenous innovation by taking advantage of Chinese huge domestic market.

Keywords: Chinese SME sector, definition of the Chinese SME's, SME Promotion Law of China, five-year plan for the growth of SMEs, innovation efficiency, internationalization

1. Introduction

China is committed itself for taking into practice serious structural reform and transformation to maintain and speed up sustainable economic growth. China's entry into the global market followed different pattern compared to Eastern European countries and former Soviet Union, and this transition process took place in two different main period. During the first phase (between 1979-1993), the planned economic system was gradually transformed by introducing central macro economic incentives reducing the obstacles in front of implementation "socialist market economy" (special combination elements of the planned economy and market economy), which became officially designated governmental goal under supervision of the Chinese Communist Party. These included: establishment special economic zones to attract foreign capital, set up and opening stock market, launching consolidation and privatization of state-owned enterprises. These measures lead to significant role of market competition in resources distribution. China took also into consideration the Hungarian experiences as the necessary steps forwarded in its early economic reform. The Hungarian economist Professor János Kornai had crucial role in this process (Chen Kang, 2020); (Mihályi P. et al. 2021). In the second phase (between 1994-2019 until outbreak of COVID-19 pandemic) new institutional system was built-up in China, supporting the market system towards internationalization. China became a full fledged actor in the globalised world economy by joining the World Trade Organization (WTO) in 2001 and the Regional Comprehensive Economic Partnership (RCEP) in 2012. The last one is strategic agreement between the member states of the Association of Southeast Asian Nations (ASEAN) and its Free Trade Agreement (FTA) partners. Vision of RCEP is creating an integrated market with 16 countries, making it easier for products and services of each of these countries to be available across this region. Furthermore, China launched the Belt and Road Initiative (BRI) in 2017 aiming to build connectivity and co-operation across six main economic corridors including China and Mongolia and Russia; Eurasian countries; Central and West Asia; Pakistan; other countries of the Indian sub-continent; and Indochina (OECD 2018).

In addition, recognising innovation as crucial factor, China makes efforts to reshaping the country from previously low value-added manufacturer to a global-leading designer and innovator. Through a large number of tailored initiatives and programs, significant efforts have been made by both central and local governments to facilitate nation-wide innovative development. Representing the majority of Chinese firms and the main foundation of the manufacturing base, Small and Medium-sized Enterprises (SMEs), which were historically considered as low-tech and resource-intensive manufacturers, have been the target of these supportive policy schemes and are becoming an emerging force for innovation. The rise of innovative SMEs in Chinese manufacturing sectors is fundamentally changing market structures and relationships, leading to the transition of China's innovation system. China's unprecedentedly rapid economic growth. Over the past three decades, Chinese SMEs have developed quickly due to the development of China's reform and opening-up. Between 1979-1993: the quickly expansion of SMEs in number and scale is resulted from the government's stimulation of and support for the development of township, collective and self-employed companies. During the timeperiod 1992-2002: the government adopted different measures to reconfigure state-owned SMEs for gradually reducing the state's ownership in SMEs and the rapid development of non-public sectors due to establishment of the socialist market economy.

The SME's promotion law entered into force in 2002 and amended the constitution to grant the non-public economy a legal status in the socialist market economy in 2004. This paper aiming to analyse the challenges of innovative Chinese SME's predominantly in the industrial sector (e.g. machinery, robotics, logistics, ICT), domestic consumption (e.g. entertainment, fashion, tourism, financial and consultancy services), energy sector focusing on time period 2011-2021.

2. Research methods and data

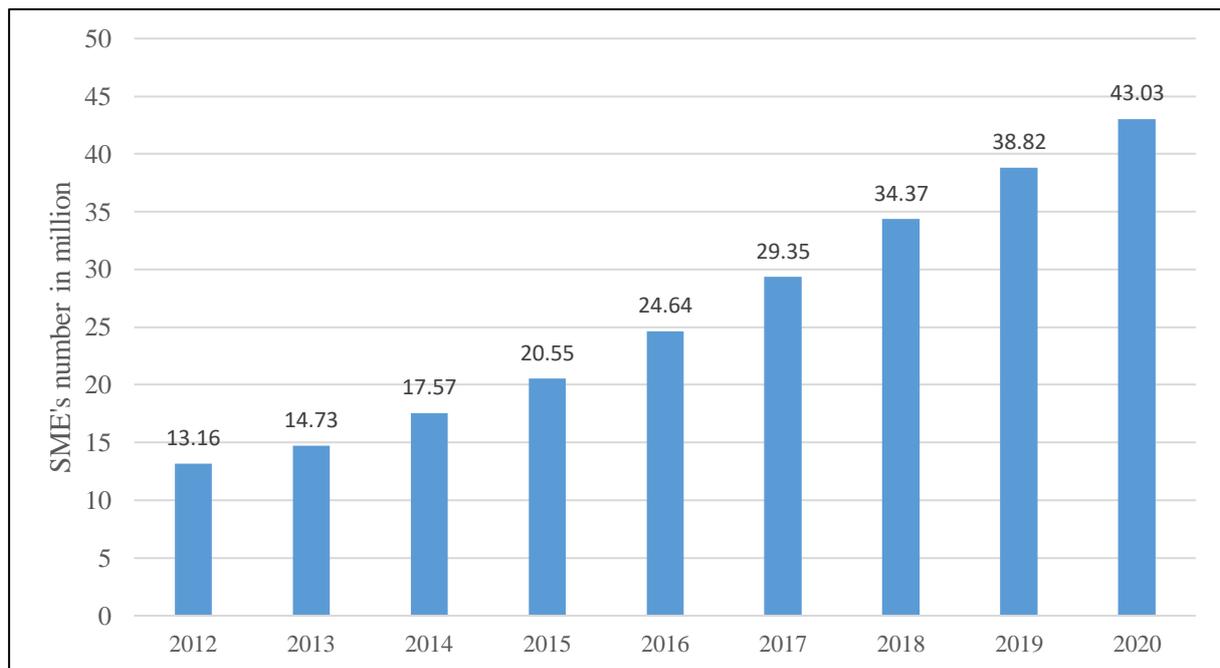
As a review paper, we mainly focused on the methodology based on secondary research analysing scientific publications, studies, online literature sources and relevant, Chinese and international documents (OECD, CEPII), up-to date data bases as well. The conclusions and recommendations based on this „desk research” finding reflects the authors' own professional views and hopefully can contribute to understanding the specific situation of the Chinese SME sector and their attitudes toward the innovations.

