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*New Trails for SMEs in Germany and China:  
Co-operations. Opportunities. Challenges.  
Perspectives.*

~  
Andree Elsner / Andreas Oberheitmann (Eds.)



German-Sino  
School of Business  
& Technology

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Andree Elsner / Andreas Oberheitmann (eds.)

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Kai Pauling, Michael Rothgang,  
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**Welcome Note by the President of FOM University of Applied Sciences**

The development of an economy and macro-economic welfare are driven by different factors and players. Important players in Germany as well as in China are small and medium-sized enterprises (SMEs). They are hugely contributing to employment, innovation, the production of goods and services and generation of income. Not many decades ago, German SMEs were mainly producing locally for the domestic markets. However, with a growing globalization these companies, often family-owned and lead, are expanding their business to the international markets in Europe and abroad. With the quick Chinese economic development, many German SMEs are exporting their goods and services to China and even start producing there. In China, SMEs are also a backbone of the economy and since the late 1990's more and more Chinese SMEs are also entering the German markets and competing both with German SMEs and also big Chinese companies which started to sell their products in Germany even earlier. Against this background, there is a large scope for the discussion of issues related to new trails for SMEs in Germany and China in terms of co-operations, opportunities, challenges and perspectives.

The FOM University of Applied Sciences is undertaking intensive research on small and medium-sized enterprises in different competence centers as well as especially with respect to China in the German-Sino School of Business and Technology. One outcome of this research and the long-term cooperation of FOM with Shandong Agricultural University and the RWI – Leibnitz Institut für Wirtschaftsforschung in Essen is the International Workshop "Opportunities and challenges for small- and medium-sized enterprises in Germany and China in a globalized world" which was held at Shandong Agricultural University in Tai'an on 27-28 May 2016. Researchers from Germany and China intensively discussed various important issues of SMEs in China and Germany and laid the basis for fruitful future joint research and cooperation projects, especially regarding the topics "Industry 4.0/Made in China 2025" and "Environment and Sustainability".

I would like to express my warm gratitude and deep appreciation for the input and work of the organizers and all contributors to this important conference.

Essen, October 2016

Prof. Dr. Burghard Hermeier  
President FOM University of Applied Sciences

## 序言

经济的发展和社会的富足由众多因素决定。中小型企业在其中扮演着重要的角色，在德国是这样，在中国也是这样。这些企业们致力于企业发展，积极推动创新改革，努力生产产品提供服务，从而提升企业业绩。仅仅在二三十年前德国中小型企业市场还仅限于德国本土。但是随着全球化的进程家族化特点明显的德国中小型企业开始放眼欧洲甚至海外。中国经济的高速发展吸引了德国中小型企业出口产品和服务到中国，这些企业还逐渐开始在中国开设工厂。中国的中小型企业同样是国民经济的基石。在90年代后期开始中国中小型企业开始进军德国市场，此后大型中国企业也陆续开始开发德国市场销售他们的产品。在这样的背景下探讨中德中小型企业日后发展中的合作，机会，挑战以及前景就有着巨大的价值。

德国埃森经济管理应用技术大学（FOM）多年来致力于相关中小型企业的科研课题项目，下属多个专业研究机构并就其中德合作办学项目设有德中经济科技学院。FOM 大学科研工作的一项重要成果为日前和中国山东农业大学以及 RWI-Leibnitz 经济研究所共同举办的国际学术研讨会。此次题为全球化进程中德中小型企业面临的机遇与挑战的研讨会于 2016 年 5 月 27 日至 28 日在中国泰安的山东农业大学成功举办。此次研讨会期间中德两国学者欢聚一堂深入探讨有关中小型企业的相关课题与日后发展前景，并由此引申出新的合作项目与科研课题，例如时下热门的工业 4.0 与中国制造 2025 或环境与可持续型发展等。

在此，我想对此次研讨会取得的成果表示热烈祝贺，对会议组织者和报告学者做出的辛勤工作表示由衷感谢，并诚邀山东农业大学的同仁们在科研之路上与我们携手并肩，共同发展！

Burghard Hermeier

2016 年 10 月

德国埃森经济管理应用技术大学校长

**Welcome Note by the Office Director of the Konrad-Adenauer-Stiftung in Shanghai**

Small and medium-sized enterprises (SMEs) have become a recognizable force behind China's economic development accounting for more than 60 percent of the country's gross domestic product and 82 percent of the job opportunities. As such their role in guaranteeing sustainable development and social equality through technological innovation and exchange between business, politics and society are not to be underestimated. Though challenged by weak linkages to external markets and limited financing opportunities it becomes more and more important to enhance the competitiveness of SMEs through efficient and professional government services.

By promoting participation of entrepreneurship and the concept of the social market economy the Konrad-Adenauer-Foundation has been contributing to fair and equal development of economic systems. To achieve sustainable and green development has been incremental part of the KAS work worldwide since the 1990s. This workshop helps to deepen the Sino-German exchange on opportunities and challenges SME are facing in both countries. I am very confident that it will lay the groundwork for further cooperation.

I therefore sincerely thank all contributors and partners of this event for their efforts in helping to realize these ambitious goals.

Shanghai, October 2016

Tim Wenniges

Director, Office Shanghai, Konrad-Adenauer-Stiftung

**Konrad-Adenauer 基金会（上海）主任致辞**

中小型企业已经成为中国经济发展中一种可识别的力量，贡献着 60% 以上的国内生产总值和 82% 的就业机会。中小企业在保证可持续发展和社会平等方面的作用以及通过技术创新对商业政治和社会贡献不容低估。与外部市场较薄弱的联系和有限的融资机会虽然制约了中小企业的发展，但是这也促进了中小企业同过更高效和更职业化的管理来提升企业竞争力。

通过参与促进创业和促进社会中概念市场经济发展，Konrad-Adenauer 基金会一直致力于公平经济体制的均衡发展。自 1990 年以来实现绿色的可持续发展在 KAS 全球工作重要程度日益提升。这个研讨会有助于深化中德交流，帮助两国的中小企业迎接机遇和挑战。我很相信它将为进一步的合作奠定基础。

因此，我谨对本次活动的所有参与者和合作伙伴对其为实现项目目标做出的努力表示衷心感谢。

上海，2016 年 10 月

Tim Wenniges

Konrad-Adenauer 基金会（上海）主任

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## **Part 1 Accounting and taxation**

### **A Sustainable reporting: Climate change challenges in financial accounting. A German experience with a focus on SME.**

*Andree Elsner / Annika Elsner*

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## 1 Introduction

First ridiculed as a fashion trend but later on, sustainability developed as an important and integrated part of the company's performance communication<sup>1</sup>. Not only the worries about negative effects on a company's reputation or upcoming disadvantages in raising money on capital markets, companies of all sizes started to report about sustainability and their ecological activities<sup>2</sup>. Also the chance for an improved risk management and an increase in customer loyalty and employee satisfaction are important factors. Especially for SMEs this trend could develop into a competitive advantage in the near future<sup>3</sup>.

There are several initiatives in the world whose aim is to develop and so steer the design of sustainability reporting by publishing new frameworks and guidelines. The internationally most widely used guidelines are developed by the Global Reporting Initiative (GRI)<sup>4</sup>, whose principles companies help to make their economic, environmental and social activities transparent. Besides that the principles and criteria of the United Nations Global Compact (UNGC)<sup>5</sup> and the German Sustainability Code (Deutscher Nachhaltigkeitskodex)<sup>6</sup> are considered as guide buttress and starting points for the voluntary disclosure of sustainability information. Additionally companies must fulfill a number of legal requirements of their non-financial performance indicators. Also in addition to the German Commercial Code (HGB) the Standard DRS 20 published 2012 by the German Accounting Standard Committee (DRSC) regulate group management report and make a reference to sustainability reporting<sup>7</sup>. Furthermore, there are other regulatory standards such as the International IIRC- und the American SASB framework<sup>8</sup>. All regulations have a focus on all companies, regardless the size of the companies. However, it is of specific importance for SMEs: These companies are considered to be particularly flexible and market-oriented and are referred as the

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<sup>1</sup> cf EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

<sup>2</sup> cf EY (2014): Integrierte Berichterstattung: Wertsteigerungsmöglichkeiten für Unternehmen.

<sup>3</sup> cf EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

<sup>4</sup> IIRC: [www.theiirc.org](http://www.theiirc.org); downloaded on 13.09.2016.

<sup>5</sup> UNGC: [www.unglobalcompact.org](http://www.unglobalcompact.org); downloaded on 13.09.2016.

<sup>6</sup> DNK: [www.deutscher-nachhaltigkeitskodex.de](http://www.deutscher-nachhaltigkeitskodex.de); downloaded on 13.09.2016.

<sup>7</sup> DRSC: cf [www.drsc.de/service/drs/standards/](http://www.drsc.de/service/drs/standards/), downloaded on 13.09.2016.

<sup>8</sup> SASB: cf [www.sasb.org/approach/conceptual-framework/](http://www.sasb.org/approach/conceptual-framework/), downloaded on 13.09.2016.

backbone of the German economy<sup>9</sup>. That's why these kinds of companies are most frequently in the focus of new ideas and developments.

## **2 How German companies report about sustainability: Differences between different sized companies**

### **2.1 Development of sustainability reporting in companies which publicly traded on German stock exchange**

Reporting on sustainability activities within the thirty biggest publicly traded companies listed in the German Stock Index (DAX 30) became usual and commonplace<sup>10</sup>. Almost all of those companies publish a separate Sustainability Report<sup>11</sup>. But for other companies outside of the DAX 30 the situation is different: The analysis of Companies listed in the MDAX (middle sized companies), SDAX (small sized companies) or in the TecDAX (technology companies) showing a significant difference between large and SME Companies. The number of published sustainability reports published by companies with a smaller market-capitalization and low sharetrading volume decreases. This fact may have its foundation in the history: Global operating German companies were years ago regular in focus of public criticism with regard to the impact of their activities on the environment and society. That's why companies publish environmental reports already during end of the 1980s<sup>12</sup>. By adding these reports due to social issues, the first German sustainability reports were generated. A clear majority of the DAX-companies published their reports in accordance with the guidelines of the Global Reporting Initiative (GRI)<sup>13</sup>. In summary an amount of 155 sustainability reports according to GRI were published in Germany, worldwide there were over 2,800<sup>14</sup>. The ori-

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<sup>9</sup> Zew (2010) Mittelstandsmonitor 2010. cf [ftp://ftp.zew.de/pub/zew-docs/mimo/MittelstandsMonitor\\_2010.pdf](ftp://ftp.zew.de/pub/zew-docs/mimo/MittelstandsMonitor_2010.pdf), downloaded on 13.09.2016.

<sup>10</sup> cf EY/GRI (2014): Sustainability reporting – the time is now.

<sup>11</sup> cf here and below: EY-Study 2014, downloaded on 13.09.2016.

<sup>12</sup> cf BDA/BDI/DIHK/ZDH (2013): CSR und Diversity: Berichterstattungszwang ist der falsche Weg, [www.dihk.de/presse/meldungen/2013-04-17-verbaende-csr](http://www.dihk.de/presse/meldungen/2013-04-17-verbaende-csr), downloaded on 15.09.2014.

<sup>13</sup> cf EY/GRI (2014): Sustainability reporting – the time is now.

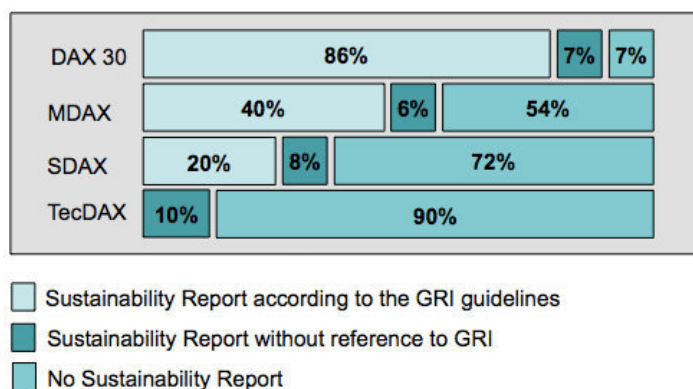
<sup>14</sup> GRI: G4 (2013): Leitlinien zur Nachhaltigkeitsberichterstattung: Berichterstattungsgrundsätze und Standardangaben, [www.globalreporting.org/Pages/resourceLibrary.aspx?resSearchMode=resSearchModeText&resSearchText=G4&resCatText=Reporting+Framework&resLangText=German](http://www.globalreporting.org/Pages/resourceLibrary.aspx?resSearchMode=resSearchModeText&resSearchText=G4&resCatText=Reporting+Framework&resLangText=German), downloaded on 15.09.2014, für Informationen zu den Gemeinsamkeiten mit den „zehn Prinzipien“ (2000) des Global Compact der Vereinten Nationen siehe S. 88.



entation towards a globally established framework allows companies a transparent reporting of relevant sustainability issues and though allows a better comparability of social, economic and ecological benefits across industries and national borders<sup>15</sup>.

**Figure 1:** Dax-segment of sustainability report

In which DAX-Segment Sustainability Reports are published?



Source: In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

## 2.2 Proportion of sustainability reports with audit certification

Along with an increased interest of the public and investors on the sustainability performance of companies also the need for an auditing of the reporting increased<sup>16</sup>. From verified reports by an independent auditor companies expect a better credibility of sustainability reporting in the public. Besides that companies had the intention to improve their internal optimization of data quality as same as their internal processes and activities. Again the analysis reveals that especially SMEs barely publish audited information about their sustainability activities. In general the analysis present a very mixed picture regarding audited and reported

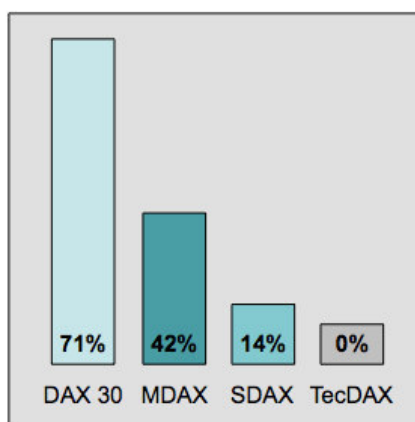
<sup>15</sup> cf here and below: EY-Study 2014, downloaded on 13.09.2016.

<sup>16</sup> cf EY (2014): Integrierte Berichterstattung – Wertsteigerungsmöglichkeiten für Unternehmen.

information which is depending on the size of the companies<sup>17</sup>. So here seems to be another chance for SME to act as a role model and to set a positive impact on the capital market.

**Figure 2:** Proportion of sustainability report with audit certification

What is the proportion of sustainability reports with audit certification?



Source: In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

### 2.3 Information need of stakeholders in focus of the analysis

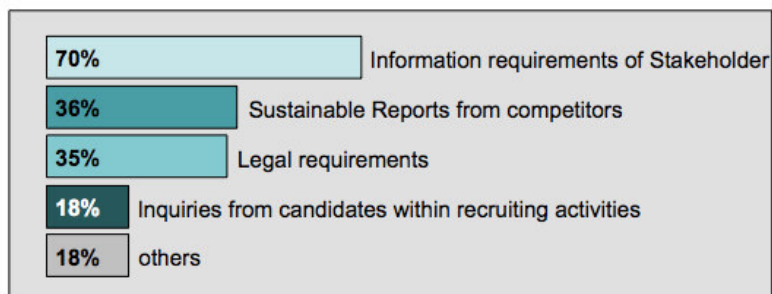
Nowadays companies are more and more understood as social actors. So it is not surprising the information needs of stakeholders for all interviewed companies the main motivation reason for the published reporting of sustainability activities is<sup>18</sup>. In addition to customer and media interest in environmental and social aspects of the value chain sustainability is an increasingly important criterion when assessing the risk of investment decisions for investors.

<sup>17</sup> cf EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

<sup>18</sup> cf Europäischer Rat (2014): Offenlegung nicht finanzieller und die Diversität betreffender Informationen durch bestimmte große Gesellschaften und Konzerne, [www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/intm/144945.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/intm/144945.pdf), downloaded on 1.10.2014.

**Figure 3:** Motivation of companies to report sustainability report

What motivates companies to report publicly on sustainability activities?



Source: In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

## 2.4 Reporting of the competitors and legal requirements as drivers

It is remarkable that the interviewed companies indicate the communication of competitors as the main reason for their own communication activities<sup>19</sup>. Another reason – but not the main reason – is the need for legal requirement. This understanding is very different in the industries. Within the energy industry half of the interviewed companies classify the communication of the competitors as the most important driver for sustainability reporting<sup>20</sup>. This nowadays may be of high importance in times of the energy revolution because it can improve the market position of a company<sup>21</sup>. On the other hand it is unsurprisingly that more than a third of the interviewed companies feel obligated to report about sustainability according to the legal and regulatory requirements. This is also supported by the

<sup>19</sup> cf GRI et al. (2013): Carrots and Sticks: Sustainability reporting policies worldwide – today's best practice, tomorrow's trends, [www.globalreporting.org/resource/library/carrots-and-sticks.pdf](http://www.globalreporting.org/resource/library/carrots-and-sticks.pdf), S. 28 ff., downloaded on 11.09.2014.

<sup>20</sup> cf BDA/BDI/DIHK/ZDH (2013): CSR und Diversity: Berichterstattungszwang ist der falsche Weg, [www.dihk.de/presse/meldungen/2013-04-17-verbaende-csr](http://www.dihk.de/presse/meldungen/2013-04-17-verbaende-csr), downloaded on 15.09.2014.

<sup>21</sup> cf here and below: EY-Study 2014, downloaded on 13.09.2016.

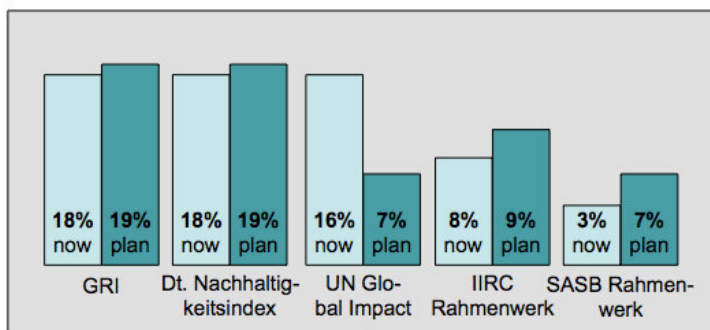
special sustainable understanding in the European Union which has intensified lately<sup>22</sup>.