The remaining of the paper is structured following: Section 3 reviews relevant Facts and Figures about the Chinese SME sector from different aspects. Section 4 presents a brief summary on Innovation Processes in the Chinese SME Sector including the governmental initiatives, and the main types SME's innovations. Finally. Section 5 presents the conclusion of the paper.

3. Facts and Figures about the Chinese SME sector

China making concerted actions to increase its support for the domestic owned small and medium-sized enterprises (SMEs) to encourage high-tech innovation and stimulate their survival. The Ministry of Industry and Information Technology (MIIT) is working on a five-year plan for the growth of SMEs, which strongly focuses on improving a level playing field, increasing financing availability and enhancing innovation capacity and professionalism. Since the economic reformation in China, SMEs have become one of the driving forces in the economy. In 2020, the number of SMEs was estimated to be over 40 million as you can see in the below Figure 1. Classification of SMEs in China is complex based on specific criteria for different industries. According to the SME Promotion Law of China, SMEs can be categorized according to their number of employees, annual revenue and total assets. For example, a medium-sized agricultural enterprise is required to hire a minimum of five hundred people. A small-sized construction enterprise can have a maximum business revenue of 8.5 million U.S. dollars. Compared to the SMEs in other economies which often employ below 100 or 500 people, SMEs in China are relatively big (<https://www.statista.com/statistics/783899/china-number-of-small-to-medium-size-enterprises/>).

Figure 1. The number of the Chinese SME’s in million (2012-2021)



Source: Own edition based on <https://www.statista.com/statistics/783899/china-number-of-small-to-medium-size-enterprises/>

The below Table 1. indicate the differences in the SME’s definitions making comparison between China, EU, USA and Japan.

Table 1. The different definitions of SME’s in China, EU, USA and Japan (2011-2018)

	Micro	Small	Medium
China	Employees with less than 20 and annual revenue less RMB 3 million (around 0,38 million euros)	Employees with less than 300 and annual revenue between RMB 3 million – 20 million (around 0,38 -2,5 million euros)	Employees with less than 1000 and annual revenue between RMB 20 million-400 million (around 2,5 million-52 million euros)
EU	Employees with less than 10 and turnover less than 2 million euros or balance sheet total less than 2 million euros	Employees with less than 50 and turnover less than 10 million euros or balance sheet total less than 10 million euros	Employees with less than 250 and turnover less than 10 million euros or balance sheet total less than 43 million euros
USA	N.A.	N.A.	Employees with less than 500
Japan	Employees with less than 20	N.A.	Employees with less than 300 and Stated Capital Yen 300 million (around 2,25 million euros)

Source: Own edition based on Christiane Prange and Youzhen Zhao 2018, pp.208.

In China more than 99,7 % of all firms are SME’s with 300 or fewer employees, contributing to over 60% of total GDP, 50% of tax income, 75% of job creation, more than 80% of urban labor employment, and 68% of exports. In 2018, growth in new business creation reached record highs up by 10.4% compared to 2017. The 70 % of the technology innovations took place at the Chinese SME’s in the country (OECD 2020); (Ma Z, et. al. 2021)

China, Japan and the Republic of Korea (ROK) are complementary in the innovation of small and medium-sized enterprises (SMEs), which helps enhance trilateral cooperation on innovation-based SMEs to push forward digitalization. Chinese SMEs prevail in the development of core industrial technologies; Japanese SMEs are championing innovative and applicable ideas for technologies to be more impactful; and ROK SMEs are especially good at penetrating consumer markets to commercialize technologies. (Economy CGTN 2020). You can find the top ten most popular innovative Chinese, Japanese and ROK SME's list in the below Table 2.

Table 2. Top ten most popular Chinese, Japanese and ROK innovative SME and their business profile (2019-2020)

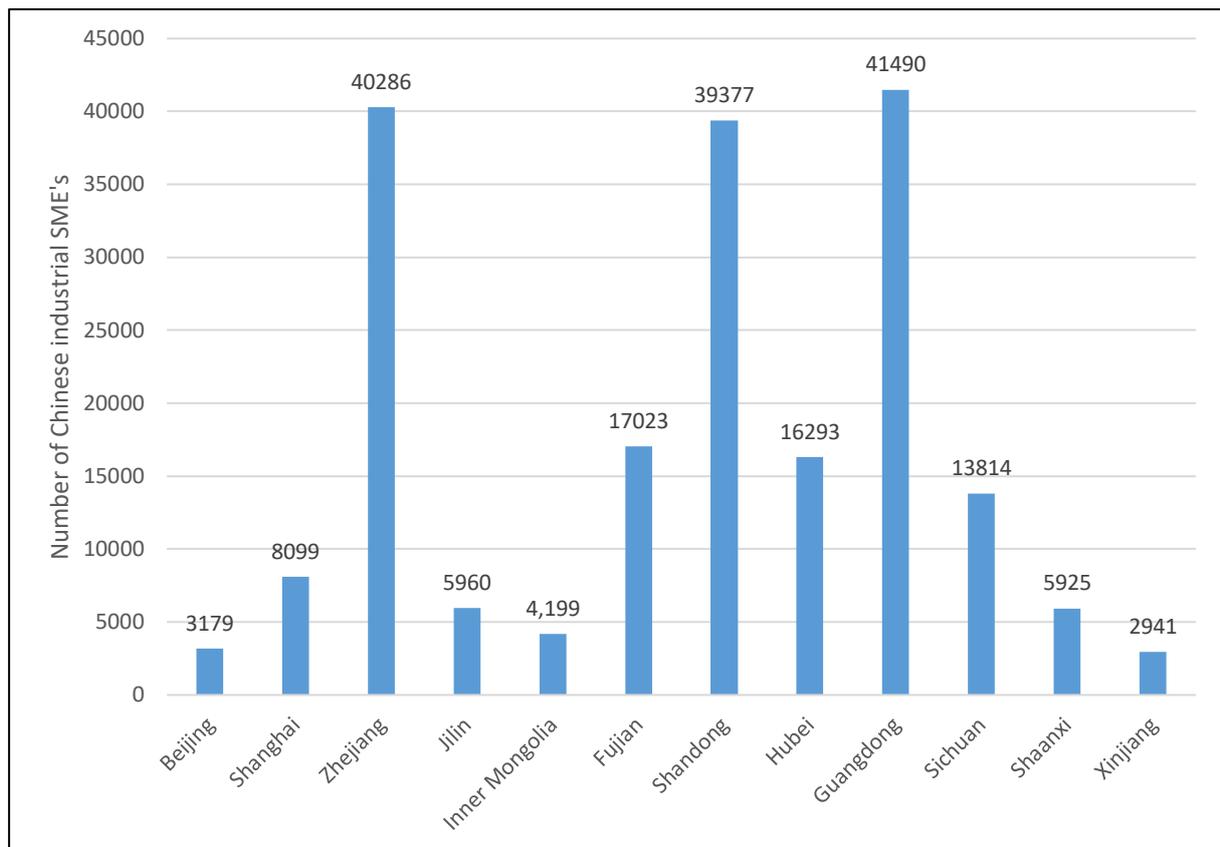
No.	China	Japan	Republic of Korea
1.	Cambricon (software)	San San (software)	Musinsa (fashion commerce)
2	Amap (navigation service)	PKSHA (software)	Yaonlija (hotel booking system)
3	MEGVII (software)	ABEJA (software)	MoneyBrain (AI deep learning platform)
4	Horzion Robotics (AI* chip maker)	SanBio (health industry)	Seaul Robotics (software)
5	Pony AI (autonomous vehicle)	HEROZ (AI technology)	Carelabs (health industry)
6	CloudWalk (software)	Gatebox (robot maker)	BESPIN Global (cloud management)
7.	UBTECH (intelligent humanoid robot maker)	Connected Robotics (robot maker)	Aprogen (biotechnology)
8.	Royole (electronics)	Money Tree (financial education)	Rainst (software)
9	Henlius (biotechnology)	Cinnamon (AI)	SsenStone (security authentic solutions)
10.	Mobvoi (consumer electronics)	Blue Innovation (dron systems)	StradVision (vision processing technology)

Source: Own research based on Economy CGTN 2020

*AI – Artificial Intelligence

You can see in the Figure 2. numbers of Chinese industrial SME's by regions in 2017. Industrial enterprises above designated size refer to enterprises with annual revenue from principal business over 20 million yuan. (1 yuan equals approximately 0.15 U.S. dollars and 0.13 euros as of 2019)

Figure 2. Numbers of Chinese industrial SME's by region (2017)

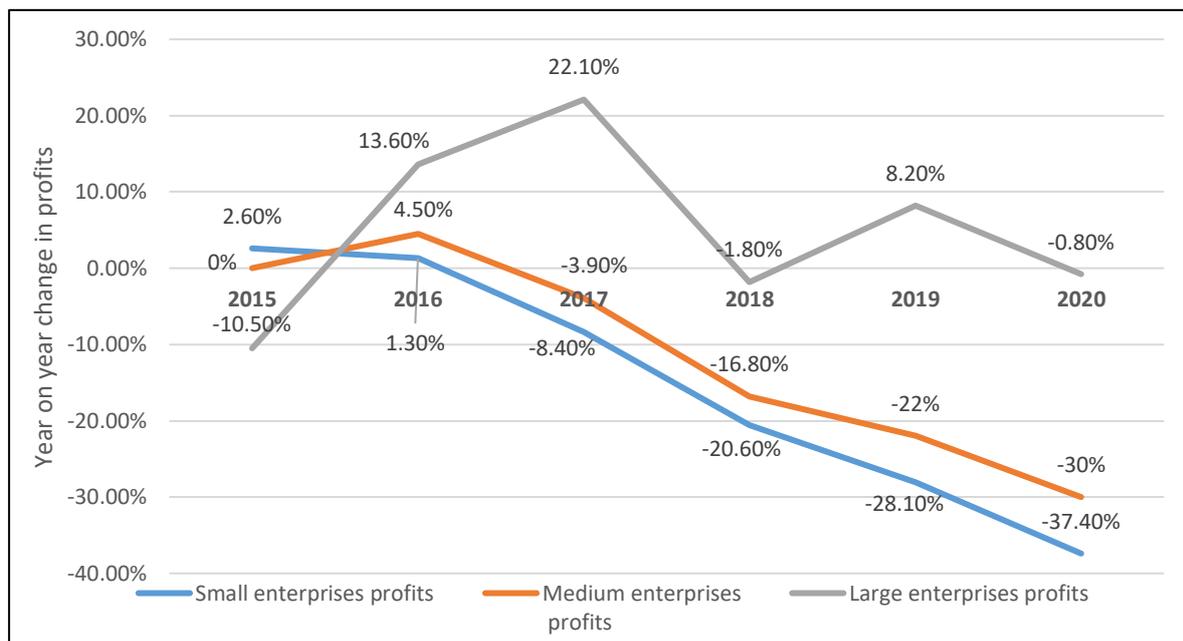


Source: Own edition based on <https://www.statista.com/statistics/783899/china-number-of-small-to-medium-size-enterprises/>

Currently, internationalization has become more and more important factor in the increasing number of SMEs in China. With the opening-up policy of China since 1978, competition has intensified and Chinese SMEs have become attracted by overseas market opportunities, not only with the objective of increasing sales through exporting, but also with an ambition to learn about foreign product and manufacturing quality in order to catch up. Chinese SMEs have an intrinsic surge to rapidly expand across developed markets in order to increase quality, branding and technological know-how, they definitely need to penetrate their home market or emerging markets to maintain profitability. (Christiane Prange and Youzhen Zhao 2018, pp.205-224). The Regional Comprehensive Economic Partnership (RCEP) entered into force in 2020, including 10 ASEAN countries and five Asian Pacific ones (China, Japan, South Korea, Australia and New Zealand). Besides the Belt and Road Initiatives (BRI), RCEP can also be important element of China's new strategy to play a global leading role. This initiative will contribute to relocating supply chains from China to ASEAN countries with lower labor costs, because it will reduce trade tariffs and speed-up intra-zone investments. In this context, besides the challenges, many exploitable opportunities (e.g. higher exports) will be open in front of the Chinese SME sector (M. Aglietta et al., 2021). The youth-owned SME is growing in difficult business settings characterized by globalization, the internationalization of economies, and there is a need to enhance innovation and knowledge-based efficiency, efficiency, and competitiveness (Berdine, et al. 2008). According to Bunduchi, (2013), the small and medium-sized businesses sector has continued to grow, becoming a major industry in the country's economy and a source of new jobs. SMEs have generated employment and become the home financial engine power in many nations.