## 2.5 Differences among the reporting standards for SME

At the beginning of the sustainable reporting it is worth considering about the regulatory which is to be applied. Today SMEs have the choice to report their sustainable activities according to established and traditional concepts (such as the guideline of the GRI or the UNGC) or if they apply to more modern and individualized frameworks of the IIRC and SASB. It is interesting to see to what are the main standards and guidelines used by German companies: No framework is used by more than 20 percent of the interviewed companies. Even the set of international and publicly traded companies is no exception.

**Figure 4:** Guidelines used for the sustainability report

On what Guidelines companies base their Sustainability Reporting?



Source: In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

<sup>22</sup> cf GRI et al. (2013): Carrots and Sticks: Sustainability reporting policies worldwide – today's best practice, tomorrow's trends, [www.globalreporting.org/resource/library/carrots-and-sticks.pdf](http://www.globalreporting.org/resource/library/carrots-and-sticks.pdf), S. 28 ff., downloaded on 11.09.2014.

### **3 Summary and trends**

Market indication and trading volume are an indication of sustainability communication. SMEs currently fall short of expectations. Information needs of stakeholders and sustainability reporting of the competitors are the key drivers of sustainability communication. The application of established frameworks for sustainability communication will increase. Companies existing interest in integrated reporting does not reflect the current reporting landscape in Germany. Despite the existing experience in sustainability communications in practice there are uncertainties regarding the application of the new EU regulation. Sustainability Reporting of German SMEs remains fragmented and divers in the upcoming years.

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**Part 1 Accounting and taxation**

**B Research on tax and fee policy of small and medium sized enterprises in China - A Shandong province experience**

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## **Summary**

At present, China's real economy is facing difficulties in development, business production and operation costs continue to rise, which is not conducive to China's economic restructuring and upgrading of the competitiveness of enterprises. The fifth Plenary Session of the 18th CPC Central Committee carried out "a cost reduction action of real economy enterprises"; the 13th Five-Year plan action proposed to carry out "reducing the cost of the real economy enterprises....." Then put forward five major tasks as production, inventory, leverage, reducing cost and making up losses. For small and medium enterprises, under the new economic normal, the tax burden is heavy. This article studies the policy support from the angle of reducing the burden of enterprises.



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## **1 Theoretical basis of tax and fee policy**

On the theoretical basis of the existence of the tax policy, there are some theories, such as the exchange theory, the obligation theory and the public need theory in the history.

The exchange theory, also known as the trade and interest theory. It believes that the state tax and the citizen pay taxes are the mutual exchange of rights and duties. Since the seventeenth Century, with the popular sense of exchange of the people's livelihood and the theory of contract, this kind of understanding are becoming more and more popular, the main representatives are Hobbes, Rock, Smith and Proudhon etc.

Obligation, also known as sacrifice, considers the tax revenue as the people of the country should do one of the obligations of the theory. The obligation originated in Europe in the early nineteenth Century was popular in Europe at that time. It is believed that human beings must be organized in order to live together, and that the state is the highest form of human society. The people are members of the national community, and the life of the individual depends on the existence of the state. To realize its functions, the state should have the right to tax, which is the condition for the survival of the state. The influence of nationalism trend, some scholars in Germany in the tax theory opposed to the theory of social contract based exchange, insurance, proposed tax is the obligation of the people, every citizen is no exception. "Obligation" from the state is the product of historical development of human society, countries in order to achieve its functions with the right of taxation, can compel citizens to pay taxes, which is a kind of civic tax obligations they should do according to the tax, which is a national class property tax from theory.

## **2 Development status of small and medium sized enterprises**

### **2.1 Definition and standard of small and medium sized enterprises**

Small and medium enterprises, also known as SME, is compared with the large enterprises in the industry in personnel size, asset size and business scales which are relatively small economic units. Different countries, different stages of economic development, different industries defining their standards are not the same, with the development of the economy and dynamic changes. The definition of small and medium enterprises from the two aspects of quality and quantity, form of organization, financing the main qualitative indicators, including the enterprise and industry status, quantity indicators are mainly the number of employees, paid in capital, total assets etc. The amount of more qualitative indicators of indicators is more intuitive, easy data selection, most countries are divided according to the amount of the standard, such as the United States Congress in 2001 introduced the "small business law" for SMEs to define standards for no more than 500 employees, the British and European Union taking the volume of indicators at the same time. Also to qualitative indicators as auxiliary. The history of our country the definition of small and medium enterprises after 8 revisions, the last time was in June 18, 2011, the Ministry of industry and information technology, the National Bureau of statistics, the national development and Reform Commission, Ministry of Finance jointly issued "on the issuance of small and medium-sized enterprises draw type standards notice", defines the industry standard type specific in Appendix 1. Compared with the previous standards, the industry division is more detailed, and the new increase in the "micro enterprises" of this type.

### **2.2 Economic contribution and development of SME in China**

#### **2.2.1 Large quantity and great contribution**

As of the end of 2015, China's small and medium-sized enterprises more than 10 million, accounting for 90% of the total number of registered enterprises; circulation of small and medium enterprises in the country's retail outlets accounted for more than 90%. Small and medium-sized industrial output value and the realization of profits and taxes accounted for 60% of the country and about 40%.

Labor-intensive exports and some high-tech export products are mostly small and medium-sized production, exports of small and medium-sized products accounted for 60% of total exports;

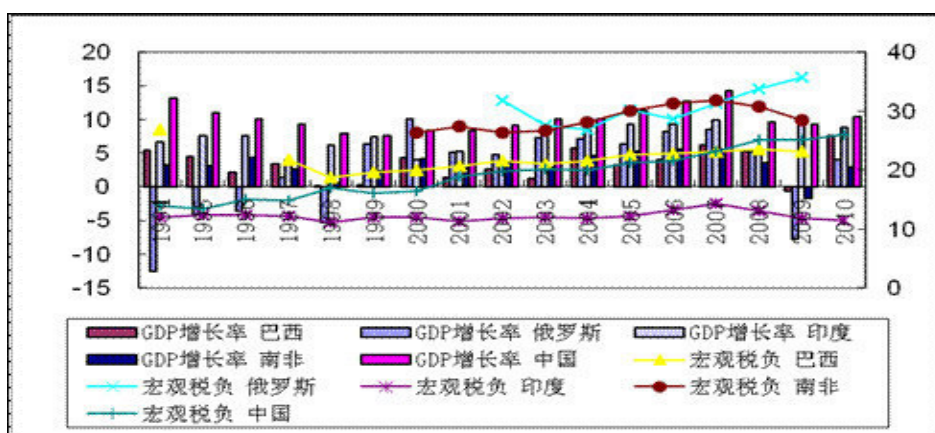
SMEs provide about 75 per cent of urban employment opportunities. Since the reform and opening up, most of the labor force transferred from rural areas is absorbed by small and medium-sized enterprises.

SMEs each year for the state to pay industrial and commercial tax accounts for about 50% of the total. In the rapid economic growth since the 1990s, 76.7% of new industrial output value was created by small and medium-sized enterprises.

### 2.2.2 SME tax burden

Relevant statistics show that in 2013 China's total government tax revenue was 20 trillion and 870 billion yuan, accounting for the proportion of GDP reached 36.7%; in 2014 was 23 trillion and 670 billion yuan, accounting for GDP proportion reached 37.2%. Macro tax burden slightly exceeded the level of developed countries, the average level of nearly 10 percentage points higher than developing countries. And comprehensive consideration of taxes, government funds, the various fees and social security payments and other projects, the tax burden of China's enterprises as high as 40%, more than the average level of OECD countries.

**Figure 1:** SME in the domestic market space pressure



(GDP growth rate Brazil, GDP growth rate Russia, GDP growth rate India  
 GDP growth rate South Africa, GDP growth rate China, Macro tax burden Brazil  
 Macro tax burden Russia, Macro tax burden India, Macro tax burden South Africa  
 Macro tax burden China)

After 30 years of rapid growth, Chinese economy is currently in the rapid growth of the conversion period of rapid growth, GDP growth rate has dropped to 7.3% in the three quarter of 2014, it is difficult to obtain the fundamental breakthrough in the technology innovation, the donor should decline, rising costs and falling labor capital contribution rate, Chinese medium-term the potential growth rate continued to decline. In this context, China's economic slowdown has exceeded the scope of the phase fluctuations, becoming a trend in the next period of time. As of the three quarter of 2014, industrial production price index (PPI) continued negative growth trend has continued for 31 months in the year of negative growth, at the same time, private fixed asset investment, total retail sales of consumer goods, industrial added value and a series of data showed a significant downward trend, reflecting the gradually increasing downward pressure on the economy. 2015, with economic growth and labor productivity growth slowdown, housing, automobile consumption growth effect gradually weakened, the final consumption expenditure and total retail sales of social consumer goods continued to rise, the actual growth rate. Domestic consumer demand growth rate down affect the small and medium enterprises market space.

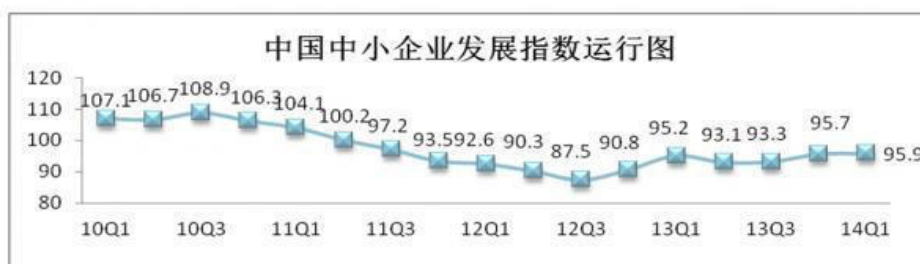
### **2.2.3 SME boom conditions**

SME boom conditions can be expressed in the SMEDI (Small and Medium Enterprises Development Index). SMEDI hosted by the China SME Association, the National Bureau of Statistics China Economic Monitoring Center to provide technical support, Beijing Hua Tongren Commercial Information Co., Ltd. is responsible for organizing the implementation of the national economy through eight small and medium enterprises to investigate the use of small and medium enterprises in the industry And the production and operation of enterprises to determine the situation and the expected data compiled from, is to reflect China's small and medium enterprises (excluding individual industrial and commercial households) economic operating conditions of the composite index.

In the process of industry selection, according to the contribution of various sectors of the national economy to GDP, a total of selected industries, construction, transportation, post and warehousing, real estate, wholesale and retail trade, information transmission, computer services and software, Industry, social services and other eight industries. The content of each industry survey, including eight aspects, namely: macroeconomic feelings, corporate integrated management,

market, cost, capital, investment, efficiency, labor. China SME Development Survey adopted PPS sampling, quarterly survey of 2,500 small and medium enterprises. The overall sampling error of not more than 2%, sub-sector error of not more than 10% confidence level of 95%. The survey uses the method of diffusion index to calculate the China SME development index through the way of combining enterprise investigation and telephone interview. The SMEDI ranges from 0 to 200: (1) 100 is the critical value of the economy, indicating that the economic situation does not change greatly; (2) 100-200 is the boom interval, indicating that the economic situation tends to rise or improve, (3) 0-100 as the recession interval, indicating that the economic situation tends to decline or worsen, the closer to 0 the lower the economy.

**Figure 2:** SME Development Index 2010-2014



Source: 《A Study Report on China's SME Prosperity Index 2014》 Nanjing APEC SMEs Industrial Business Forum

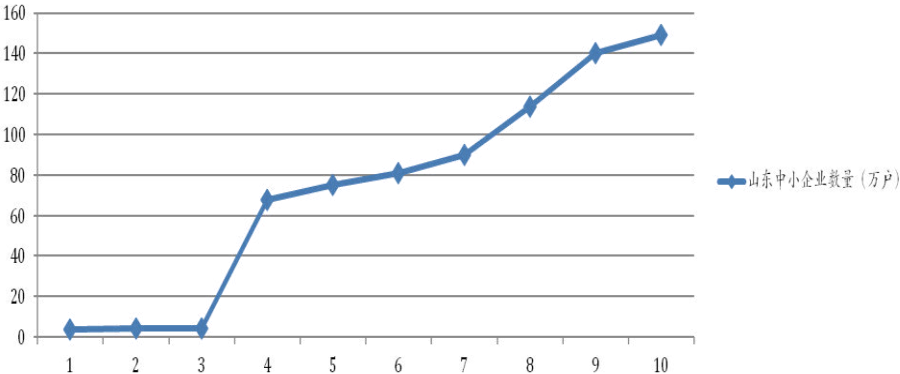
As can be seen from Figure 2, China's SME boom is still higher than the critical point of 100 by the end of 2010, since 2011 continued to decline in the third quarter of 2012, only 87.5, after a slight rebound, but has been below the threshold.

### 3 Economic contribution and development of SME in Shandong province

Shandong has built 460 entrepreneurship counseling base, the contribution of SMEs to economic growth rate has exceeded 65%, becoming the province's economic and social development of new impetus to the new engine. Before 2009, the number of small and medium enterprises in Shandong Province remained at 50000, since 2010, the rapid development of SMEs, showing a more substantial growth. The reason, by the state to boost economic requirements, to encourage innovation, so the number of significant growth.

1) Number of SME in Shandong

**Figure 3:** Number of SME in Shandong (According to the Shandong Statistical Yearbook)



2) Quality of SMEs in Shandong Province

Overall, the small and medium enterprises in Shandong Province to achieve the financing in the capital market is not too much, but compared to the provinces and cities, ranking the first three times the level. According to the Shenzhen Stock Exchange SME board and the GEM company in Shandong statistics, as of June 2016 in 60 small and medium-sized version of the company, the GEM has 22 companies; according to Qingke private pass data statistics, from the number of listed companies , Jiangsu Province, Shandong Province and Zhejiang Province,



respectively, occupy the top three listed areas, of which Jiangsu Province, the number of listed companies is 19, accounting for 12.8%, Shandong Province, the number of listed companies 18, accounting for 12.1% The number of enterprises is 18, accounting for 12.1%; accounting for 37% of the total. In June the new three board listed enterprise operation center is located in 26 provinces and cities, covering a wide range. Jiangsu Province, the largest number of listed companies to the IT industry; new board in Shandong Province three new enterprises in the IT, chemical raw materials and processing, machinery manufacturing, construction / engineering, clean technology industries everywhere, the average distribution of new enterprises in Zhejiang Province is in the mechanical manufacturing performance eye-catching.

### 3) The Tax Situation of SMEs in Shandong Province

China implemented a total of 18 kinds of taxes, the central tax include: customs duties, consumption tax, vehicle purchase tax, ship ton tax. Central and local shared tax includes: VAT, business tax, corporate income tax, personal income tax, resource tax, stamp duty, city maintenance and construction tax. Local taxes include: property tax, urban land use tax, arable land occupation tax, deed tax, land value - added tax, travel tax, tobacco tax. In 2012, the cost per main business income of small and medium-sized enterprises in China reached 85.84 yuan, and the cost of main business in Shandong increased by 18.3%. In the current industrial manufacturing industry, the wage cost of workers has accounted for about 30% of the total cost of the enterprise, financing costs accounted for 11% -13%, logistics costs accounted for 8% -10%, raw material costs accounted for more than 50% Cost burden, small and medium enterprises profit space compression. According to the author and the relevant financial and SME responsible person on the tax burden of the survey and interviews, generally believe that the burden of tax burden, a number of preferential policies cannot be implemented effectively.

#### 4 The situation of SME tax support policy in recent years

At the present stage, the state has introduced the development of small and medium enterprises to support tax policies, in general, in the following aspects.

- 1) Preferential policies for income tax of township enterprises.  
Township enterprise income tax can be reduced by 1% of tax payable, used to subsidize social spending, not 1% before tax extraction.
- 2) Encourage the employment of urban unemployed persons tax deduction and exemption policy.  
Newly-built urban labor and employment service enterprises shall be exempted from income tax for 3 years when the number of unemployed persons is over 6% of the total number of employees employed by the enterprises in the same year. After the expiration of the tax-free period, the unemployed persons If the total number of employees is more than 3%, the income tax may be reduced by half for two years after examination and approval by the competent tax authorities. The income of the laid-off workers engaged in the service industry of the community residents, the individual from their holdings of proof in the local competent tax authorities for the record date, the individual industrial and commercial households or laid-off workers account for more than 6% of the total number of enterprises from the tax registration Day, 3 years exempt from sales tax.
- 3) To support high-tech enterprise relief policy.  
The high-tech enterprises approved by the State Council in the Hi-tech Industrial Development Zone shall be subject to income tax at a reduced rate of 15%, and shall be exempted from the income tax for 2 years from the profit-making year. . Enterprises and institutions, and the related technical consultation, service and training in the process of technology transfer. If the annual net income is less than 30,000 yuan, the income tax shall be exempted.
- 4) Support poverty-stricken areas in developing income tax relief policies.  
In the old revolutionary base areas established by the state, new enterprises established in ethnic minority areas, remote areas or poverty-stricken areas may be reduced or exempted from income tax for 3 years upon approval by the competent tax authorities. Enterprises of national autonomous areas, to be encouraged to take care of, approved by the provincial government may be reduced or exempt from income tax for 3 years.