Despite of the continuously increasing number of the Chinese SME’s, the below Figure 3. clearly illustrates the negative trends in the profit growth rate of these SME’s profit. As you can see, China’s smallest businesses are crumbling, which means a high hidden risks an unknown pitfall on the national economy level on longer timescale. The possible reasons beyond the significant shrinkages of the SME’s profits can be: the central government has tendency to prioritizing the large size state enterprises, – predominantly in mostly in the industrial, transport, wholesale, retail, catering and accommodation sectors - the insufficient size and frequency of the strategic innovations largely due to the lack of know-how, information, skills, competencies, attitude, network-based co-operations and experience of domestic and international markets.

Figure 3. Growth rates of Chinese enterprises profit in percentage by company size (2015-2020)



Source: Own edition based on <https://www.statista.com/statistics/1207958/china-profit-growth-of-enterprises-by-company-size/>

These also pointed out the relevance on the strategic innovation and how to impact on the product and process innovation on the SME’s technologies, business models, reshaping the corporate cultures and values as well to stop and reverse his negative trends. Combining a dynamic multi-dimensional technology innovation model with the SMEs' innovation practice to continuously improve their technology innovation model and establish the innovation system, can play crucial role in enhancing the innovative capability of SMEs and strengthening their core competitiveness. (Bo, Z. and Qiuyan, T. 2012, pp. 124-136)

To solve the financial problems of the SME sector, the central government will allocate more than 10 billion yuan (1.55 billion dollars) from 2021 to 2025 to support the growth of more than 1,000 "little giants", or Chinese SMEs that focus on a market niche and master key technologies with strong innovation capacity. Innovative SMEs play crucial and irreplaceable role in the whole industrial chain. Globally competitive "little giants" can contribute to stabilize the Chinese supply chains and seek high-quality development in manufacturing. (Ma Si 2021).

4. Innovation Processes in the Chinese SME Sector

4.1. Central Governmental initiatives

Innovation Economics is new branch of economics focusing on innovation, to reveal the contexts between technology, knowledge, and entrepreneurship. Its main goals to understand where new ideas come from, and how we can put forward measures and concerted actions promoting the development of new ways of thinking. As many nations move away from an industrial model of production and towards a knowledge-based economy, the economics of innovation becomes more and more relevant as you can see this progress in the Table 3.

Table 3. The evolution of Innovation Economics

From Innovation Economics to Information Economics		
Innovation Economics has been introduced in the Schumpeterian economic theory as a tool to explain the ability of the companies to produce new products and services even in the context of the creative-destruction	Knowledge-based economics based on the idea that knowledge can get through Research and Development (R&D) as a tool to boost productivity in the long run in the context of Endogenous Growth Theory	Information Economics is the idea of Industry 4.0. trends. The possibility to use the informatics developments in Artificial Intelligence, Machine Learning and Big Data in connection to R&D, Business Management and so on.

Source: Own edition based on Alberto Costantini et al., 2021 pp. 23-32

Zhong et al., (2020) agreed that businesses that innovate can be more successful in responding to environmental changes and creating new possibilities that would help them reach better performance. Innovation is an important tool for developing modern technology and businesses.

With the evolution of the national political economy, China’s innovation policy has undergone complex and significant changes. Recently, the main tool of the Chinese government is to use grants, loans, interest subsidies, and planning grants to promote and speed-up different innovation activities of the companies including the emergence of new firms, and the diffusion and absorption of knowledge and technology. Productivity promotion centers are science and technology intermediary service institutes, which aim to promote technological innovation in firms, especially SMEs. Despite of these measures, the dominance of the SME’s remained marginal till now.

In order to strengthen the crucial role of the innovative Chinese SME’s, China has launched a three-year plan to offer monetary incentives to provincial-level regions that have made achievements in fostering patent technology transfers from SME’s. Provinces, autonomous regions and municipalities with well-developed schemes, proper measures, strong execution and outstanding achievements in transferring patent technologies will each be awarded 100 million yuan (about 15.3 million dollars), according to the plan. (http://english.www.gov.cn/statecouncil/ministries/202103/25/content_WS605c244cc6d0719374afb69a.html)

The Ministry of Industry and Information Technology (MIIT) is working on a five-year plan for the growth of SMEs, which underlines key tasks including improving a level playing field, increasing financing availability and enhancing innovation capacity and professionalism. Calling for integrated innovation development pattern for large, medium and small enterprises and upstream and downstream firms, the ministry also proposed to increase inclusive finance support for small and micro-businesses. The latest fiscal support is part of China's broader push to cultivate a globally competitive ecosystem of SMEs, which account for nearly 50 percent of

the nation's tax revenue, 60 percent of China's GDP, 70 percent of technological innovation and 80 percent of urban employment in China (Economic Watch 2021); (Ma Si 2021). In China, the innovation-inhibiting effects of structured uncertainty can largely be eliminated by setting up mutually beneficial alliances between the local government and SMEs. Sustaining low-levels of unemployment and providing jobs for migrants from China's poorer inland provinces helps ensure continued social stability. Firms benefit by profiting reduction of the negative impacts of structured uncertainty which make it possible for them to invest, stable growth and innovate. While this special alliance with the local state enables productive innovation to take place, firms remain incentivized to seek short-term profitability and avoid long term R&D projects (M. Murphree et al., 2016). Due to their weaker innovation capabilities comparing the giant high-tech global Chinese companies, and other solutions can be for the domestic SME's to start open innovations and creates a favorable market performance through cooperating with external source of innovation, as well as using the ways of open innovation timely (Li, X et al. 2010). The below Table 4. indicate the main component of the complex and integrated innovation development pattern for the Chinese SME's.

Table 4: Elements of the Chinese Governmental SME Innovation Strategies that have impact on the innovation efficiency on this sector

Main elements	Innovation Performance
SME-specific Resources and Capacities <ul style="list-style-type: none"> <input type="checkbox"/> Absorptive Capacity <input type="checkbox"/> Talent Capacity <input type="checkbox"/> Ownership Structure <input type="checkbox"/> Linkage Capacity 	
Industry-based Competition <ul style="list-style-type: none"> <input type="checkbox"/> Competitive Intensity <input type="checkbox"/> Talent Capacity 	
Institutional Conditions and Transitions <ul style="list-style-type: none"> <input type="checkbox"/> Government support and R&D Tax Incentives <input type="checkbox"/> IPR Management <input type="checkbox"/> Cultural Norms <input type="checkbox"/> The Role of Local Government 	

Source: Own edition based on (Yi Cao and Weifeng Chen, 2010 pp.15)

Since the broader implementation of the R&D tax allowance in China in 2008, implied subsidy rates on R&D expenditures have remained stable until 2017. In that year, the R&D tax allowance rate was raised for SMEs from 50% to 75%. This led to an increase in the implied R&D tax subsidy rate for SMEs from 0.15 (0.12) to 0.23 (0.18) in the profit (loss) making scenario. In 2021, China extended its R&D tax allowance (super deduction) for research and development expenses for three years to December 31, 2023 and increased the rate of the enhanced tax deduction for manufacturing enterprises from 75% to 100%. Another and recent change in the design of the R&D tax allowance in China occurred in 2019, when the headline R&D tax allowance rate for large firms was lifted from 50% to 75%, coinciding with the enhanced deduction rate applicable to SMEs. Chinese SMEs accounted for 89% of R&D tax relief recipients in 2017, while the share of R&D tax support accounted for by SMEs amounted to around 54% in this year. 46% of R&D tax benefits were allocated to large firms, comprising 11% of the population of R&D tax relief recipients in 2017. In 2017, firms in manufacturing represented 99% of R&D tax relief recipients in China. The share of R&D tax benefits accounted for by the latter similarly amounted to 98% in that year (OECD 2021).

Innovation efficiency is the relative capability of an enterprise to maximize innovation outputs given a certain quantity of innovation inputs. It is a key index to measure the ability of technological innovation.

The dependent variables are innovation efficiency (IE), pure technical efficiency (PTE), and scale efficiency (SE). Including both the internal and external factors such as government subsidies, ownership concentration, firm size, asset-liability ratio, market competition, and firm age are selected as the independent variables to explore the main factors affecting the high-tech SMEs’ innovation efficiency (L. Liu et al. 2020). According to the Table 5, an effective mode or direction for innovation combining with the relevant capability and strategy can maximize the value of innovation projects.

Table 5. Conceptual framework for domestic technological capabilities

		Product Technology Capability	
		High	Low
Process Technology Capability	High	Fast Follower Innovation Mode (Cluster Strategy) – establish strategic partnerships to gain competitive advantages) High Export Orientation	Process Capability Pioneering Mode (Niche Strategy) High Export Orientation
	Low	Product Technology Pioneering Mode (Niche Strategy) Low Export Orientation	Application Specialits Mode (Free-Riding Strategy) Low Export Orientation

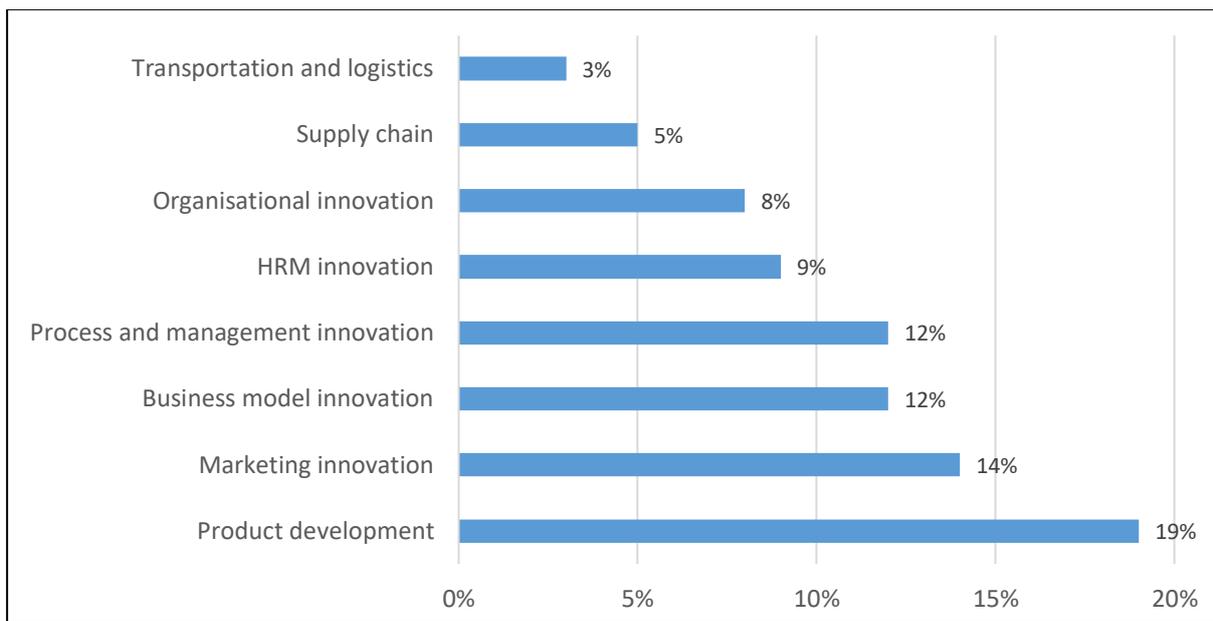
Source Own edition based on Toshiki K. et al. 2007

4.2. Main types of innovations in the Chinese SME sector

Product and process innovation can improve customer loyalty, acquiring consumers from competitors, and leading to revenue growth. Value chain and business model innovation can help companies expand their business scale and channels, and, as a result, increase revenue. However, companies need to select the right innovative mode to realize these benefits, which requires a precise understanding of industries and consumers. What companies really want from innovation are capabilities that can power sales and scale growth. This includes innovation in products and services, business models, and competition strategies (Kearney 2018).