- 5) Support and encourage the tertiary industry tax policy. Reflected in:
  - (1) The service industry of agricultural production in rural areas, namely agricultural extension station, plant protection station, water management station, forestry station, animal husbandry and veterinary station, aquatic station, seed station, agricultural station, weather station and farmer professional technical association,
  - (2) The transfer of technological achievements of scientific research institutes and universities and colleges and universities; the transfer of technological achievements by the scientific research institutes and universities; the transfer of technological achievements by scientific research institutions and tertiary institutions; Technical training, technical consultation, technical service and technical contracting are exempted from income tax.
  - (3) Enterprises and units engaged in consulting, information and technical service industries newly established in independent accounting are exempted from income tax. The first year to the second year exemption from income tax;
  - (4) new independent accounting transportation, post and telecommunications enterprises or units, since the opening date of the first year exemption from income tax, the second half of the income tax;
  - (5) Newly-established enterprises, institutions, enterprises and institutions that have independent accounting, which are subject to the approval of the competent tax authorities, may reduce or exempt the taxpayer from the date of the opening of the enterprise, in the form of independent accounting, public utilities, commerce, materials, foreign trade, tourism, warehousing, resident services, catering, Income tax for one year.
- 6) Welfare enterprise tax deduction and exemption policy.  
Disabled, blind, deaf, dumb and handicapped shall be exempted from income tax, and the "four disabled" persons shall be exempted from the income tax for the production of the above-mentioned products. If the total number of personnel is more than 1% but less than 35%, the income tax shall be reduced by half.
- 7) Favorable income tax and value-added tax policies for small enterprises.  
Prior to the reform of the tax system to determine the corporate income tax rate of 33% of the tax rate. In order to alleviate the tax burden of small and medium-sized enterprises, the enterprise with annual profit of less

than 30,000 yuan shall be levied an income tax of 18%, while the enterprises with income of 30,000 to 10,000 yuan shall be levied a 27% income tax. At present the State Council decided to annual sales of 180,000 yuan the following small commercial enterprises, the VAT rate from 6% to 4%.

## 5 Problems of tax support policies for SME

- 1) Policy objectives starting point is not high, lack of support  
The existing preferential tax policies for small and medium-sized enterprises are scattered in the single-line law and the detailed implementation rules for various types of taxation, and they are issued in the form of supplemental regulations or circulars. The preferential policies are more frequent and more frequent. But also the lack of systematic, normative and stable, lack of effective legal guarantee, low transparency, is not conducive to the actual operation, affecting the development of SMEs long-term development strategy, but also makes the policy measures The lack of effective legal protection is not conducive to the realization of fair tax and equal competition.
- 2) Tax preferential policy design is unreasonable  
The current tax incentives for SMEs are limited to tax concessions and tax breaks and other direct incentives, and like the international adoption of accelerated depreciation, investment credit, deferred tax, special deductions and other special indirect use of less. In this way, cannot truly reflect the fair tax burden, the principle of equal competition, is not conducive to encouraging small and medium enterprises for the investment scale, 'long business cycle, slow basic investment. In addition, the lack of SMEs to reduce investment risk, raise funds, ease employment pressure, and guide the flow of talent, encourage technological innovation, improve core competitiveness and other aspects of tax incentives. And tax incentives are mainly concentrated in the business when the start.
- 3) Tax incentives for small and medium enterprises is not clear  
The current tax incentives for SMEs is not clear, is not conducive to the adjustment and optimization of industrial structure. Tax incentives should be in accordance with the requirements of national industrial policy macroeconomic regulation and control, to embody the encouragement, allow and limit the spirit, guide the funds and resources of small and medium enterprises to the national witch needs to develop the industry, and the existing preferential policies do not fully reflect the guiding principle.
- 4) The current tax policy on the existence of discrimination and restrictions on SMEs
  - (1) Income tax system  
Enterprise income tax system is still the implementation of two sets of tax law inside and outside, the preferential treatment of foreign-invested enterprises, tax burden, less preferential tax on domestic-

funded enterprises, tax burden; belong to domestic enterprises, but also preferential for large enterprises, small and medium enterprises preferential tax Negative emphasis. It is estimated that the actual tax rate of domestic-funded enterprises is about twice as high as that of foreign-invested enterprises, and the actual tax rate of domestic-funded SMEs is even higher.

(2) VAT system

The current value-added tax system divides taxpayers into two categories: general taxpayers and small-scale taxpayers. Taxpayers who fail to meet the sales standards are generally not classified as general taxpayers and are classified as small-scale taxpayers. Small-scale taxpayers of the tax provisions are: input tax is not allowed to deduct, and may not use VAT invoices; operating on the invoice must be issued to the tax authorities to apply on behalf of open, and can only be "levy" fill Tax payable.

## 6 Suggestions for improvement

- 1) Support tax policy of small and medium-sized enterprises should be unified tax system, tax burden fair.  
In accordance with the Law of the People's Republic of China on the Promotion of Small and Medium Enterprises, the existing preferential tax policies for small and medium-sized enterprises shall be cleared up, standardized and perfected. In accordance with the principle of giving priority to efficiency, taking into account fairness, equal competition, lighter taxation and easy collection and administration, Regulations and regulations in order to enhance the standardization, stability and transparency of tax policy, so that tax incentives for SMEs with an effective legal guarantee, in order to actively create a conducive to the survival and development of SMEs tax environment, and guide small and medium enterprises Behavior, improve their own quality and competitiveness of SMEs.
- 2) Scientific choice of means of tax means, methods and scope of action  
Focusing on the role of indirect tax incentives such as accelerated depreciation, tax credit, venture capital support, cost deduction, etc .; pay attention to the system point of view, with other policy instruments such as fiscal expenditure, investment policy, financial policy, industrial policy.
- 3) Tax policies to support the development of small and medium enterprises should be combined with industrial policies and employment policies.  
Tax preferential policies involve too few taxes and mainly focus on one kind of enterprise income tax, which limits the regulation and support of taxation to small and medium-sized enterprises, reduces the income tax of small and medium-sized enterprises and allows the deduction of value-added tax.
- 4) Pay attention to tax and fee support policy implementation.  
Tax support for SMEs policy, management at all levels should attach importance to policy implementation, implement, and follow-up management.

In short, SMEs in various fields cannot be denied the current contribution, tax support policy should be towards the direction of the construction of a fair environment to make it in the international economic arena to play a greater role.

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## Appendix

### Appendix 1 Standard for classification of SMEs

Industry	Indicator	SEM	SE	ME
Agriculture, forestry, animal husbandry and fishery	Operating income	Under 500k	0.5-5m	5-20m
Industry	Personnel Operating income	20 people under 3m	20-1000 people 3-20m	1000-2000 people 20-40m
Construction industry	Operating income Total assets	under 3m under 3m	3-60m 3-50m	60-800m 50-800m
Wholesale trade	Personnel Operating income	under 5 people under 10m	5-20 people 3-50m	20-200 people 50-400m
Transportation	Personnel Operating income	Under 20 people Under 20m	20-300 people 2-30m	300-1000 people 30-300m
Retailer	Personnel Operating income	Under 10 people Under 1m	10-100 people 1-5m	100-300 people 5-200m
Accommodation and catering services	Personnel Operating income	Under 10 people Under 1m	10-100 people 1-20m	100-300 people 20-100m
Information transmission industry	Personnel Operating income	Under 10 people Under 1m	100-300 people 1-20m	300-2000 people 20-100m
Software and Information Technology Services	Personnel Operating income	Under 10 people Under 500k	10-100 people 5-100m	100-300 people 10-300m

Warehousing	Personnel Operating income	Under 10 people Under 2m	10-100 people 2-10m	100-200 people 10-30m
Postal	Personnel Operating income	Un- der20people Under 1m	20-50 people 1-10m	50-300 people 10-20m
Real estate develop- ment and operation	Operating income Total as- sets	Under 1m Under 20m	1-10m 20-50m	10-2000m 50-100m
property management	Personnel Operating income	Under 100 people Under 5m	100-300 people 5-10m	300-1000 people 10-50m
Leasing and business services	Personnel Operating income Total as- sets	Under 10 people Under 1m	10-100 people 1-8m	100-300 people 80-120m
Other industries not listed	Personnel	Under 10 people	10-100 people	100-300 people

## **Appendix 2 SME related policies in recent years**

Circular of the Ministry of Finance and the State Administration of Taxation on Several Preferential Policies for Enterprise Income Tax [1994] 001

"Opinions on Further Improving Financial Services to Small and Medium Enterprises" Yin Fa [1998] No. 278

Notice on the Relevant Tax Preferential Policy for Laid-off Workers Engaging in Community Service Industry "Guo Shui Fa [1999] No. 43

January 1, 2003 from the implementation of "SME Promotion Law";

Guofa [2005] No.3 "Opinions on Encouraging, Supporting, and Guiding the Development of Individual, Private and Non-Public Economy";

Guofa [2009] No. 36) "Several Opinions on Further Promoting the Development of Small and Medium-sized Enterprises";

Guofa [2010] No. 13 "on encouraging and guiding the healthy development of a number of private investment advice"

"National Economic and Social Development Twelfth Five-Year (2011-2015) Plan" for the first time to discuss the special section to promote the development of small and medium enterprises.

Since 2011, the State Council has held executive meetings to study and determine policies and measures to support the healthy development of small micro-enterprises.

Guofa [2012] No. 14 "Opinions on further supporting the healthy development of small and micro enterprises"

In September 2014 launched a small micro-enterprise tax incentives, the current monthly sales of not more than 20,000 yuan of small micro-enterprises, individual industrial and commercial households and other individuals were exempted from VAT, sales tax, based on the October 1 To the end of 2015, will be 2-3 million monthly sales are also included in the scope of temporary tax exemption.

2013-2014 The government carried out a series of administrative examination and approval and rectification of fees and charges, and canceled a large number of unreasonable charges.

The central bank in April 2014 and June two consecutive implementation of the directional down standard, in August also introduced the "State Council Office on Duozuo and efforts to ease the high cost of corporate finance guidance."

Held in November 2014, the State Council executive meeting, decided to implement a general reduction, and further for enterprises, especially small and micro enterprises burden reduction, the meeting deployed four specific fee reduction initiatives, each year will reduce the burden on enterprises and individuals about 400 billion yuan.

As of November 2014, has established 500 national SME public service model platform, initially built from the "provincial hub platform + around the window platform" framework covering the country's SME service platform network for SMEs covering entrepreneurship counseling , Management consulting, financing, technological innovation, law, market development and other fields of professional services. All levels of financial funds to support the construction of SME service system continues to increase.

Announcement of the State Administration of Taxation on the Relevant Issues Concerning the Expansion of the Scope of Enterprise Income Tax for the Smaller and Smaller Profit Enterprises by Half the Tax (State Administration of Taxation No. 23 of 2014)

"The Ministry of Finance State Administration of Taxation on small-scale low-profit corporate income tax preferential policies related issues notice" (Caishui [2014] 34) provides preferential policies (referred to as half of the tax policy)

From October 1, 2014 to December 31, 2015, on sales of 20,000 yuan to 30,000 yuan in value-added tax small-scale taxpayers and business taxpayers, are exempt from value-added tax and sales tax, the policy covers small Micro-enterprises, individual industrial and commercial households and other individuals. (Finance and Taxation [2014] No. 71)

Circular of the Ministry of Finance and the State Administration of Taxation on Enlarging the Exemption Scope of 18 Administrative and Institutional Charges

## **Part 2 Innovation**

### **C Innovative SMEs in Germany and globalization: Firms, strategies and policy trends**

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**Abstract:**

Globalization and new technological opportunities changed the business environment for innovative SMEs in Germany. This change has taken place in different industries and at the same time affected them differently. Against the backdrop of these developments, innovative SMEs have on average been successful in developing their competitive advantages. Innovative SMEs are a very distinct part of the firm population. Many of them are in the industry sector, while they can also be found in parts of the service industry. Innovation strategies chosen vary in the different sectors and technology fields. In medium-technology fields like the automotive or machinery sector, many firms were successful in developing their cumulative knowledge and protecting it from competitors. In the high-tech sector the framework conditions (university research, entrepreneurship's financing) have improved such that new firm ventures came up although not many of them have grown large. As innovative firms give impulses for important innovations in all part of the German economy, they are also quite relevant for research and innovation policies. The government influences conditions and give impulses for precompetitive research to increase their competitiveness. Fostering of R&D co-operation is one important policy goal (without forcing the firms to comply).

**Key words:**

Globalization, R&D, SME

**JEL-Classification:**

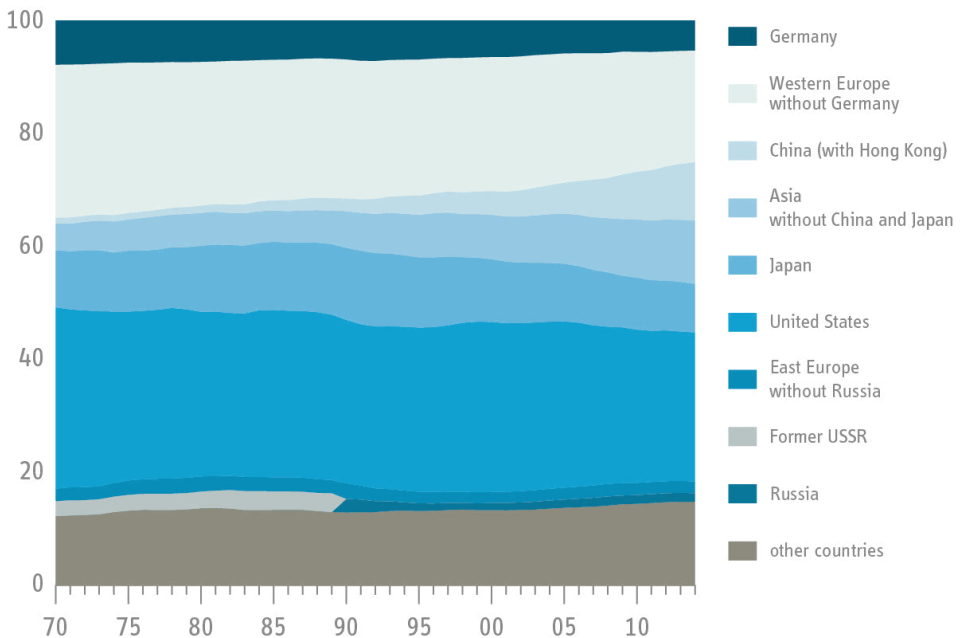
O33, O38



## 1 Introduction: Globalization, technical progress and challenges for SMEs

The last decades have witnessed substantial changes in the business environment for innovative small and medium sized enterprises (SMEs) in Germany. One of these changes becomes obvious in Figure 1, which shows a remarkable shift in the division of value added in industry between different country groups. While the share of total worldwide gross value added of the industrialized countries, and Germany, has decreased steadily over this period, the share of Asian countries has increased. While Germany had a share of value added of about 8% in 1970, this number has decreased to 5% in 2014. Similar developments took place in Western Europe, the United States and Japan. The share of global value added of China has increased from 1% to 10% in that period.

**Figure 1:** Worldwide share of gross value added in industry of different country groups (1970-2005, gross value added at constant prices (2005) in US-\$, in %)



Source: Own calculation based on United Nations Statistical Division 2016.

Simultaneously, technological progress lead to substantially increased product quality and also improvements in production processes. These developments had quite different features in the core sectors of the economy like the automobile

or chemicals sector. Technological progress helped to keep the international competitiveness of the German economy: other than has been forecasted some decades ago, the producing sectors have not disappeared from the German economy to low-cost locations but are still an important part of the German economy. SMEs and their innovative input into the economy played and still play an important role in that development. Many SMEs were able to profit from the development of international markets and stay competitive in the changing environment.

Against this backdrop, the decreased share of worldwide gross value added of the German economy as such indicates no negative trend for German SMEs. They are expression of a catching-up-process of the Chinese and other Asian economies. This process has different consequences for SMEs: Firstly, new markets developed where the products of innovative international SMEs can be sold. Secondly, also new competitors have developed that try to increase their share of the mostly growing markets. And thirdly, also new hot spots for innovation have come up where new products are developed and production processes are optimized. From these worldwide trends both opportunities and challenges arise for innovative SMEs in Germany. This paper discusses the consequences of these developments for research strategies of innovative SMEs in Germany. In Section 2, the characteristics of innovative SMEs are sketched out. Section 3 looks at different research strategies with which SMEs cope with these challenges. In section 4, we look at how policy responds to the challenges and opportunities of globalization.

## 2 Characteristics of innovative SMEs

In this paper, we define „innovative“ SMEs as SMEs that pursue the search for Innovation (Research and Development, R&D) in a systematic manner. This is not identical to the definition of innovation as it is laid down in the OECD Oslo Manual (OECD 2005: 16, 17). According to this definition, firms pursue innovation if they supply a product new to the firm. However, in many cases, this means not finding something completely new but is part of the diffusion of innovations in the economy.

Only a fraction of the SMEs as defined by the Oslo Manual regularly perform R&D. These are:

- High-tech firms in different sectors that are often close to scientific research.
- Innovative SMEs in medium technology industries like machinery and automotive.
- Hidden champions, i.e. firms that are active and important market players in relatively small markets internationally and globally often not SMEs by EU definition that regards firms with up to 250 employees as SMEs but rather “small large firms” (Simon 2007).
- Innovative firms in low-tech industries perform R&D (par example in the textile industry).

As the traditional view sees SMEs as independent economic units, this is often not any more the case. Many SMEs belong to larger firms. Their independence in their business management decisions, therefore, depends on the company group they belong to (RWI and WSF 2010: 325).

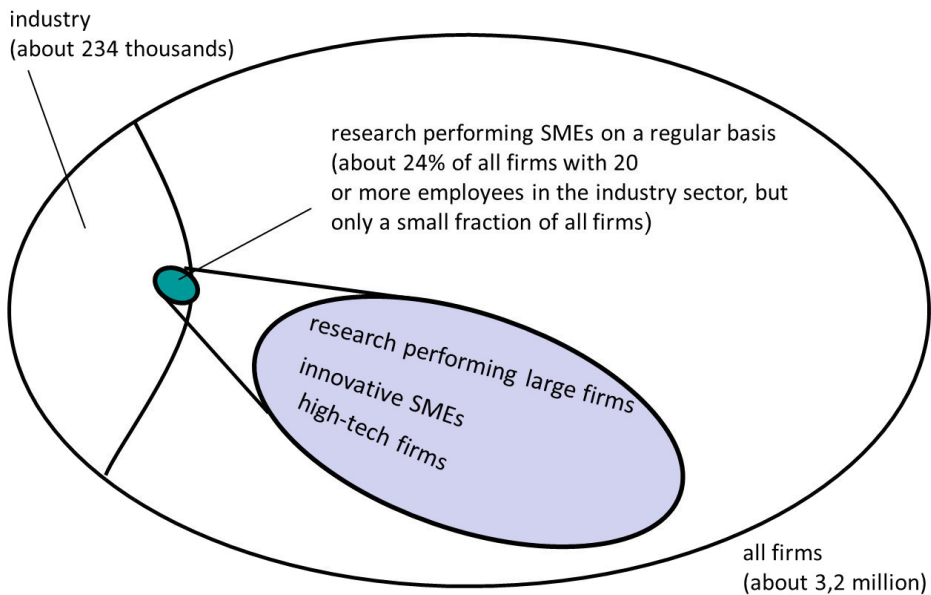
Figure 2 gives an overview about the innovative and research performing firms in Germany. Of the total 3.2 million companies, about 7% or 234 thousand were in the industry sector in 2014 (Statistisches Bundesamt 2016). The share of SMEs that perform research on a regular basis has been 24% of all firms in the industry sector with more than 20 employees some years ago.<sup>1</sup> In the service sector, innovative Firms are only a relatively small part of all firms.