Chinese SME’s have to think deeply about the opportunities and challenges of the future when focusing on innovative development. Innovation capability is not built overnight; instead, companies need to constantly build a dynamic path. Technology development and talent resources have the greatest impact on a business’s future. Other challenges include value chain synergy, policy and regulation changes, and the transformation of operational models.

Figure 4. Key innovation modes of the Chinese SME's in percentage (2018)



Source: Own edition based on Kearney 2018.

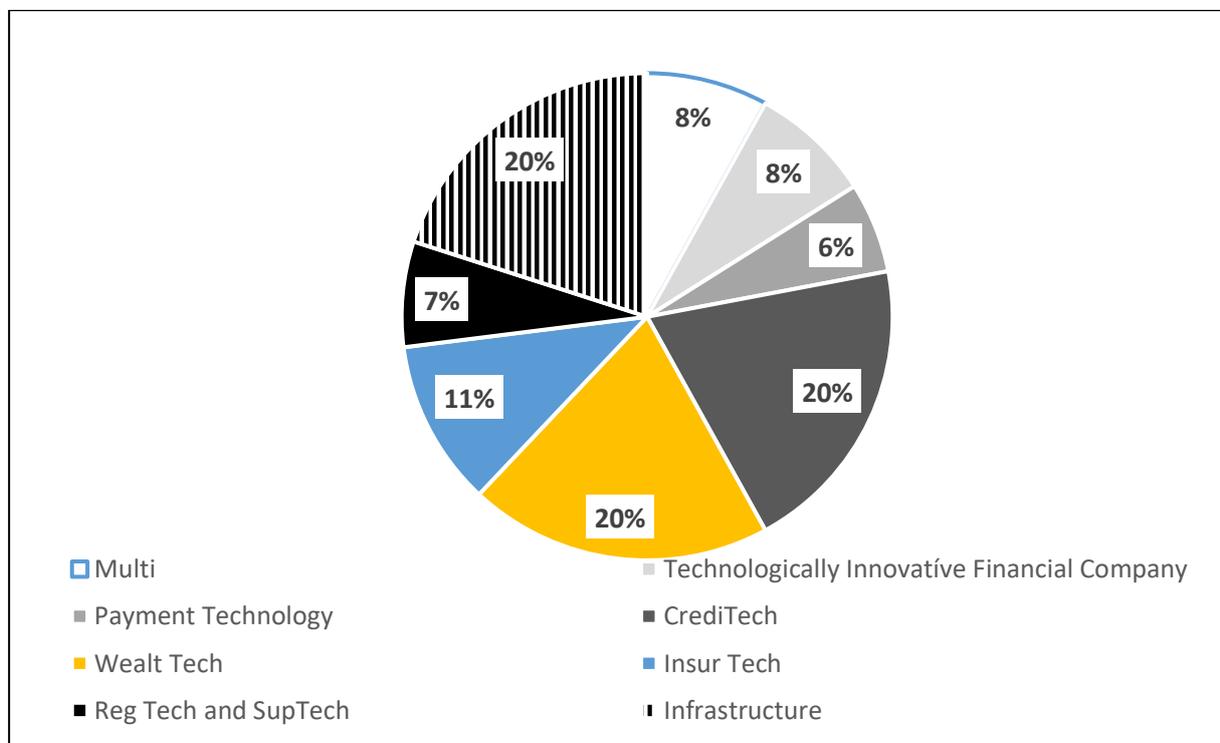
The "little giant" enterprises have strong innovation capacities and development resilience. These SME's are in the early stage of development and focus on the new generations of ICT, high-end equipment manufacturing, new energy, new materials, biomedicine, space industry, artificial intelligence (AI) and other high-tech sectors. Currently in China, there are 4 672 "little giant companies"—innovative SMEs-, which shows the country's strong commitment to incubate such firms into future champions in bottleneck sectors.

For SMEs in China, fragmentation of production offers opportunities and fosters specific innovation capabilities. The capabilities are specific to the niche in which Chinese SMEs specialize in the global economy. According to the Ministry of Industry and Information Technology, little giant companies refer to leading SMEs that specialize in niche sectors, command a high market share, boast strong innovative capacity and core technologies. These companies refer to leading SMEs that specialize in niche sectors, command a high market share, boast strong innovative capacity and core technologies. By 2025, China aims to grow 10,000 little giant companies and 1,000 single-product champion enterprises. More than 70 percent of "little giant" enterprises were able to obtain loans, and their average loan balance was 75.26 million yuan. (Cheng Yu, 2021); (<https://www.globaltimes.cn/page/202107/1227877.shtml>); (The rapid development and penetration of Chinese Fintech SME's have tangible impact on the development of the financial industry. The Internet, big data, AI, cloud computing and other technologies have become indispensable to the financial industry, and the integration of technology has also deepened the transformation and influence across the entire industry. The rapid development of Fintech across a number of application areas have created new business models. A number of technology platforms, Internet giants and leading enterprises in the financial industry have deployed integrated Fintech companies to open up new markets and develop the Fintech ecosystem. In addition to traditional businesses, some integrated Fintech enterprises have also actively contributed to the development of RegTech, cooperating with regulatory authorities to use advanced technology to enhance data processing rates, establish a fair market environment for competition and maintain financial stability. Every industry, as well as every organisation, is in the midst of innovation-driven change and paradigm shifts. Digital technology has a significant and far-reaching impact on socioeconomics and business models worldwide. For the end-consumer market, AI is being increasingly combined with big

data technology to dig deeper into data, and add value to digital payments. Digital payments generate a large amount of data, which can be applied to precision marketing, intelligent risk management, fraud identification and other diversified scenarios, forming a "payment plus" ecosystem. The payment industry faces a broader and more complex prospect of user demand in the business-end market. By going deep into merchants' payment scenarios and using mature Fintech to enable SMEs, the business-end services go beyond traditional payment services and provide one-stop multi-dimensional solutions such as marketing, financial management, accounts receivable management, capital collection and risk management. (KPMG 202)

Furthermore, effective intelligent operations can help asset management institutions reduce costs and increase efficiency of the Chinese SME's. Technology has been transforming all the key links in the asset management value chain, especially in investment research, risk management, operational efficiency and customer service. The below Figures 5. reveals the Chinese FinTech SME's by their business profile.

Figure 5. Distribution of the young Chinese Fintech companies by business profile (2020)



Source: Own edition based on KPMG 2020

5. Conclusions

Innovation has always been relevant topic for enterprises in China. Many of them are trying to adapt by building a set of innovative capabilities despite of the difficulties and challenges. Understanding the key success factors of innovation can help companies improve their performance, scale, and develop a long-term internal mechanism to cope with future uncertainties.

China's innovation policy consists of institutional structure, financial policies, business innovation support system, human resource policies, and laws, which comprehensively reflect the key elements of the NIS. Under this analytical framework, SME innovation policy texts between 1994 and 2017 was studied. The current NIS does not effectively support the

sustainability of SMEs' innovation because of these reasons: Incomplete law system especially for SMEs, lack of independent and specialized management agency and inappropriate policy tools, such as lack of guidance on social capital and financial services and weak business and human support.

SME's still face many difficulties in production and operation, heavy burdens, financing difficulties, rising costs, insufficient orders, debates related to intellectual property rights and other problems, and operating pressure continues to increase.

Government subsidies, ownership concentration, and market competition have a significant negative effect on the high-tech SMEs' innovation efficiency and pure technical efficiency but have no significant effect on the scale efficiency.

Firm size and asset-liability ratio have a positive on enterprise innovation efficiency. Many innovation projects require substantial capital investment, and the amount of funds needed are increasing every year. Capital shortage is a major barrier hindering the innovation of high-tech SMEs. It is of vital importance to give full play to the role of government subsidies' signal transmission and lead the flow of social funds and financial institutions to innovation enterprises, so that the enterprises can ease external financing constraints and increase the availability of funds.

At the end of the 1990s, big technological giants like e.g. Alibaba, Baidu, or Tencent significantly contributed to the Chinese rapid economic growth. This period was mostly characterized by unregulated markets, which also had crucial effect on the relatively poor country becoming a prosperous economy. In the past, the technology sector was characterized by a practically complete lack of regulation: the first regulatory measures came to light around 2017. Mergers and acquisitions were also mostly outside regulatory powers. Although the country has become the world's second largest superpower due to its rapid growth in the last decade, the level of inequality within society has risen drastically. Based on the concept of "common prosperity", the central government tries to realize social equality based on socialist principles. In this context, the Ministry of Industry and Information Technology has launched a legislative campaign to eradicate harmful market practices such as the violation of user rights, endangering data security and the use of pop-up windows that users cannot avoid and introducing regulation creating the conditions of fair and transparent market competition. The fair market competition environment can help SME's reducing selling expenses, improve the resource allocation efficiency, and encourage enterprises to concentrate on innovation continuously.

The larger the firm size, the greater the scale effect of technological innovation. So, promoting the development and growth of enterprises and enhancing economies of scale are conducive to the improvement of high-tech SMEs' innovation efficiency

Chinese domestic firms have comparative advantages, such as cheap labour resources, better knowledge about Chinese local market comparing to foreign MNEs from developed countries. Facing intense competition both from large-sized SOEs and foreign MNEs, Chinese SMEs should pay more attention to indigenous innovation by taking advantage of Chinese huge domestic market.

Besides the product and process innovations it is definitely need to the organizational development, management innovations as well.

Summary

The innovation generated by small enterprises with limited resources can successfully compete with large companies. The company can provide products and services with lower cost and more convenient use, turn former non customers into loyal consumers, and create a new market. The products and facilities produced by companies using high-end destructive technologies are initially less efficient in terms of the quality valued by traditional customers, but more efficient in terms of the quality valued by low-cost customers. Then through product innovation, the company can put new products on the market and improve the quality of existing products, so that the company has a competitive advantage among competitors in the same industry. Small and medium-sized enterprises (SMEs) play an important role in promoting economic growth through technological breakthroughs, creating employment opportunities and promoting exports to other countries.

In today's dynamic economic climate, competitiveness is a crucial element for a company's survival, growth, and success. Intense competition forces businesses to develop and compete in order to stay afloat. To win their robust local markets, small companies in emerging nations must improve their competitiveness. Strategic innovation is thought to improve organizational performance throughout the world in many business industries. As a result, strategic innovation is a means for a new organization to compete with established ones.

In comparison to large businesses, SMEs are more predisposed to new product development (NPD) and complete the entire process. Due to the smaller size of SMEs and the lower number of employees they have compared to major corporations, cross functional teams established are more specialized. There is an atmosphere in which employees are able to communicate and swap jobs, allowing members of the teams to have a better understanding each other. However, this has a limit since it is difficult for an employee to specialize in the most up-to-date technological knowledge and depending on how various SMEs differ in their learning propensity. SME's have also dynamic capabilities, which are particular knowledge and skills that they should master in order to successfully complete a new product development process. (Gupta et al., 2013) identified the critical success factors that a firm needs to be successful in their investigation of the NPD process. High-quality new product process, a defined product strategy, adequate financial and human resources, NPD research and development resources, high quality project teams, senior management commitment, innovative environment and culture. Cross-functional teams are used, and top management is held accountable for the outcomes.

The challenges are particularly difficult for SMEs with smaller scale and weaker risk tolerance.