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<sup>1</sup> This number originates from the official cost structure survey conducted in 2004. Unfortunately, a more up to date number has not been displayed in the new survey that has been published in 2014. However, as such indicators don't change very much over time, it is plausible that this value has not changed substantially over time.

**Figure 2:** Innovative and research performing firms in Germany

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Source: Own representation based Rothgang and Dürig 2008.

### 3 Research strategies

The **research strategies and activities of innovative SMEs** in Germany have rather distinct characteristics. In general, the predominant share of R&D (about 90%) takes place in large firms. However innovation impulses from SMEs are important in many industries. Example are the firms in the machinery sector which by their products give innovation impulses to all their customer markets. In General, SMEs are more flexible and more prone to try new routes in respect to innovation and can thus more easily develop new ideas to marketable innovations. At the same time, SMEs often develop research strategies less formally than large firms.

There are substantial differences in respect to R&D strategies between different industries and technology fields. Research and innovation of companies in the **medium-technology industries like machinery, automotive or chemistry** feature the following characteristics:

- The competitiveness depends on the production and product knowledge inside the firm which has evolved over a long time and is cumulatively developed.
- Firms in these sectors look out for technological and market developments that endanger their market position and at the same time try to generate new opportunities based on their accumulated knowledge stock.
- R&D in these industries usually is performed close to the head office.

Tackling the challenge of ambidexterity (being able to develop further the existing knowledge stock while at the same time developing new products and using new technologies) is often a core task for competitiveness of SMEs in these industries but also for all firms along the value-added chains. Innovation of these SMEs are often important for innovation in the value added chain and give impulses for the customer firms and industries. While the characteristics of research strategies of medium-technology firms have many common features, the strategies of **high-tech firms** which can often be found in biotechnology, or the information and communication technologies (including the software sector) partly differ:

- The competitiveness of these firms usually depends on developing new ideas to bring them to the market fast.
- The technology stock develops with a high speed with new opportunities coming up quite fast and often large uncertainties in respect to what products will prevail.
- On average the R&D intensity is high.
- There are different strategies in respect to knowledge development (depending on sector characteristics). In some sectors like software development, some R&D activities are done in a cooperative way, featuring open innovation processes. In others, new firms need large firms in order to get access to worldwide markets (like business software). In still others (like biotechnology), firm strategies partly don't aim at bringing products to the market but at selling the research results to large companies (like in pharmaceuticals):
- The funding of science as well precompetitive research and growth is important as many ideas result from scientific research.

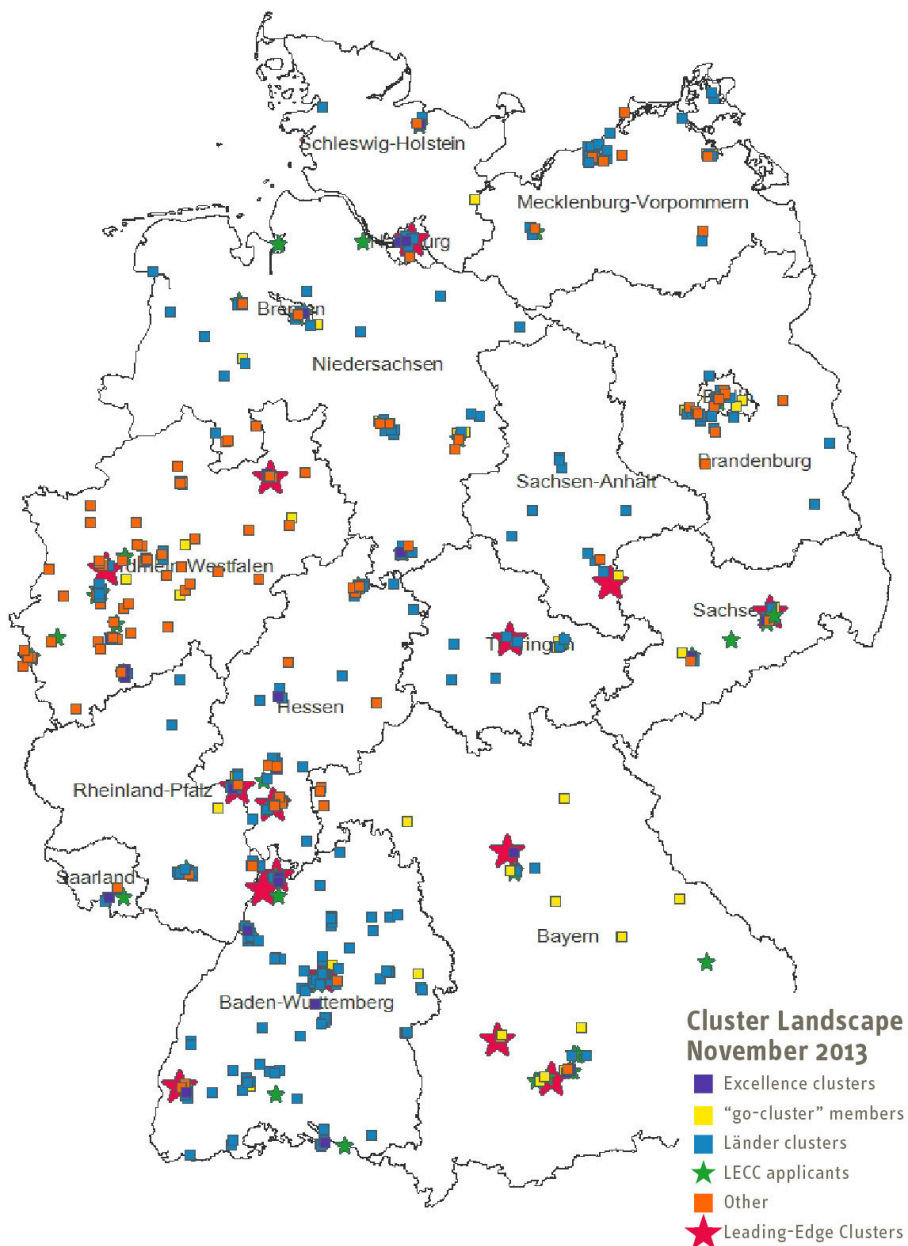
High-tech firms are very important for the economy as they often come up in new industries with high growth potentials. In addition, their ideas also bring impulses to the traditional sectors of the economy.

#### **4 Policies**

Promoting innovation activities of SMEs has been one important goal of R&D policies in Germany from the beginning. Research promotion mostly is precompetitive (RWI and WSF 2010). The different kinds of instruments are e.g. research grants for mostly cooperative firm research, promoting technology transfer respectively cooperation (RWI and SV Wissenschaftsstatistik 2007; Rothgang and Dürig 2009). Goals are the overcoming market imperfections, fostering long-term industry development and setting impulses for economic growth. One example is the program for the promotion of industrial collective research that has funded R&D by universities and research institutes on problems that are relevant for SMEs in different sectors of the German economy. This program has started in 1954 and has been adapted to changes in the business environment of SMEs (Böttger 1993). However, the core aim to foster innovation in SMEs has stayed all the same over time.

One more recent instrument for promoting innovation of SMEs are cluster policies (Kiese 2012). This kind of instruments uses the promotion of cooperation of local industries in order to strengthen common research of SMEs with large firms, universities, and research institutes. Figure 3 shows a landscape of the more than 640 funded cluster initiatives that exist on Federal and Länder level in Germany. About half of these initiatives feature a focus on innovation, while others promote different goals in cooperation. Most of them receive funding either from the Federal or from Länder governments.

Figure 3: Cluster landscape in Germany



Source: Rothgang, Cantner, Dehio et al. 2015: 25.

These initiatives supply services to SMEs, but also to large firms, Universities, and research organizations. The high number of initiatives shows the importance that the cluster funding has for the German innovation policy. The regional distribution of the clusters results from different factors like different Länder policies, the regional industrial structure, the research intensity of the local economy, and the readiness to which companies, science institutes and the government force common strategies. The financial support is in the most cases limited to a period of some years.

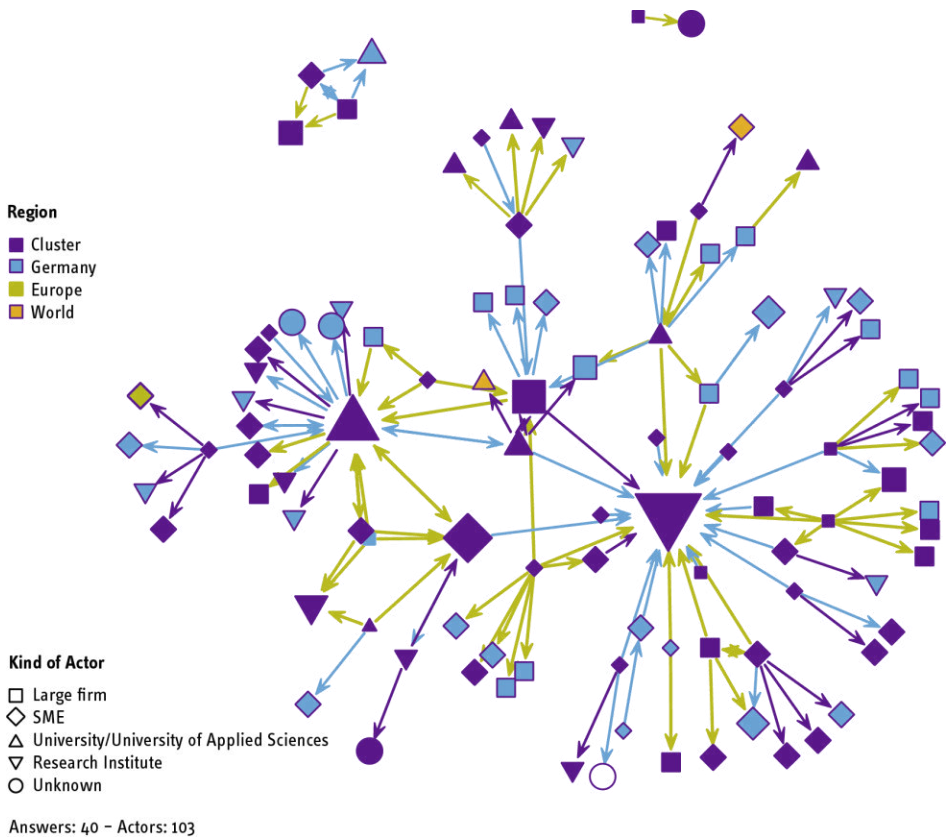
One program that sticks out from the different kinds of cluster promotion is the Leading-Edge Cluster Competition at the Federal level. One goal of this program that runs from 2008 to 2017 is to foster cooperation in High-Tech fields in order to strengthen innovativeness of the German economy. This has resulted in a close cooperation of the firms, mostly the using of very advanced technologies and an orientation towards a common strategy (RWI 2014; Rothgang, Cantner, Dehio et al. 2015).

The effect of the Leading-Edge Cluster Competition on the Network is shown in Figure 4 by using the example of the logistics cluster “Effizienzcluster LogistikRuhr”. The figure shows that the program has resulted in many new innovation cooperations and deepened others.



**Figure 4:** Effect of the leading-edge cluster competition on the network of the Effizienzcluster LogistikRuhr

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Source: RWI 2014: 126. – Color of the arrows: green = impulse from the program; light blue = intensified by the program; dark blue = not influenced by the program.

There are several other benefits from cluster cooperation for SMEs:

- SMEs can make use of the results from common research projects.
- They have access to representatives from large firms which is often quite difficult, especially for newly founded firms.
- They can profit from the increasing cluster visibility.
- Through cluster cooperation, they can keep track of technological developments that are important for their competitiveness.

As the results from the evaluation of the evaluation of the Leading-Edge Cluster Competition show, cluster policies have the potential to help SMEs to cope with technological and market challenges. Another advantage of this policy instrument is its flexibility in respect to the situation of different industries.

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## **Part 2 Innovation**

### **D “Internet and SMEs innovation” from the perspective of industry convergence – Taking agricultural products circulation enterprise as an example**

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#### **Key words:**

Industry convergence; SMEs innovation; “Internet+”; Agricultural Products Circulation

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## 1 Background

As more and more industry interaction occur, industrial convergence became an important topic of new economic era, and governments also take active policy to promote industrial convergence. Due to technology progress and control relaxation, industrial convergence took place in the industry boundary and corner of technology integration, which changed the original industrial product characteristics and market demand, lead to the relation change among enterprises competition and cooperation. Industrial convergence can be understood as a process of industrial innovation, can also be interpreted as industry innovation results.

Based on the basic idea of industrial convergence, internet and SMEs innovation convergence may be defined as the allocation optimization among internet and SMEs or their internal departments, based on technique, products, services, business, and market resources. Its outstanding performance is their boundaries increasingly blurred, and new industry attributes appear, which rely on internet technology.

Agricultural product circulation refers to the entity flow of agricultural products from supplier to customer, including agricultural production, purchase, transportation, storage, processing, packaging, distribution, information processing, market feedback and other functions, so as to make the agricultural product value-added. It should be noted that most enterprises in agricultural product circulation industry are SMEs, and so in this paper, agricultural product circulation industry enterprises will be taken as examples.



## **2 Five major problems restricting the development of SMEs**

More than 30 years of reform and opening-up, Chinese SMEs developed rapidly, made important achievements, and became an important force in China's economic and social development. However, Chinese SMEs are facing so many problems, such as financing difficulties, poor management, bad informatization, high cost and lack of professional personnel.

### **2.1 Financing difficulties**

SMEs financing channel is narrow, mainly depends on the owner's investment, internal financing and bank loan financing. Other financing channels, such as venture capital investment, issuing stocks and bonds play little effect to ease the financing difficulties of SMEs. At the same time, because of the existence of the factors such as financial exclusion, it is too difficult for SMEs to get bank loans. Most banks and other financial institutions raised the threshold of bank credit financing by setting the higher credit standards, strict assessment process and so on. Existing commercial bank performance evaluation mechanism is also adverse to SMEs. Southwestern university of finance and economics institute of economic and management according to "Chinese family" financial report released, SMEs get bank loan ratio of 46%, 11.6% to apply for a loan was rejected, 42.4% of small micro enterprises did not apply for a loan.

### **2.2 The cost is high and rising fast**

International economic growth expected to slow further intensified competition at home and abroad, as well as factors such as the minimum wage continues to increase further increased the SMEs' business cost. According to the survey of the national federation of industry and laboratory in June 2014, the current cost of production or operation of SMEs in China increased obviously. 64.9% of respondents think that the cost of raw materials in 2014 is a "rise" in 2013, among them, 66.5% of the SMEs think "growth" compared to the cost of raw materials, 67.9% of the modern service enterprises that "growth" compared to the cost of raw materials, 72.0% of the western region enterprises think the cost of raw materials increased rapidly.

### **2.3 Low degree of informatization**

According to statistics, SMEs are lack of information professionals, 16%-36% enterprises did not set special information department, and more than half of the enterprises did not specially-assigned person to manage information.

## **2.4 Poor management mode**

SMEs are lack of specification in finance, human resources, and procedures. Most SMEs are controlled in "family management mode", and several set up special human resources department, the staff is difficult to feel the sense of belonging and security.

## **2.5 Lack of professional personnel**

Labour costs have risen sharply in recent years, SMEs recruitment, recruitment expensive, lack of professional and technical personnel and other issues become another important bottleneck for the sustainable development of SMEs. At the same time, SMEs' incentive mechanisms, as well as shortage of enterprise culture construction, also make it difficult to retain talent.

### **3 PEST analysis of “internet + SMEs Innovation” convergence environment**

Internet and SMEs innovation convergence environment analysis mainly includes the following four aspects as political, economic, social and technology.

#### **3.1 Political environment**

Balance urban and rural development strategy provides the convergence basis of agriculture and related industries, urban integration policy indicates the developing direction of the convergence, stable growth of government investment in "SAN NONG" laid the material conditions for industry convergence.

Government continuously issue policies motivate the convergence between Internet and traditional circulation industry. In recent years, the No.1 file continued to encourage convergence of Internet and the traditional agricultural industry. Particularly, No.1 file in 2015/2016 respectively puts forward the "innovation of agricultural products circulation mode" and "promote Internet + modern agriculture" goals. China is a big country of fresh agricultural products production and consumption. Strengthening construction of fresh agricultural products circulation, ensuring the long-term mechanism of market supply, safeguarding the interests of producers and consumers is very important.

#### **3.2 Economic environment**

With the growing popularity of the internet, electronic commerce plays an important role in rural area, which has caused much change in consumer behavior, strategy of the agricultural product circulation enterprises, and behavior of the farmers.

Consumer behavior has changed much. Nowadays, fresh agricultural products consumption gradually increased; residents' food safety consciousness further improved; cold chain logistics demand increase; network shopping is prevailing, green food, organic products and other high-end agricultural product demand. Agricultural product circulation enterprise adjusted their strategies actively to carry out the order agriculture, agricultural products e-commerce and other new business relying on the Internet, strive to improve its core competition ability, make the enterprise to operate more standardization, and promote enterprise's management upgrading. The behavior of farmer also changed much. More and more fruit and vegetable farmers, fishermen, provide their origin fresh products on the internet. E-commerce brings a shortcut for fresh agricultural products sales.