REFERENCES

1. Alberto Costantiello, Lucio Laureti and Angelo Leogrande (2021): The SMEs Innovation in Europe; FEMIB 2021 - 3rd International Conference on Finance, Economics, Management and IT Business;
<https://www.scitepress.org/Papers/2021/104726/pdf/index.html>
<https://doi.org/10.5220/0010472600230032>
2. Berdine, M., Parrish, E., Cassill, N.L. & Oxenham, W. (2008). Measuring the Competitive Advantage of the US Textile and Apparel Industry. Alfred P. Sloan Foundation. A conference paper. Boston.
<https://doi.org/10.2139/ssrn.1134985>
3. Bo, Z. and Qiuyan, T. (2012), "Research of SMEs' technology innovation model from multiple perspectives", Chinese Management Studies, Vol. 6 No. 1, pp. 124-136.
<https://doi.org/10.1108/17506141211213825>
4. Bunduchi, R. (2013). Trust, partner selection and innovation outcome in collaborative new product development. *Production Planning Control and Management Operations Journal*, 24 (2– 3), 145 – 157. Castillo, J. (2002). A note on the concept of tacit knowledge. *Journal of Management Inquiry*, 11 (1), 46-57.
<https://doi.org/10.1080/09537287.2011.647868>
5. Caiyan Jia, Xiaoyun Tang and Zhehan Kan (2020): Does the Nation Innovation System in China Support the Sustainability of Small and Medium Enterprises (SMEs) Innovation?, *Sustainability* 2020, 12, 2562; doi:10.3390/su12062562
<https://doi.org/10.3390/su12062562>
6. Chen Kang (2020): János Kornai: A Hungarian insight into China's economic development;
<https://www.thinkchina.sg/janos-kornai-hungarian-insight-chinas-economic-development>
7. Cheng Yu: New batch of little giants to champion SME cause,
<https://global.chinadaily.com.cn/a/202108/26/WS6126e3f3a310efa1bd66b2de.html>
download on December 6, 2021
8. Christiane Prange, Youzhen Zhao, "Strategies for Internationalisation: How Chinese SMEs Deal with Distance and Market Entry Speed" In *Key Success Factors of SME Internationalisation: A Cross-Country Perspective*. Published online: 08 Aug 2018; 20540 224.
<https://doi.org/10.1108/S1876-066X20180000034012>
9. Economy: China, Japan, ROK complementary in innovation-based SMEs, says report (2020), <https://news.cgtn.com/news/2020-11-30/China-Japan-ROK-complementary-in-innovation-based-SMEs-says-report-VQcKNKcmIw/index.html> download on December 01, 2021.
10. Economic Watch: China mulls five-year plan for SMEs, http://www.news.cn/english/2021-10/26/c_1310270440.htm download on November 28, 2021.
11. Gupta, V., Venn, R., & Berg, N. (2013). Building competitive advantage through social entrepreneurship. *South Asian Journal of Global Business Research*, 2(1), 104.
<https://doi.org/10.1108/20454451311303310>
12. KPMG: 2020 China Leading Fintech 50,
<https://assets.kpmg/content/dam/kpmg/cn/pdf/en/2021/01/china-fintech-50.pdf> download on December 10, 2021.

13. Lixia Liu, Yaming Hou, Xueli Zhan, Zongxian Wang (2020), "Innovation Efficiency of High-Tech SMEs Listed in China: Its Measurement and Antecedents", *Discrete Dynamics in Nature and Society*, vol. 2020, Article ID 8821950, 9 pages, 2020. <https://doi.org/10.1155/2020/8821950>
14. Li, X. Yu, J. Jin and J. Chen, "Open innovation in Chinese SMEs: A case study," 2010 IEEE International Conference on Management of Innovation & Technology, 2010, pp. 726-730, doi: 10.1109/ICMIT.2010.5492730 <https://doi.org/10.1109/ICMIT.2010.5492730>
15. Ma Si: Innovative SMEs to get policy boost in financing, <https://www.chinadaily.com.cn/a/202102/04/WS601b2d2aa31024ad0baa71c7.html> download on December 6, 2021.
16. Ma Z, Liu Y, Gao Y (2021) Research on the impact of COVID-19 on Chinese small and medium-sized enterprises: Evidence from Beijing; *PLoS ONE* 16 (12): e0257036. <https://doi.org/10.1371/journal.pone.0257036>
17. Michel Aglietta, Guo Bai & Camille Macaire (2021): The 14th Five-year Plan in the New Era of China's Reform Asian Integration, Belt and Road Initiative and Safeguarding Multilateralism; http://www.cepii.fr/PDF_PUB/pb/2021/pb2021-36.pdf
18. Michael Murphree, Tang Li and Dan Breznitz (2016) "Tacit Local Alliance and SME Innovation in China." *International Journal of Innovation and Regional Development*, 7(3), 184-202. <https://doi.org/10.1504/IJIRD.2016.079456>
19. Mihályi, P., Szelényi, I. Kornai on the affinity of systems: Is China today an illiberal capitalist system or a communist dictatorship?. *Public Choice* 187, 197–216 (2021). <https://doi.org/10.1007/s11127-020-00835-0>
20. OECD (2018), "The Belt and Road Initiative in the global trade, investment and finance landscape", in *OECD Business and Finance Outlook 2018*, OECD Publishing, Paris, https://doi.org/10.1787/bus_fin_out-2018-6-en
21. OECD (2020): Financing SME's and Entrepreneurs 2020. An OECD Scoreboard, <https://www.oecd-ilibrary.org/sites/31f5c0a1-en/index.html?itemId=/content/component/31f5c0a1-en> download on December 3, 2021.
22. OECD (2021). "R&D Tax Incentives: China, 2021", www.oecd.org/sti/rd-tax-stats-china.pdf,
23. Toshiaki Kanamori, J. Lim, Tracy Yang: China's SME Development Strategies in the Context of a National Innovation System (2007), Corpus ID: 53638614
24. Yi Cao and Weifeng Chen: Investigating the Technology Catching-up Trajectory of Chinese Hi-Tech SMEs: an Integrated Framework from Industry-, Resource-, and Institution-based view, *WLICSMB* 2010, pp. 1-18
25. Zhong, S., Qiu, L. and Sun, B., 2020. Internet and firm development. *International Journal of Crowd Science*. Zhou, H., Yao, Y. and Chen, H., 2018. How does open innovation affect firms' innovative performance: the roles of knowledge attributes and partner opportunism. *Chinese Management Studies*. <https://doi.org/10.1108/CMS-05-2017-0137>

INTERNET SOURCES

1. http://english.www.gov.cn/statecouncil/ministries/202103/25/content_WS605c244cc6d0719374afb69a.html download on December 7, 2021.
2. <https://www.globaltimes.cn/page/202107/1227877.shtml> download on December 5, 2021.
3. <https://www.kearney.com/strategy-and-top-line-transformation/article/~/a/innovation-in-china-2018-time-to-drive-real-impact-beyond-telling-story> download on December 10, 2021.
4. <https://www.statista.com/statistics/783899/china-number-of-small-to-medium-size-enterprises/> download on December 1, 2021.