### **3.3 Social environment**

On the one hand, China's economy is gradually turning to pursue all-round development and to save resources, protect the ecological environment for the principle of intensive development pattern. The integration of agricultural products circulation industry and internet is facing a rare opportunity for development. "Internet + agricultural products circulation" provides approaches for traditional agricultural products circulation development, through which, new agricultural product circulation enterprise can make full use of information collection, information transmission, information processing and other technologies of the Internet industry to reduce energy consumption, improve efficiency, reduce cost, save resources, protect the environment.

On the other hand, consumers are paying more attention to agricultural products safety and health, caring agricultural products whole life cycle monitoring of production, storage and transportation, and so led to demand for information in production, distribution, retail, and all these provides the "Internet + circulation of agricultural products" development space.

### **3.4 Technological environment**

Technology convergence caused by technology innovation and penetration, is the most direct requirement of industrial convergence. Represented by the internet information technology make consumer, farmer, agricultural product, information, and capital combined more closely. At the same time, due to the popularity of internet, consumers are easy to accept the new business, service pattern. Internet brought an alternative technology for the circulation of agricultural products, including data collection, transmission, storage, and sharing in agricultural products distribution, wholesale, retail, international trade and so on. All these technology changed the route of traditional agricultural products circulation and management content.

The rapid development of information technology itself also lowered the threshold of the agricultural products wholesale and retail industry informatization. The popularity of the internet reduces the building costs of fresh agricultural products online retail businesses. At the same time, interconnection and interchangeability of these techniques accelerated their penetration, and changed the agricultural product circulation internal competition relationship among enterprises.

Through the PEST analysis we can find Internet and SMEs innovation convergence in China is facing a favorable macro environment, and the convergence

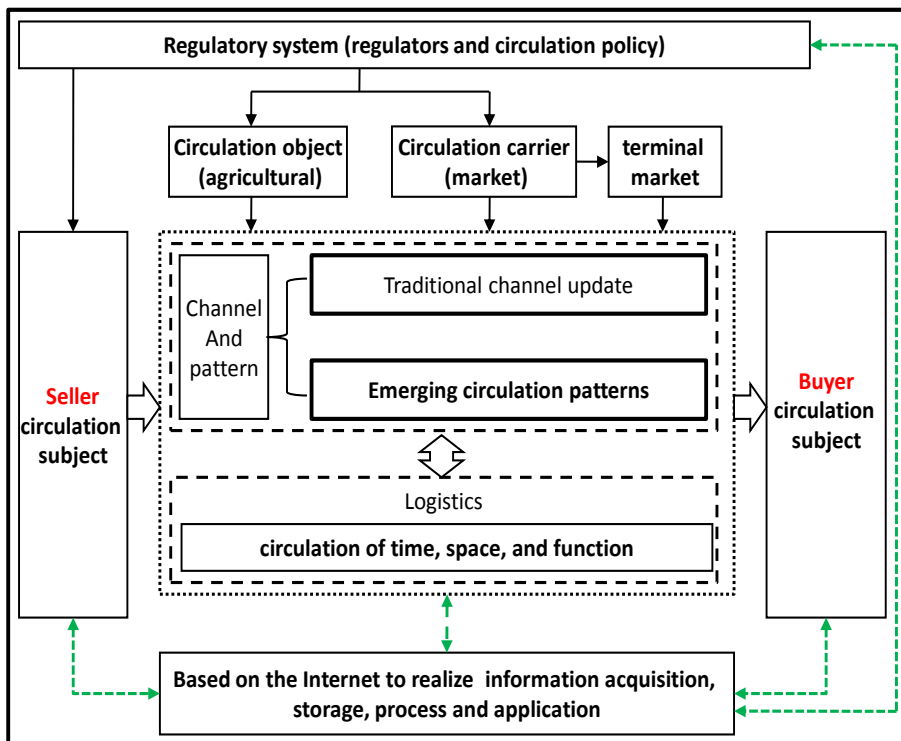
will effectively promote the SMEs industrial structure upgrade, organizational RE-FORM, and change layout.

#### 4 Convergence mechanism of "Internet+ agricultural products circulation"

New agricultural products circulation value chain need the internet support from the early production and purchase, to the middle of transport, storage, processing, and packaging, to the end part of the distribution, information processing, market feedback and other functions. Internet technology can reduce agricultural products circulation costs or provide a steady stream of technological innovation service.

In a word, the new agricultural product circulation system has realized full penetration of Internet technology to the traditional system. The relationship between Internet and agricultural product circulation is a dynamic relationship, which means penetration, fusion, and symbiosis gradually (Figure 1).

Figure 1: Convergence patterns of the “Internet+ agricultural product circulation”



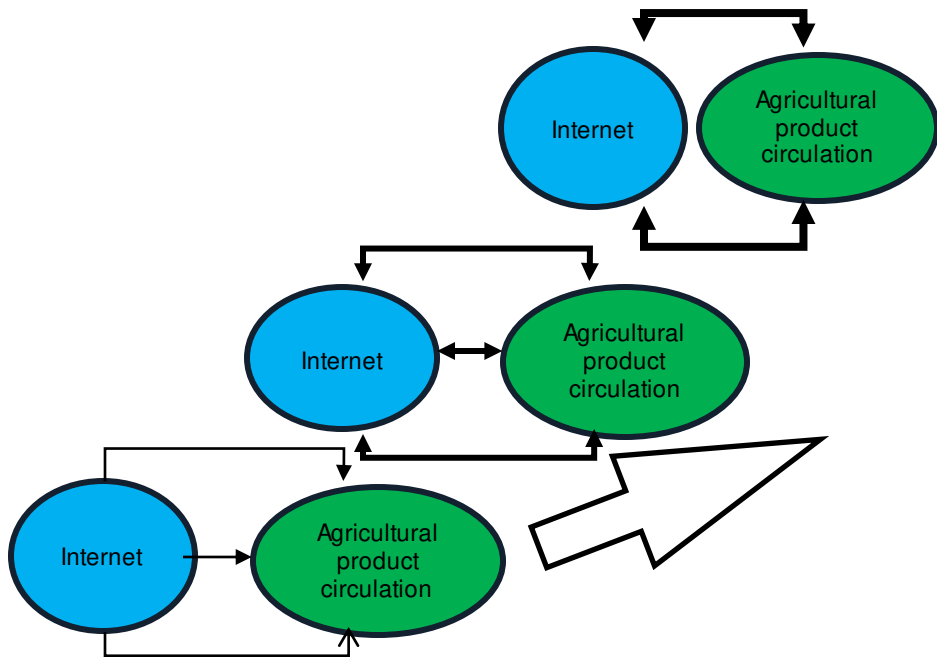
The convergence mechanism of the internet and agricultural products circulation refers to the development process of “Internet + agricultural products circulation” around the core technology value chain. New agricultural products circulation value chain need the Internet support from the early production and purchase, to the middle of transport, storage, processing, and packaging, to the end part of the logistics distribution, information processing, market feedback and other functions, optimizing the management to meet user needs, and realize agricultural product added value, as Figure 2 shows. Internet technology can reduce agricultural products circulation costs or provide a steady stream of technological innovation service.

As a traditional industry, agricultural products circulation has experienced years of slow development. Agricultural products circulation in essence belongs to the productive service industry, is along with the deepening of labor division, and is the product of social and economic development to a certain stage. The relationship between Internet and agricultural product circulation is not a simple labor division relation, but a dynamic relationship, which means penetration, fusion, and symbiosis gradually.

In the primary stage of “Internet + agricultural products circulation”, agricultural products circulation is the logic premise of internet existence, and internet depends on the development of agricultural product circulation industry. But the rapid development of agricultural product circulation is driven by internet technology. The interaction phenomenon between them is not obvious, and more performance is the penetration of Internet technology to the traditional agricultural products circulation industry (Figure 2).

**Figure 2:** Comparison of three convergence stage

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With the vigorous development of agricultural products circulation, the demand for Internet technology will increase rapidly, such as the quality of fresh products detection sensor technology, agricultural products quality tracking technology, information and communication technology, etc. Business ability of circulation department needs Internet sector's input, and so, with the improvement economic development, the extent depend on each other will gradually deepened;

To the advanced stage, internet and agricultural products circulation will change into the industrial symbiosis patterns, namely, internet and agricultural product circulation industry or their internal sub-industries appear the phenomenon of integration, interaction and coordination for some internal mechanism. The conclusion is "Internet + agricultural products circulation" experiences the primary stage of penetration, the intermediate stage of closely integration, and the advanced stage symbiotic integration, finally emerges mechanism of the interaction and integration.



## **5 “Internet + SMEs” convergence effect**

### **5.1 Industrial convergence upgrades industrial structure**

Combing traditional agricultural products circulation and the internet will bring about a new industrial structure form, and then, industrial organization structure will be transformed. The internet as a new industry, combined with agricultural products circulation industry, will give it certain attributes of modern services. The integration of internet promotes social division of labor in agricultural products circulation. New agricultural product circulation services across time and space, creating good conditions for collaboration, has blurred the boundary of agriculture, logistics and services.

On the basis of the internet penetration to traditional agricultural products circulation, the organization levels become clearer, technology concentrated more high, and new knowledge discovery pattern occurred. Then, operational efficiency improved and various forms of communication will be promoted. The change of agricultural products circulation is getting more quickly, then new technology conduction among enterprises is faster, different industries' resource allocation and services can accurately express; So, internet upgrades agricultural products circulation technology, promotes industries correlation, and finally further optimizes industrial structure.

### **5.2 Internet integration changes industrial organization**

The internet penetration into agricultural products circulation weakened the role and position of traditional wholesale markets and retail markets. The development of virtual economy caused reduction of passenger flows in solid agricultural products businesses. Some retail markets are depressed and even shut down in some remote areas. So, a decentralization trend appeared. More and more agricultural product trade is done online. Thousands of people gathering together in a tangible market patterns gradually reduce. The development of the virtual agricultural trade platform makes agricultural traders gathering on the internet, and so the position of various trade services entity center is affected.

Agricultural trade network platform is away from limitation of the entity trade center resources, has a more broad space for development, and so agricultural trade are also likely to influence the trend of urbanization. All above mentioned factors make agricultural products trade from a single geographical spatial clusters into virtual clusters on the internet simultaneously, and so, the business mode of spatial clusters has changed.

Internet companies cross-border competition, has impact on and even subverts the traditional agricultural products circulation enterprises industry status. Internet companies via its flexible mechanism, different business models, changed the competition rules, and are fully restoring the agricultural product circulation pattern of industrial organization.

### **5.3 Internet changed the layout of the agricultural products circulation industry**

Internet promotes urban and rural resources getting closer, drives integration of urban and rural agricultural products circulation. Under the dual structure between urban and rural areas, the development of Chinese agricultural products circulation industry also presents the fragmented state and serious imbalance.

As Internet penetration is increasing in rural areas and logistics infrastructure improves, the gap between urban and rural agricultural products circulation is gradually narrowing. E-commerce has become the new engine for economy growth in rural areas, and satisfies the demand of urban residents to purchase high quality agricultural products.

With the deepening of the "Internet + agricultural products circulation", agricultural retail regional landscape division was broken according to administrative division, internet integration will reshape agricultural products circulation and business areas.

## **Part 2 Innovation**

### **E Entrepreneurial decisions in innovation driven economies: The sifting face of entrepreneurship in a globalized world**

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## 1 Introduction

The entrepreneurial environment in Germany is known by a high number of financial and advisory services as well as a prosperous economic climate to encourage entrepreneurial actions. Nevertheless, Germany's entrepreneurial intensity is very low.<sup>1</sup> Comparing the level of startups and liquidations, there has been a negative balance for the last 4 years.<sup>2</sup> This situation is even more peculiar due to the fact that only 60% of the allotted budget for grants to support entrepreneurial activities was used due to missing applications.<sup>3</sup> Hence, the question arises as to why the Germans disregard the opportunity for entrepreneurship? The objective of this paper is to step into a field of entrepreneurial research in relation to the economic development stage of an economy. It is the objective of the paper to provide a first attempt to examine factors determining entrepreneurial behavior in innovation driven economies. In the light of the German case, there appears to be a need to rethink various research knowledge about entrepreneurship in innovation driven economies. The result of this paper is to direct future research by giving research questions and hypotheses in the light of entrepreneurship in innovation-driven countries.

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<sup>1</sup> GEM Monitor 2014 and 2015 and the Table in the Appendix, Start up quota of total population in 2012: 1,5%, 2013: 1,67; 2014: 1,8%.

<sup>2</sup> cf Meyer 2015a, German statistical Office 2013 – 2015, Institute for SME Research.

<sup>3</sup> cf Almus/Prantl 2002, Bernhard 2012, Bouncken 2011.

## 2 Theory-based propositions of research

### 2.1 Questioning the definition of entrepreneurship

In a bulk of literature entrepreneurship is often understood relating to a business startup. The effects on unemployment as well as the idea to work as an employment motor dominated the definition of entrepreneurs. Research on entrepreneurship has often been conducted in analyzing push and pull factors towards to decision to become an entrepreneur in order to develop instruments to promote entrepreneurship as an employment factor.

Nevertheless, the definition of spiritual fathers of entrepreneurship like Schumpeter, Drucker or Porter, it appears to be that entrepreneurship is not only restricted to a business startup. Schumpeter<sup>4</sup> described entrepreneurship as the ability of people to provide new factor combinations in order to create market disequilibrium by introducing innovations. His views of entrepreneurship were based on the idea of Kondratieff where innovations were the source of new economic development, employment and prosperity. Also Drucker<sup>5</sup> has been inspired by the views of Schumpeter. However, he stressed the fact that entrepreneurs have the ability to convert innovation into planned organizational behavior. Thereby, he understood innovations not only by the application of new factor combinations or industrial inventions, he also understood innovations by providing a new service layer to existing products. He emphasized the 7 sources (like time, processes or new knowledge) for innovation as well as the need to put entrepreneurship into practice. As for Porter<sup>6</sup>, in addition entrepreneurship is the key for economic competitiveness and growth. The creation of innovation and its implementation for him was the central task of entrepreneurs.

It appears that the literature appears to be unsure whether to allocate entrepreneurship to the startup situation or to include existing companies as the need to provide innovation applies to both types of enterprises. By employing the literature on management strategy, however, there is also clear indication, that for a company, there is a need to provide innovations in order to maintain competitiveness as well as to remain as an organization. According to Drucker, Porter or Schumpeter, these are true entrepreneurial characteristics.

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<sup>4</sup> cf Schumpeter: *Theorie der wirtschaftlichen Entwicklung* (1993).

<sup>5</sup> cf Drucker: *Innovation and Entrepreneurship* (1993).

<sup>6</sup> cf Porter: *Competitive Advantage* (1990).

Nevertheless, there appears to be a more or less general agreement on the fact that entrepreneurship is understood as a behavior of individuals to create and implement innovations on taking economic opportunities and risks to receive financially viable and social rewards. It is the task of entrepreneurship to realize innovation through organizational development and to market them. The performance of this task is to allocate more to an individual behavior rather than to an organizational behavior.

Nevertheless, this uncertainty in the understanding of entrepreneurship could become a major implication in order to understand the behavior of entrepreneurs with innovative- driven countries where not only the growth aspect of employment appears to be the major focus. None regardless, even bigger companies apply knowledge management systems in order to promote innovations which is labelled as intrapreneurship.

## **2.2 Implications of an innovation-driven economy on entrepreneurship**

According to the world economic forum (WEF) as well as the GEM Monitor,<sup>7</sup> economies are classified into the following three groups according of their economic development: factor driven economies, efficiency driven economies and innovation driven economies. These different stages of the economies do have different implications toward the issues of entrepreneurship and promoting the role of labor.

In factor-driven-economies, labor is a production factor due to existing low costs. Entrepreneurship is based on the idea to exploit more own natural resources (tourism, agriculture as well as craft businesses). All entrepreneurial efforts rely on labor as a production factor. Research questions to promote entrepreneurship are geared to set up an entrepreneurial environment, to provide education, and to provide micro finance to prospective entrepreneurs. These issues are allocated mainly to developing countries like many African countries.

Efficiency-driven economies can be characterized by a growing development of industrialization and an increased reliance on economies of scale. This also implies the management of more capital-intensive organizations as well as the development of social security systems. Thereby, the key focus of promoting entrepreneurship is to improve productivity or efficiency in order to compete better with world markets. The promotion of entrepreneurship

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<sup>7</sup> See for example the GEM Monitor 2014 or 2015.



mainly concentrates on rationalization, access to world markets as well as to setting up standards for international organizations. Countries such as China or other East European countries are regarded as efficiency driven economies.

Innovation-driven economies<sup>8</sup> can be characterized by the following characteristics:<sup>9</sup> (1) demographic changes in the working population, (2) effects of globalization on an economy as it shifts from an industrial base towards a service/logistics base, (3) strong knowledge-based value-added economy, (4) a shift from a quantitative to a qualitative growth orientation, and (5) increasingly high standards of living and social welfare. The competition is intense and determined by the degree of innovation, networking, and a high demand of specialization to cope with the effects of globalization. The adoption of innovations, the quality of the customer-orientations, and the adaptability to the pace through the effects of e-commerce are key success-factors in an innovation-driven economy.

The effects towards entrepreneurship in innovation-driven economies need to be expected in the management of knowledge as well as in the relationship between large and small companies. It appears that due to the complexity of these economies, there are needs to define ways to economize knowledge. The obvious competition of big versus small companies needs to be altered. Due to the project orientation of bigger companies, they need more smaller companies with specialized knowledge fields to cooperate with. Bigger companies have better opportunities to finance innovations, however they need to economize knowledge. In return, smaller companies need to cooperate bigger companies in order to enter the globalized market on the idea of back-packing.

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<sup>8</sup> cf Kuckertz/Berger/Allmendinger (2015); Göggel et al 2007, GEM Monitor 2014 and 2015.

<sup>9</sup> cf Kuckertz/Berger/Allmendinger (2015), Göggel/Gräß/Friedhelm 2007, Maaß/Chlosta/Icks/Welter 2014.

### 3 Methodology

The research methodology used is based on an inductive qualitative-oriented approach while using existing data from the GEM Monitor as well as other pieces of work by various research institutes. The main focus in the methodology, however, is in the comparative nature of the study between Germany and China (see Appendix). Despite their different economic status, Germany is regarded as an innovation-driven economy, whereas China is regarded on the edge to become an innovation-driven economy. Therefore, more fine-tuned results are possible to define and measure causalities in the decisions leading up to an entrepreneurial venture. In the conduct of the research, GEM data have been analyzed by long-continual as well as multivariate analysis in order to measure the various effects on the likelihood to take up an entrepreneurial activity.

Thereby, it is the objective of the research to identify problems for a further in-depth analysis. On the ground of the GEM research model<sup>10</sup> of entrepreneurship, the following areas have been of particular interest as the image of entrepreneurship, the role of innovation in the economy, the value of perceived economic freedom to allow entrepreneurship,<sup>11</sup> and the entrepreneurial environment and access to finance. The data used were existing statistics and analyzing other research reports being more qualitatively orientated by employing an inductive method. Thus, mainly the German perspective has been used and elaborated by an additional Chinese perspective.

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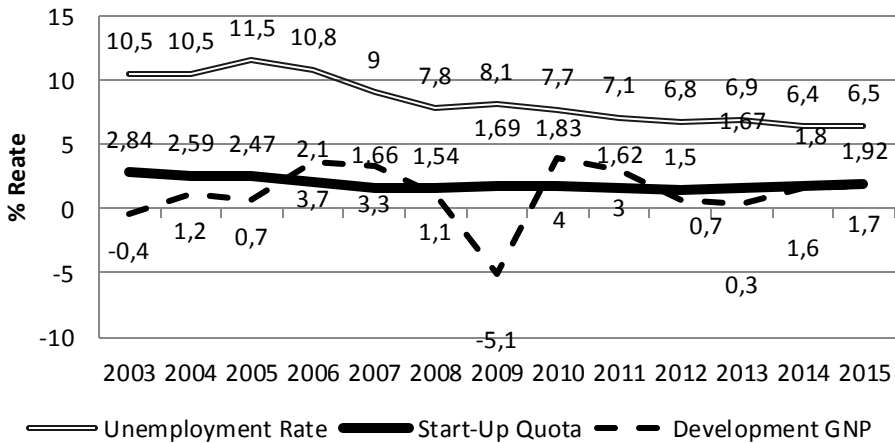
<sup>10</sup> See GEM Monitor 2014.

<sup>11</sup> cf Kuckertz/Berger/Allmendinger (2015).

#### 4 Preliminary results

The comparison between the start-up quota, development of GNP, and unemployment rate in Germany demonstrates that there is a clear negative relationship between push factors like unemployment and entrepreneurial activity (Figure 1).

**Figure 1:** Start-up quota, development GNP, unemployment rate in Germany from 2000 to 2015

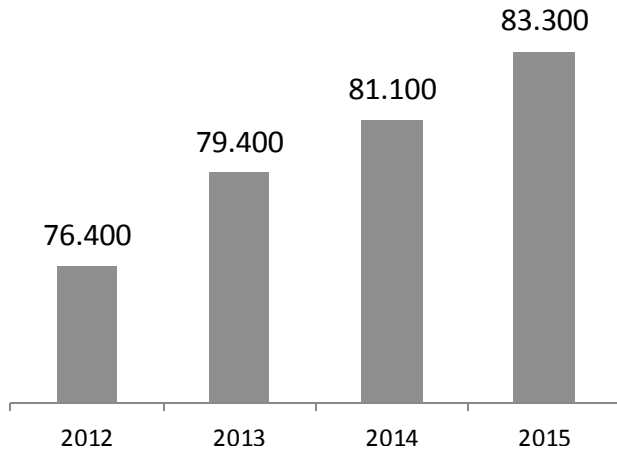


Source: Statistical Year Book 2010 – 2015, own calculations.

However, the start-up activities demonstrate quite clearly that Germany is an innovation-driven economy. In the case of Germany, it is remarkable that the main entrepreneurial activities are performed by freelancers with a constant rising percentage (Figure 2) in relation to the total start ups. The top ten of entrepreneurial activities are led by management consultants, web designers or software engineers. Knowledge and the provision of knowledge appears to be the engine of entrepreneurship since knowledge is an important production factor in the German economy.

**Figure 2:** Freelance business start ups in Germany

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Source: KFW Gründungsmonitor 2013.

This observation follows to various pieces of research that the majority of business startups cannot be regarded as innovative.<sup>12</sup> Only 17,7% of the startups are innovative.<sup>13</sup> In many cases they offer services based on their previous employment and are able to refer to a personal professional network. Entrepreneurship in Germany has only a little employment effect. On average, only 0,4 full-time work places have been generated.<sup>14</sup>

Nevertheless, due to missing push factors, it appears that the quality of entrepreneurship has increased since the choice to become an entrepreneur was a free choice. It has been reported that 62% of all entrepreneurs were driven by specific ideas and changes.<sup>15</sup> Also, the demographics of entrepreneurs changed as the majority of entrepreneurs started directly out of their employment and were well educated (31% of the entrepreneurs had a university degree, 54% of the entrepreneurs had at least a vocational training). With 34,6 years, the average age of business starters increased. Also, the age-group of 45-54 years increased by 17,2 % in 2015.<sup>16</sup>

Concerning the image of entrepreneurship, in Germany, there appears to be a problem as 40% of Germans associate entrepreneurship risk with the fear

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<sup>12</sup> KFW Gründungsmonitor 2013.

<sup>13</sup> cf Schauf/Gilpert 2011, Hansch 2006.

<sup>14</sup> cf Schauf/Gilfert 2011, KFW Gründungsmonitor 2013.

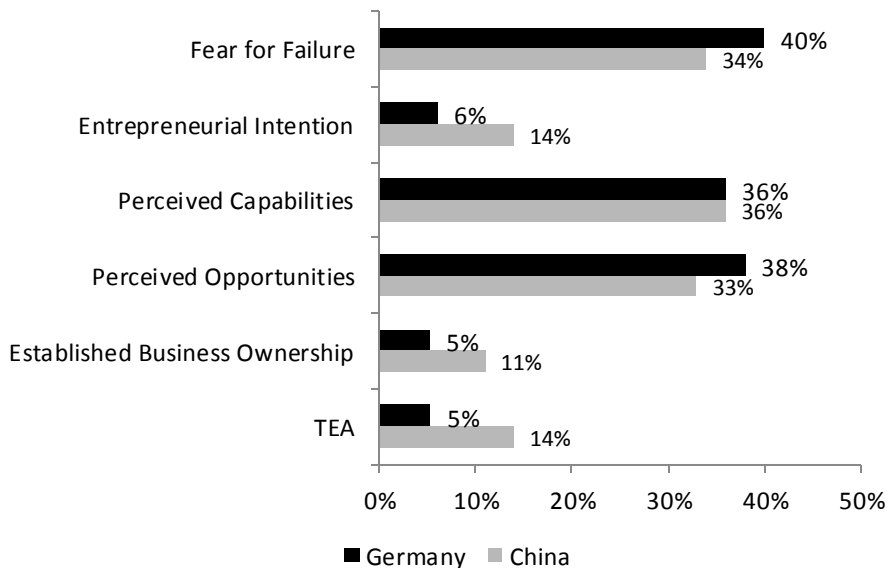
<sup>15</sup> KFW Gründungsmonitor 2013, IFM 2011.

<sup>16</sup> KFW Gründungsmonitor 2014.

of failure (Figure 3).<sup>17</sup> This appears to weigh heavily in particular once potential entrepreneurs do have other options in the labor market. In particular the comparison between China as an efficiency driven economy demonstrates more entrepreneurial activities in comparison to Germany despite the fact that both countries regard the entrepreneurial capabilities at the same degree. Moreover, Germans regard the perceived opportunities due to a favourable environment even higher. Nevertheless, as the research of Kuckertz suggests, that there might be a problem with the perceived economic freedom.<sup>18</sup> In particular, Germany as a highly sophisticated and regulated economy portraits, perhaps has more burdens than the Chinese economic system. In addition, it is notable that in Germany entrepreneurship is not a subject in school or in many academic courses.<sup>19</sup> Potential entrepreneurs get in contact with entrepreneurship during the start of their business career (Figure 3).

**Figure 3:** Comparison of key entrepreneur image factors

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Source: GEM Monitor 2014.

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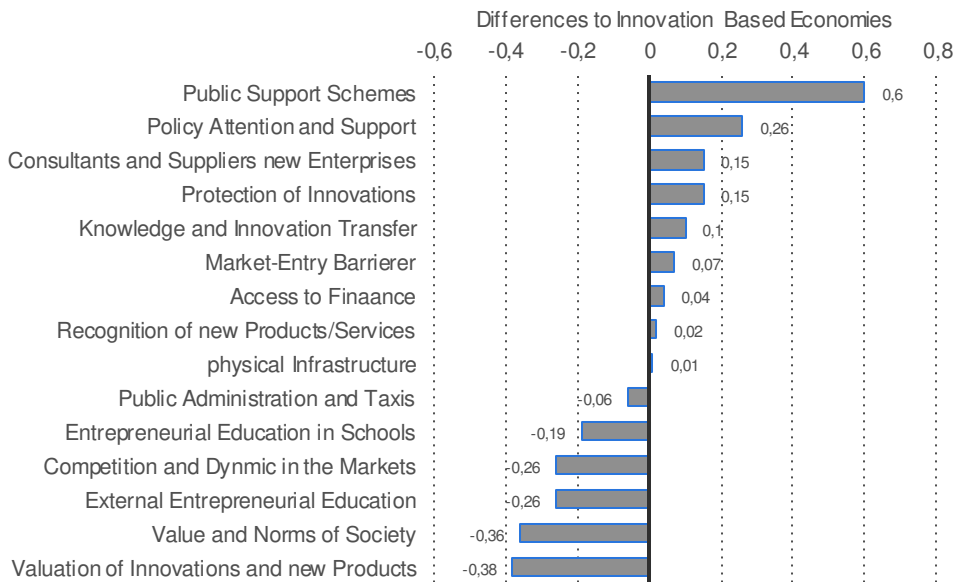
<sup>17</sup> GEM Monitor 2014.

<sup>18</sup> cf Kuckertz/Berger/Almendinger (2015).

<sup>19</sup> KfW-Gründungsmonitor and IFM 2011, Reller 2013.

Figure 4 attempts more to look at the environment of entrepreneurship in Germany. Although Germany is able to provide a favourable environment to prospective entrepreneurs, key factors to allow entrepreneurship to happen appear not to be developed to a supportive degree. Despite that fact that 23% of business start-ups report problems in obtaining funding. Thereby, one needs to know that 54% of the business start did not require any funding due to a low budget start up as a free-lancer. However, for this group of entrepreneurs, the availability of grants has an important role in the decision to take up an entrepreneurial venture.

**Figure 4:** Comparison of key entrepreneurial indicators



Source: GEM Monitor 2014 where the values of Germany have been compared with the average results of the other innovation-driven economies.

Moreover, the fact that innovation is the motor of entrepreneurship in particular in innovation-driven economies, the German society appears to have a problem relating to this aspect. Most entrepreneurs reported that Germans do not value innovations as such very high or it takes a long time to award innovations to a satisfactory economic results. This attitude appears to weigh heavily in the decision to take up an entrepreneurial venture rather than a supportive economic environment.

## 5 Conclusions

The conclusion of this research is more a complete set of research questions rather than any pragmatic recommendations to policy makers or economic institutions. The primary analysis and observations suggest that, in particular, we need to broaden up our view on entrepreneurship not only relating to business start ups. We need to come back to the original definition of entrepreneurship, which means to take up an economic venture or risks by developing and marketing inventions in an economy and initiating changes in the market. Thus, the role of innovations needs to be investigated as how innovations are developed in innovation driven economies in a complex knowledge environment. The role of networking and support to reduce complexity in the knowledge transfers appear to be crucial factors. The fear of failure is allocated with the need of entrepreneurial marketing, including a development of a failure culture. Hence, we perhaps need to rethink the tasks and challenges of the entrepreneurial environment since only consultancy services seem not to be enough. We need to evaluate the role von networking, possibilities of knowledge transfer as well as coaching services. The problem of financing raises a further set of questions. As the German case shows, it appears that the role and policies of banks do not support entrepreneurship due to a strict application of financial standards. The loan or equity security based funding approach may inhibit to finance innovative driven entrepreneurial activities. Entrepreneurial activities seem more to rely on innovation-driven economies to the provision of venture capital arrangements in order to reduce risks. Finally, the German case suggests that economies highly regulated with respect to markets, administration, and taxes appear to inhibit entrepreneurial activities. Innovation-driven countries acting in a globalized world certainly changed the face of entrepreneurship. Already the forwarded questions suggested that we perhaps need to rethink our research knowledge to focus more on the role of the development of innovations and the effects of knowledge as a production factor rather than concentrating on developing an entrepreneurial environment as such.

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### **Part 3 Sustainability and health**

#### **F Game analysis of rural tourism in the surrounding countryside of scenic spots – taking Wande town, Changqing district, Jinan municipality in Shandong province as an example**

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## Abstract

This thesis takes Natao county, Wande town, Changqing district, Jinan municipality in Shandong province as the research subject. Game relationship between villagers and rural tourism companies (farmer professional cooperatives) is analyzed through questionnaires, interviews and field research. Sustainable development suitable for local rural tourism is studied from three angles: villagers, rural tourism companies (farmer professional cooperatives), and the government. In a sustainable development, the government takes the lead, rural tourism companies (farmer professional cooperatives) are the operators and the residents play the role of participants. This mode will help develop local rural tourism, exert villagers subjective initiative to protect and use local resources voluntarily and realize true sustainable development of rural tourism.

Based on the questionnaire survey, interview and field investigation, this paper analyzes the game relationship between villagers and rural tourism companies (farmer cooperatives) by Game Theory, and analyzes the relationship between villagers and rural tourism companies (Farmer Cooperatives), Rural tourism company (farmer professional cooperatives) and the government to explore the sustainable development model suitable for local rural tourism. The government should guide and operate the company (farmers' cooperatives), and participate in the development of the local rural tourism. The villagers' subjective initiative should be exploited to protect and utilize the resources and form a virtuous cycle to realize the real sustainable development of rural tourism.

Shandong is a tourist province, rich in tourism resources, to a mountain of water a saint world-renowned, and has the world's natural and cultural heritage of Mount Tai as the first of the Five Sacred Mountains, the emperors of heaven, is a unique tourism Resources, Taishan surrounding with many picturesque scenery, ancient countryside landscape, with China's economic take-off, people have more economic strength for tourism, tourism demand, how to use and develop a good scenic surrounding rural tourism worth exploring. Rural tourism companies are one of the effective modes to enhance the degree of specialization and intensification of tourism agriculture and rural tourism industry. It is an effective way to transform the farmers' concept, integrate industrial resources, extend the industrial chain, promote employment and income of farmers, and protect and promote local culture. The creation of local brands, as well as the realization of national environmental protection, tourism and other aspects of the effect is more significant.

## 1 Introduction

Rural tourism natural landscape, pastoral scenery, rural folk customs and agricultural resources is an important factor to attract tourists to rural areas, while it is to broaden the channels for farmers to increase income, promote rural poverty out of the important resources of the whole. With the development of economy and society, rural tourism has become one of the most effective ways to promote rural economic development, rural poverty alleviation and farmers' poverty alleviation. The development of rural tourism involves the interests of government, rural tourism companies and villagers. The game relationship between them affects the harmonious development of rural tourism. This paper analyzes the game from the government, rural tourism companies, villagers Three perspectives are given to promote the sustainable development of rural tourism proposals.

Since the 30s of the twenties of the twentieth century, the development of farmers' cooperatives in China now has about 150,000 cooperative organizations in rural areas, especially since 2004, the annual release of the Central Document No. 1 to support the farmers' professional cooperatives made a clear request, Farmer cooperatives have become the only way for the rural economy to thrive and the peasants to embrace a more prosperous life. The Law on Farmers' Professional Cooperatives defines legal personality of farmers' specialized cooperatives, establishes the independent market position of farmer cooperatives, gives farmers the right to organize economic development, voluntary management and democratic management, and is the right to support and guide farmers' The development of cooperatives, the regulation of farmer cooperatives, the protection of farmer cooperatives and the legitimate rights and interests of their members to take important measures. The implementation of this law for the development of modern agriculture and new rural construction has laid a solid foundation.

The development of tourism has a large amount of long-term investment characteristics of long-term benefits, government investment alone is not enough to take a wide range of investment and financing channels, especially for rural areas, to make full use of unique rural resources and geographical advantages, the development of tourism cooperation Organization, accelerate the development of tourism industry.

Tourism cooperatives are based on tourism resources in rural areas established, both for the rural areas of the tourism industry and supporting the development of complementary services, but also to stimulate local people to develop local resources, an important way to get rich.



## **2 The present situation of tourism resources in Ma Dao Village, Wande Town, Jinan City**

Jinan Changqing District Wande town is located between the city of Jinan and Dongyue Taishan, the territory of the "four famous temples," the first state-level 4A scenic Lingyan Temple. Starting from the city of Jinan calendar, north from the village, the horse race, the Jade Emperor Temple, Zhang Zhuang, Fang Zhuang, Ma village, 12.5 km in length. The natural environment is superior, climate four distinct seasons, forest coverage rate of 80%, a beautiful environment, rich products, walnut, chestnut, persimmon, Mount Tai rocks all over the mountains. Especially in the southern town of Wande village, from the Taishan west side of the Peach Blossom Spring Scenic Area recently only 2 km and strategic location, rich in tourism resources, North Ma is the ancient village, according to legend in the Yuan Dynasty, the village built by Ren, near Thailand Shanxi Road, went to Mount Tai pilgrims in this car more than a horse, named Ma Zhuang. In the north of the village of North Village, left a more complete Qi Great Wall site, which is the Great Wall of nail head cliff is the end of Changqing section, but also "to the mountain city" model. Qi Great Wall since the Great Wall Village East Dazhaishan, North Mountain, 12000 meters to reach the nail head cliff. From the north to the nail head cliff between the Great Wall is the existing Qi Great Wall to save the most intact section, according to legend, when the Great Wall built to the north east of the nail Maotou nail cliff, because of steep slopes and steep cliffs. The wall delay repair does not go up, annoyed Qi Hou, Qi Hou took the repair of the general beheaded, its head nailed to the cliffs, to kill an example, to threaten migrant workers must repair the Great Wall, "nail cliff" name. Despite killing the supervisor, the Great Wall has not been able to repair up, only repair to the cliffs so far, there is no wall from the east forty miles. Since then, the local with the "Great Wall repair to the top cliff, a drop of forty years," the legend, spread so far.

As the famous tea village of Jinan North Ma Tai Village, Changqing tea is the main production base. On the acres of tea plantation base to allow visitors to experience the play of tea leisure activities. 2013, an investment of 900,000 yuan, construction area of more than 700 square feet of tea processing plant in the town of Wande North Masato Village officially completed and put into use. Among them, the tea processing machinery and equipment and supporting facilities 230000 yuan, since then, Ma village will embark on a self-produced, their processing, their sales path. North Ma Taitun to set up Taishan Tea Technology Development Co., Ltd. as the basis, set up a tea planting professional cooperatives, mobilizing villagers to adjust the industrial structure, and actively transfer the land 600 acres,

all planted tea. The village has 150 acres of collective tea plantations, of which 50 acres have been planted for 2 years to 1,500 yuan per mu of the price of circulation to the Jinan Hengtai Science and Technology Development Company management, the village sent the villagers to help companies manage tea, each can also be 1500 Of the income. To increase the income of the villagers, the village decided to all contracted to skilled villagers management, only to the village to pay 3,000 yuan per mu contracting costs. The villagers Lanjun Zhong contracted 20 acres of tea garden, remove all expenses, annual income is also more than 10 million. Village cooperatives only receive contract fee and acquisition of fresh leaves for processing and sales. At present, the village has registered "General Hill" tea trademark and put on the market.

### 3 A game analysis of the cooperation among the villagers, rural tourism cooperatives and government

In the process of rural tourism development, the villagers, the rural tourism cooperatives and the government are equal cooperative relations, each as a rational economic man, from a rational point of view of their own interests, and rational analysis of the game, you can make The three areas of the distribution of benefits to achieve the best balance, and promote the healthy development of rural tourism. October 1, 2015 Jinan City, Shandong Province, the first set of modern agricultural development, rural cultural and creative, rural life experience as one of the rural tourism complex - "Qilu 8 Style Road" tourist tourism, officially launched operations, will create a Shandong Province, an important leisure, health tourism destination and the well-known rural tourism demonstration zone. In this case, Jinan City, Shandong Province, Changqing District Wande established the "Shandong Culture Culture Tourism Co., Ltd. No. 8," Jinan, Shandong Province, Changqing District Wande Zhen Ma North Village set up a "Cooperatives ", tourism companies and tourism cooperatives were established after the establishment of a number of projects, such as " Qilu Road on the 8th, "the northern village of Ma Kitao cultural B & B, Le Wo self-driving camps, self-picking tea, animal intimate contact and other projects.

#### (1) Game analysis between villagers and rural tourism and cultural companies

Villagers and rural tourism and cultural companies in accordance with their respective interests of the cost of cooperation or refused to cooperate in the development of rural tourism strategic choice.

**Figure 1:** Game analysis between villagers and rural tourism and cultural companies

		乡村旅游合作社、旅游公司	
		合作	拒绝
村民	合作	80, 80	-20, 20
	拒绝	20, -20	0, 0

In Figure 1, the two squares represent the benefits of a cooperative or denial strategy. The result is that there are four kinds of static game results: First, the villagers and rural tourism cooperatives and tourism companies both expressed their cooperation in tourism development (Figure 1, upper left grid), the two sides benefit the most, for example, many villagers have two sets in the village housing, a house is on the housing, the other is in their own contracted forest land or land on the new housing, the villagers use their own family of extra housing, as long as equipped with air conditioning, bathroom, kitchen and other facilities, you can receive tourists, travel cooperatives have someone responsible for cleaning, one night accommodation 100 yuan, 60 yuan villagers, co-operatives get 40 yuan; Second, the villagers and tourism co-operation and tourism companies both refused to game development Rural tourism area (Figure 1 the lower right grid), the two sides do not need to pay the cost of co-investment, but the two sides received zero income, which is not willing to see the situation, the villagers unused houses have not been used, Tourism cooperatives and tourism companies have no income; third and fourth are in favor of cooperation, the other refused to cooperate (Figure 1, bottom left corner and the upper right corner). Agree to get benefits, but because of the other opposition, to pay a larger investment costs. There are many reasons for boycotting cooperation, which is summed up as low or no return on investment. From the analysis of Figure 1, there are two kinds of equilibrium in the static game of the cooperative relationship between villagers and tourism companies: one is the top left grid in Figure 1, the game between the community and tourism companies both show that cooperation in tourism development, investment cooperation costs, Both the benefits are the maximum value, which is a win-win situation. The other is the lower right of the grid cell in Figure 1, the game both sides refused to cooperate in the development of rural tourism, at this time because there is no co-investment costs and therefore did not produce co-benefits. According to the principle of benefit maximization, the rational game both naturally choose the first equilibrium state, and make the cooperative decision of common development of rural tourism.

## (2) Game analysis of villagers, rural tourism and cultural companies and government

At present, China and Shandong Province, many rural tourism, competition is fierce, while the core competitiveness of rural tourism is the brand, tourism, public brand with "public goods" some of the features. Since the governments in the region, the rural tourism companies and the villagers are all rational, it is only from the perspective of self-interest to consider that the marginal benefit equals the marginal cost, and that the government, tourism company and villager The

"public dilemma" will emerge. A well-known theoretical model of game economics is the theory put forward by Professor Hardin in his famous essay "The Tragedy of the Commons" (1968). Every shepherd who gains from the shepherds, and every rational shepherd tries to enlarge his grazing, and when overgrazing, he faces the "communal tragedy", ie the degradation of pastures. In fact, the northern village of horse set because of the elegant environment, quiet quiet, a lot of city people to buy land or rent a house or villa, because there is demand, the village committee that can bring benefits to the village and the villagers, the transfer of collective Land or village villagers have the proceeds, the transfer of land after the construction of housing, the village or villagers can have income, so even on the slopes in the perennial dry river are covered with villas, Jinan City Land Resources Bureau in 2011 because of the occupation The river forced the demolition of a dozen villas. Hill more hundreds of villas because there is no unified planning, ranging from high and low, and even some damage to the mountain vegetation, affecting the natural landscape.

We can find that in this tourism to build a public brand in the game, both for tourism in general, or for the government, tourism companies, the villagers themselves, the best result is the three areas together to create tourism public brand , "Qilu 8 style road" is such a brand, brand design creative, this tourism line connecting Jinan to Tai'an between the six villages, fully embodies the local residential ecology, life, etc., the six village function points (The village), the customs area (horse farm), the Baxi customs area (Bashan), the scenery area (Jade Emperor Temple), the hometown customs area ) Six regions. So that visitors come here, close to the landscape, close to nature, really had a farm life authentic.

In the above three-party game, if one party from the interests of the region, to shape the investment of public brands, while the other two parties do not nurture public brands, sit back and enjoy. Then this will increase the cost of production inputs, the price is necessary to improve its tourism products will not be competitive. This led to the "tragedy of public rangeland", its essence is the formation of individual rational aggregation of irrational results. The game not only reveals the contradiction between the individual rationality and the collective rationality in the public brand shaping process of tourism destination, the individual benefit of tourism enterprises often can not achieve the maximum benefit of the whole tourism industry, and even get quite bad results. In the tourism public brand cultivation process, the face of these conflicts is not the market can be resolved spontaneously. Therefore, the implementation of government-led strategy to break the tourism enterprises in shaping the public places in the tourism brand Nash equilibrium is very necessary.

#### 4 Cooperative strategy based on game relation

Coase theorem pointed out that as long as property rights are clear, transaction costs are zero, through the market mechanism can achieve the effective allocation of resources. In the market economy, the transaction costs down to zero is almost impossible, but the clear property rights is one of the conditions to effectively reduce social costs, based on the above theory, we can put a clear allocation of property rights in place to overcome the tourism public brand building. The "property tragedy" of property rights is to establish exclusive property rights.

(1) from the government's point of view: the representative of public places of tourism should be the local government, property rights since it has been clearly defined, the Government should actively create new mechanisms to the tourist destination of the public brand of this intangible asset as a real price Assets to supervision and management. First of all from the beginning of the planning, it is necessary to invite professionals to conduct research and study, so that planning is reasonable, while protecting the development of the ecological environment, the "Qilu 8 Road" The government after several inspection and demonstration, in Jinan City Landscape Design Institute and Taishan Tourism Planning and Design Institute with the help of the village committee and the villagers in the consultation on the basis of the completion of the tourism route planning in the planning process to consider the villagers and the village Committee of the interests of the village committee and the villagers have a sense of responsibility and mission. In the actual operation process, if the rural tourism company and the villagers have the game conflict, the government should guide and coordinate as the guide and the coordinator, reduce the conflict and the contradiction, achieves the three aspects benefit sharing, the risk same. At present, Wande town government established the Qilu 8 style road professional website, allowing more people to understand the customs here, the beautiful scenery, better publicity Qilu 8 style road.

(2) from the perspective of rural tourism companies: rural tourism companies and the villagers through the game, you should see the importance of the villagers in the development of rural tourism, we must put the interests of villagers on the basis of equality and mutual benefit, only two sides Effective, and cooperation can be long; another rural tourism companies in the process of developing tourism must protect the local ecological environment, the infrastructure to be coordinated with the local environment, can not damage the mountains, vegetation, ancient buildings, to be protected And the development of combining, take the road of sustainable development of rural tourism.

(3) from the perspective of local villagers: the villagers in the development of rural tourism at the same time, to actively participate in the relevant tourism knowledge training, improve their overall quality, business technology, business level, master Internet technology, you can try to open online travel accommodation to host The attitude of good hospitality visitors, through sincere service, high-quality goods, beautiful scenery, honest folkway to establish a good reputation, attract repeat customers to attract more tourists to leisure and tourism.

Only according to the game relationship, the government should consider the development of tourism from the angle of government, rural tourism cooperatives and villagers. The government should plan the development direction, formulate complete and complete rules and regulations, and establish reasonable cooperation between villagers and rural tourism companies. Mechanism, three aspects of cooperation, in order to effectively promote the rural tourism villagers and rural tourism companies of benign interaction, to ensure the common prosperity of community and rural tourism.

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### **Part 3 Sustainability and health**

#### **G Sustainability policies in China in view of the anticipated new concept of principal contradiction: Development perspectives for environmental technology projects of German small to medium sized enterprises**

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## 1 Initial considerations

The People's Republic of China (PRC) has left its domineering mark on world economy in more ways than one, over the past years. Popular conceptions are plentiful that prove this point. Attention must be paid to the fact that the Chinese economy is currently - and has been for an extended period of time - the world's biggest trading nation, claiming 10 % of imports and exports of the entire global trade. China's economic position, as logical consequence but all the same remarkable, has been characterized by a steadily increasing above-average GDP growth rate during the last decade; by global comparison.

These findings also cast shadows over the economic development of this vast country, disclosing several downsides. Already in 2011, China surpassed the USA as the world's largest consumer of energy (Gu and Mayer, 2007). To meet energy demands, China's energy mix heavily relies on coal consumption, which in peak times amounts to 70% of its overall energy consumption.

The ecological strain, which strong economic growth spurts have brought about in regard to air pollution or pollutants into water and soil, need not be elaborated on but are fraught with many problems; mainly because of the sheer size of ecological pollution.

In the light of these circumstances, it is hardly surprising that day-to-day life in China has been permeated by sustainability discourses and efforts for some time, which penetrate politics; and especially economic policies.

This development is of two-fold importance in the course of the following considerations. On the one hand, sustainability needs to be viewed in the context of China's transformation process from a socialist centralized economy to a socialist market economy. On that condition, it is consistent to conclude that environmental issues and appropriate measures are shaped by other patterns than in Western industrialized nations. On the other hand, this problematic situation demands considerations of fundamental importance in regard to Chinese politics and Chinese everyday life, which in the view of the author, is understood to be crucial for better comprehension of China's recent history and future.

The Concept of Principal Contradiction was widely popularized by Swiss sinologist Harro von Senger; particularly in the German-speaking world, as "Hauptwiderstandslehre". The argumentation that is assigned to this concept is suited to lead to more evidence, which underpins China's future role in regard to setting particularly strong sustainability standards in the area of economic development policies.

## 2 Environmental policies in the context of China's transformation process

As stated earlier on, up until recently Chinese transformation policies were shaped by an ideology of economic growth, which showed hardly any verifiable concern for sustainability issues. However, it is noteworthy that environmental protection was incorporated in the *Chinese Constitution* as early as 1978, and has influenced a great number of regulatory activities (Sternfeld, 2008). This can be traced in political guidelines pertaining to economic and social policies under the Chinese *Five-Year-Plans* (Baumgartner and Godehardt, 2012), providing significant insights.

Thus, it soon becomes apparent that the 11th *Five-Year-Plan* (2006-2010) is of fundamental importance. Up to this point in time, environmental practices were not at all irrelevant. In fact, they are clearly reflected in a variety of regulations; for instance, in the *Environmental Protection Act* that was passed as early as 1979 with a focus on water, marine and air pollution. It also included the Soil Protection Act and policies pertaining to safeguarding of land and the protection against further desertification.

The scope of these measures must be rated as less important and thus subordinate to the more important economic goals of the transformation process.

The *Act for Promoting Renewable Energies* - that was passed by the *National People's Congress* on 28<sup>th</sup> February 2005, as part of the 11<sup>th</sup> *Five-Year-Plan* that came into force on 1<sup>st</sup> January 2006 - must be viewed as turning point in the conjunction of circumstances relating to economic and environmental standards within the broader context of China's transformational policies.

The paradigm shift is probably owed to the fact that political decision-makers have realized serious cause-and-effect relationships; concluding that collateral environmental damages obstruct economic growth in the aftermath. Although the quantification of these interactions can be disputed over, the following examples provide applicable proof:

- In a report issued by the *State Environmental Protection Administration* (SEPA), environmental costs are estimated of at least 51 billion euros; which is approximately 3 % of GDP.
- World Bank estimates amount to as much as 12% of China's GDP; approximately 200 billion euro.

Legislation was thus complemented by implementation regulations that specify the following aspects of sustainability development:

- Declaration of non-fossil renewable energy reforms, such as wind and solar power, hydropower, biomass, geothermal energy, and tidal energy.
- Determination of application scopes for power generation, hot water and fuel production.
- Assignment of stipulated obligations pertaining to policies on municipal, provincial and national levels of government as well as to Chinese power producers.

The government's goal, that ties in with this legislation, is to cover 16 % of primary consumption requirements with renewable energy by 2020; which at the time was a doubling of the then available quantity. The required investments were estimated at approximately 170 billion euro.

How the use of non-fossil energy forms can be substantiated, was outlined in a forecast presented by the *National Development and Reform Commission* (NDRC), as shown in Table 1 below:

**Table 1:** Forecast of the use of non-fossil energy sources in China

	2005	2010	2020
Hydropower	115 GW	190 GW	300 GW
Wind energy	1,3 GW	5 GW	30 GW
Photovoltaic energy	70 MW	300 MW	2 GW
Solarthermal energy	80 Mio. m <sup>2</sup>	150 Mio. m <sup>2</sup>	300 Mio. m <sup>2</sup>
Biomass energy	2,3 GW	5,5 GW	20 GW
Geothermal energy	30 MW	4 MTCE <sup>1</sup>	12 Mio. MTCE

Source: Augestad (2007, pp. 69).

This rather fragmented outline of the environmental dimensions, as part of the Chinese transformation process, makes it perfectly clear – even at this point, that

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<sup>1</sup> Million Tons of Hard Coal Units (MTCE).

attention must be paid to the current status quo. Consequently, it can be stated that the renewable energy sector is well on its way to becoming a dominant and important pillar in regards to China's transformation policies.

Notable examples that underpin the aforesaid abound. As Australian energy researchers Mathews and Tan state, in a recently published article in the specialist journal *Nature*, China's energy legislation is taking on a forerunner role (Mathews and Tan, 2014):

*„China is leading the way. By placing the emphasis on production scale and market growth, it is contributing more than any other country to a climate-change solution. Its build-up of renewable-energy systems at serious scale is driving cost reductions that will make water, wind and solar power accessible to all.“*

Equally interesting is the comparison of renewable energy development goals, as stated above for 2007, with the currently available data. The overall performance forecast for wind energy for 2016 with 30 Gigawatt (GW), is compared to an installed wind power capacity of 145 GW. China far exceeds the total capacity of the EU that is to date 141,6 GW (see Global Wind Report 2015)<sup>2</sup>. This serves as a clear indication that China's energy mix constellation is changing, which is also indicated by a reduction of 2,5 % of coal fuel production in the country, as was announced in 2015.

Having said this, one needs to add that critical responses have some merit. This is due to the fact that coal fuels still play a predominant role in China's energy mix. In consequence, China is emitting the highest CO<sub>2</sub> levels in the world.

In Western societies, concerns have been voiced regarding China's ability - or rather the ability of China's various governmental bodies - to appropriately treat sustainability issues. The author of this article is convinced that considering the *Concept of Principal Contradiction* will contribute to the issue in question.

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<sup>2</sup> [http://www.gwec.net/wp-content/uploads/vip/GWEC-Global-Wind-2015-Report\\_April-2016\\_22\\_04.pdf](http://www.gwec.net/wp-content/uploads/vip/GWEC-Global-Wind-2015-Report_April-2016_22_04.pdf).

### 3 The Chinese concept of principal contradiction

Unlike other transformation policies in the area of regulatory reforms that were passed in other countries over recent decades (e.g. in the former Soviet states in Eastern Europe), the regulatory reforms introduced by Deng Xiaoping in the late eighties show some particular distinctions.

The pursued goal to establish a socialist market economy of Chinese design is regarded by many observers as economic phenomenon. Resulting achievements are noteworthy because no other country in the world has shown itself to be capable of passing through a variety of manifold and partly extremely opposing development phases within barely one hundred years.

At first glance, this is confusing to a Western mind set. However, the below outline offers ample entry points for further clarification (Ritter, 2016). The conceptional starting point is based upon Chinese everyday life - despite its manifold discontinuities that have occurred since the 1930s right into our day and time - that features a constant: The presence of *The Communist Party of China* and the postulation of Marxist principles. For instance, the conviction of the superiority of a communist economic and social system. The ideological foundation needs to be related to the inherent alignment with relevant governmental or national activities according to the Marxist teaching of the contradiction between bourgeoisie and proletariat.

The concept of contradiction that was formulated in 1978 highlights the chasm between the Chinese people - with growing material, as well as cultural, needs and demands – and the lack of productivity capacity in a backward society. From an ideological point of view this can be viewed as an explanation for the take-off point of the transformation process. To resolve the paradox, the *Communist Party of China* determined a clear time frame in what one could call “*China’s Centenary Goals*”:

By 2021, in the 100<sup>th</sup> founding year of the *Communist Party of China*, an all-affluent Chinese society is to emerge, which is to be brought about by further economic development. Furthermore, by 2049, in the 100<sup>th</sup> founding year of *The People’s Republic of China*, social modernization efforts are to be completed.

In the context of the issues presented here, it is negligible at what point exactly and with which quality level China’s political decision makers consider their centenary goals implemented. Far more interesting is the question what the new concept of contradiction is going to be, once this one has come to its completion.

According to sinologist Harro von Senger, it is plausible that sustainability will take the centerpiece position, along with recovery and safeguarding measures for a life-sustaining environment.



#### **4 Final considerations**

Many observers in the West conclude that China's economic development is characterized by a multitude of paradoxes. Often their assessment is based on ethno-centric considerations, which do matter partly. However, this approach falls short of treating the problems at hand adequately. The presented sustainability aspects need to be concretized, as follows:

Specific circumstances within the overall Chinese transformation process have encouraged a simultaneous – but not always synchronous - consideration of economic and environmental aspects in China in how they influence economic development processes.

The *Concept of Principal Contradiction* is a very important concept. However, far more worthy of attention is the possibility that sustainability concerns could attain a relevance as never before in the history of China. Keeping in mind the sheer size of the country and its great impact on world economy, one may conclude that this particular national economy could develop into a global key player that takes sustainability policies and measures forward in a proactive way.

The availability of German environmental technologies will undoubtedly play an important role in addressing this new Principal Contradiction. Indeed, for active German SMEs in this industry, medium to long-term unforeseen growth opportunities have now arisen. However, the realization of such is dependent on two issues:

Firstly, the ability and willingness of the responsible stakeholders to initiate the necessary internationalization processes both timely and systematically.

As well as the realization that the size of the projects to be handled will require careful and cooperative negotiation with local partners.

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### **Part 3 Sustainability and health**

#### **H Changes in the sports economy – Consequences for SMEs in the sports and health sector**

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**Abstract**

In this article the Competence Section of Sports Business (KSW) for Sports Economics & Sports Management of the German Competence Centre SMEs and Entrepreneurship (KCE) is concerned with the critical situation of SMEs in the German and Chinese fitness, health and sports industry based upon their research studies. The two substantial factors 'spiral of market flexibility' and 'real virtuality' jointly responsible for the changes in sports economics are presented. Furthermore one aspect of the consequential core-cause is introduced under the term of 'vacant sports management'. The article concludes with an outlook on the factors threatening the existences of most Chinese and German SMEs as the lack of universities' degree programmes in the sectors of sports business (sports economics and sports management) and the absent intensification of scientific research.

## 1 Introduction

The fitness, health and sports industry is besides constant growth characterized by excellent future prospects although this does not apply to all enterprises. While large chains and group of companies held by investors show disproportionately high growth rates, SMEs operate under enormous competitive constraints endangering their future performance.

Promises of resolutions to this problem are well dealt commodities in times of insecurities. Every year business consultancies specialized on this industry push dozens of self-made trend concepts on the market, promising cure for injured SMEs. But instead of enabling fundamental restructuring for an economic turnaround these trend concepts shape up as mere licensing for marketing campaigns the lack of fundamental scientific research identifying actual causes, evaluating approaches and converting these findings into new sustainable restructuring concepts for affected SMEs is necessary. This exactly is addressed by the research and counselling of the Expertise Section of Sports Business (KSW) for Sports Economics & Sports Management of the German Competence Centre SMEs and Entrepreneurship (KCE).

The KSW examines two substantial factors jointly responsible for the changes in sports business applicable for Germany and China. First belongs to the sector of sports economics and refers to the rapid growth of chains and enterprises. This can be combined under the caption 'spiral of market flexibility'. The second factor is intrinsically concerned with changes in sporting activities due to new technologies and the connection to virtual reality and is recapped under the term 'real virtuality'. Furtherly combining both factors results to the core-cause concerning the sector of sports management and above all the education of sports managers which can be described as 'vacant sports management'. The situation of the core-cause resulting from both factors is additionally hindered by the demographic change's enormous influence.

Below the substantial factors 'spiral of market flexibility' and 'real virtuality' as well as the resulting core-asset 'vacant sports management' are to be introduced after enabling an insight to the German and Chinese industry by giving certain economic data.

## **2 Industry revenues**

2015 Europe repeatedly presented itself as the economically strongest region in the fitness and health industry. By contrast with every other region China still holds the most rapid growth rates. While the German fitness and health industry grew about 74% from 2004 to 2014, the Chinese counterpart managed to grow about 84% in only half the time from 2009 to 2014. In comparison of the time span between 2014 and 2015 the Chinese growth rate was five times as high as the Germans'.

The significant difference between China and Europe is that China includes production incomes for machines and attachments in their economic results, while the income in Europe, especially from Germany, almost exclusively derives from the service sector.



### 3 Chain stores replace individual family businesses

Regarding the fitness industry in Germany and the most important market figures as number of enterprises, number of members and sales volume a trend becomes apparent.

Between 2014 and 2015, the number of enterprises increased by about +3.8 % to 8332. In contrast, the number of chain companies increased about +11.8 % to 3513 enterprises. The number of members in the entire industry rose about +4.2 % to 9.46 million, while chain companies generated a growth of +14.2 % to 4.82 million. The industry increased about +2.7 % to 4.83 billion € in sales volumes, on the contrary the chain companies could generate a growth from +14,2 % to 1.93 billion €. The fifth biggest players on the market (McFit, Fitness First, clever fit, Kieser Training, Injoy) reclusively pocketed 13.3 % of the total market's sales volume with 744 million €.

This enormous growth of chains and company groups (C&C) compared to SMEs also shows an enormous shift of the market. Growth rates of enterprises in opposition to the entire industry lead to the conclusion their growth is borne at the expense of SMEs. This assumption is supported by slightly increasing sales volume data of the entire sports, fitness and health industry primarily elicited by franchise economics. 'According to the statement of the German Franchise Union in the year 2014 already 9 percent fell upon these sectors amounting to about 6.6 billion Euro. According to the Union of Employers of German Fitness and Health Centres the fitness industry (without the sports and health industry) achieved about 4.7 billion Euro in sales volumes in the year 2014. While [...] sales volumes in fitness studios from 2004 to 2014 increased from former 2.7 billion about 74%, franchise economics increased their volume of sales about 162% over the same period. The number of owner-operated studios significantly dropped during the last ten years and will continuingly decrease about at least 10%.' (Pauling 2015,2): 52, translation by the author).

This already leads to 'banks and capital providers investing in fitness-franchise-systems, but not in small fitness-enterprises. This quasi blocks the way to credits for independent founders of new businesses. Existing older single-centres also barely obtain credits for necessary investments, accelerating their recession.' (ibid.).

The centre of insolvency and restructuring of the University Mannheim provided one of the most extensive surveys concerning the question of insolvency causes and was conducted on behalf of Euler Hermes. This survey mentions 'funding

gaps' with 76 percent as the second most important cause. If the lack of credits as cause of these 'funding gaps' frames restructuring and adaption to the competition as impossible, the descent to insolvency is inevitable.

According to the last analysis of the industry by Creditreform in 2013, 37.5% percent of German studios show a return on assets of less than two percent. The situation in China is even more precarious: Only 20 percent of all sports facilities in China are profitable (China Sports Business 2011).

The growth of C&C and denying SMEs required credits for their turnaround is not the crisis' cause but only one of its symptoms. One of the causal factors is the enormous flexibility of C&C. Their ability to adapt to annually changing trends in the market or even introducing own impulses faces the SMEs' inability to sufficiently observing the market to prematurely recognize shifts. This inability lays in the lack of expert knowledge and the management of human resources, which will be furtherly characterized in the point of 'vacant sports management'. While C&C can afford trained and specialized sports managers, in the SMEs mostly few all-rounders are overstrained with simple day-to-day routines. A similar management problem is detectable in China also as asserted by Deloit's: 'Most gyms are having problems in management strategies and operation.' (China Sports Business 2011).

The C&Cs' competitive advantage of enormous resources can easily push SMEs especially in terms of expert knowledge and human resources management. The C&Cs' sales volume subsequently increases with every small extinguished family business in the overtaken sectors of the markets and every further expansion of not yet accessed areas. It is a spiral forming around their outstanding flexibility in competition.

The best example of this 'spiral of market flexibility' is Europe's biggest fitness enterprise McFit that founded the franchise chain High5 in 2015. With this concept McFit quickly and creatively responded to the New Year's trend 'functional training'. The competitive price of below 10 Euro per month and membership substantiates the enormous competitive strength. This price cannot be accomplished by the smallest one-man-SME which is the reason for criticizing High5 or rather McFit. Despite this critic one must admit 'that the concept of High5 correlates the spirit of current times.' (Pauling 2015,1): 18, translation by the author).

#### 4 The way in which people train changes

‘The ancient Chinese sport includes three disciplines: Military Sports (horseback riding, archery, wushu, etc.), Yang Sheng (health care) and popular games (e.g. Cuju.). [...] Cuju was an ancient sport similar to football, which was played in China and Korea and Japan. Cuju emerged since the time of the combatants States about 2,500 years ago.’ (Liu 2008: 40, emphasis added and translation by the author).

People always got exercise and sports have always been organized, systematized and commercialized. Historical sports form the basis, i.e. generation 0.

A brief overview on how exercising in the fitness industry evolved:

- The classic equipment-based gym is fitness of the generation 1.0 and was started with the first fitness studio of Hippolyte Triat 1847 in Paris. Special and new about this generation of ‘equipment-based exercising’ was the idea: of single movements on automatic lanes. ‘Equipment-based exercising is a form of fitness and/or health-safety training, which is completed on machines that are designed mainly for workout devices which are mainly designed for developing strength.’ (Stemper 1994: 12, translation by the author).
- In the generation 2.0 ‘group fitness / aerobics’ the step of group movements in free space followed. ‘In Aerobics a form of rhythmic gymnastics is performed to music.’ (Pauling 2016: 34, translation by the author).
- The expansion of generation 2.0 followed. ‘The second revolution occurred after the conversion to service fitness. Previously the product Fitness was for sale. [...] Today we only speak of service in the following and not about a product.’ (Pauling 2004: 2, emphasis added and translation by the author).
- Through generation 3.0 and personal training sports became even more individual. The idea: One single client is trained personally by one coach. ‘Personal Training is a form of workout support. One single client is trained personally, directly and individually by a qualified trainer according to the current principles and findings of sports science, sports medicine, sports teaching.’ (Pauling 2004: 2, revision and translation by the author). Personal Training is not linked to a specific kind of sports but can be used as support for every sportive workout. In a broader sense Per-

sonal Training is a general concept, a way of life and a health management system. The client shall find to a balanced lifestyle forming a unit with his spirit, diet, exercise and relaxation.

- In the Generation 4.0, fitness came via to-homes, via web or as an app on smartphones and tablets. The idea was to make fitness digital and mobile. In 2004 already the Nokia cell phone 5140 transmitted the training data of a heart rate monitor via SMS worldwide. In 1995 a radio system from Polar already sent the pulse data of students to a display system in the aerobics studio. In 2013, in the category 'health' an estimated 5 billion apps have been downloaded. The magazine PC-World asked with reference to the Consumer Electronics Show (CES) in Las Vegas: "Will 2014 be a digital historical turning point?" (Stelzel-Morawietz 2014: 8, translation by the author). "Many manufacturers presented so-called wearables, these are bracelets and fitness activity sensors with network connectivity." (ibid.). The Handelsblatt published a prognosis under the title 'Wearables: the next billion market? Sales trend for wearables in Europe' that forecasts sales turnovers of 5.59 billion in 2016, 7.22 billion in 2017 and 9.03 billion in 2018.
- With modern video game consoles generation 5.0 was launched. The Eye Toy Camera (idea from 1999) was introduced in 2003, Eye Toy Kinetic for the PS2 in 2005 and Kinect for the Xbox followed in 2010. Special for this step of evolution was the ability of computers to detect motions.

Following points of developments on which has been researched since years or on which currently is researched are listed. We are talking about visions that have not yet been realized in the possible extent.

- Fitness 6th generation: Already almost a decade ago in 2005, the personal trainer, sports scientist and business coach Kai Pauling began working in secret with a major European telecommunications company on Fitness Sport 6.0. In the near future the vision's implementation will be technically and especially financially possible, comprising the global virtual network of fitness content providers and home/mobile exercisers. In addition kinetic and physiological data will be collected interactively. A personal real-time training supervision by a personal trainer via live stream can be realized.

- Fitness 7th generation: Autosensitive training (Successor of EMS training). Autosensitive: New technical term created by the author for a training/workout. The training stimulus (e.g. for a muscle) is created fully automatic. It is not necessary that a stimulus of the body or its nerves has been created before. Essential characteristics are no self-motion, no exercise equipment, self-learning training control and it can take place anywhere at anytime. A step in the evolution of generation 7.0 is the development of Antelope. 'The Antelope fitness suit sets joggers under power. Weights or headwind simulate and thoroughly massage: The Antelope fitness suit is to bring the body of amateur athletes with more than 100 electrodes in top form quickly. The prototype in the test. [...] The only problem is the price - just under 1300 Euros are already large amounts of cash.' (Die Zeit 2016, translation by the author).
- Fitness 8th generation presents a combination of stationary training in a gym and a parallel virtual online training (device supported cloud training). A first step in this generation's evolution are amongst others treadmill controlled by Google Glasses or 3D training equipment by tecnobody. Target is the establishment of hybrid devices with the characteristics of reactive resistance control, motion detection and global/local interactive networking/control. The Hybrid devices are interfaces between a person working out and its virtual avatar who interactively coaches and is network controlled while being integrated to the cloud, e.g. social media or computer games. The generation 8.0 lets virtual reality become real virtuality. Another small step towards this direction was recently made by the premiere of fitness machine 'Icaros'.

It is obvious that the industry will go through fundamental changes in the foreseeable future. There might still be classic fitness studios with workout involving exercise equipment and aerobic-courses but today already the growth of so called 'special interest' studios is exceedingly strong. They offer newest inventions and ideas mostly in form of micro studios that cannot be implemented equally fast even by C&C because these innovations are in most cases very personal, i.e. a person of enormous expert knowledge is required. These entrepreneurs can be hope and example for all SMEs, while they will barely be any future prospects for the mass of old SMEs without restructuring with regards to the new generations' technical and athletic abilities.

Besides fitness studios as service providers, manufacturers of equipment must equally adapt to the new ways of exercising and incorporate this for the development of new equipment.

## **5 Staffing needs for qualified professionals in the management in the future**

Two associations are linked under the term of 'vacant sports management'. First in the sense of 'vacant' as there are no sports managers, and second in the assumption that those available are mentally 'vacant' without any new expert knowledge or professional competence.

At this point, the first connection of meanings is to be explained. The KSW recently published a prognosis forecasting a deficit of work forces of estimated 170.000 sports academics and 100.000 fitness specialists in Germany by the year 2030 (c.p. Pauling & Vatanparast 2016). Responsible for this are the demographic change as well as the average annual growth of the industry until 2030 of 3.6% to 20 million members, i.e. there is a penetration rate (share of fitness members to inhabitants) of 25%. In this situation at least 500.000 qualified workers (currently 266.000) will be needed. After analyses of expected graduates figures and rates of employment in the industry only 50.000 sports academics and 40.000 fitness specialists add up.

There are several small private universities having already discovered this tremendous potential and massively extending the offered degree programmes in the sector of sports management. Especially demanded are dual bachelor programmes so the number of enterprises in the fitness industry engaging in co-operations with universities decreased by 23% from 3.000 in 2014 to 3.700 in 2015. The number of students of these programmes rose by 26% from 5.000 in 2014 to 6.300 in 2015. Compared to the count of required graduates in the future, current numbers of students are no longer sufficient.

The Chinese situation is more alarming. Although China is enormously bigger, the number of exercising citizens increased to 382 million in 2014 and the governments expects the sports industry to earn 71.9 billion Euros (524 billion CNY) in the next ten years, the industry has still 10.000 less qualified workers available than smaller Germany while the number of sports managers having run through university is vanishingly low. Adding on offers of degree programmes of sports management in China only slowly progresses and desperately needed dual bachelor programmes after the German formula of success are sought in vain though compared to the German prognosis China will lack millions of qualified workers due to demographic changes and shifts in the markets by the year 2030. But some universities have realized the potential and have taken up discussions in favour of a German-Chinese degree programme for sports management.

## **6 Conclusion**

In the KSW's view there is barely any hope for fundamental improvement of the German and Chinese SMEs situation, without universities offering new degree programmes in the field of sports business, i.e. sports economics and sports management, and without intensification of scientific research concerning this. C&C will control the market to such a large extent, the economic downfall of SMEs will continue without checks.



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**Table 1:** Industry revenues worldwide

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	€ (Bn)	¥ (亿)	Global %
<b>Europe 欧洲</b>	23.7	1732	31.6%
<b>USA 美国</b>	21.4	1564	28.5%
<b>China 中国</b>	17.9	1308	23.9%
<b>Others 其他</b>	12	870	16.0%
<b>Total 总</b>	75	5474	

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**Figure 1:** Industry revenues in China

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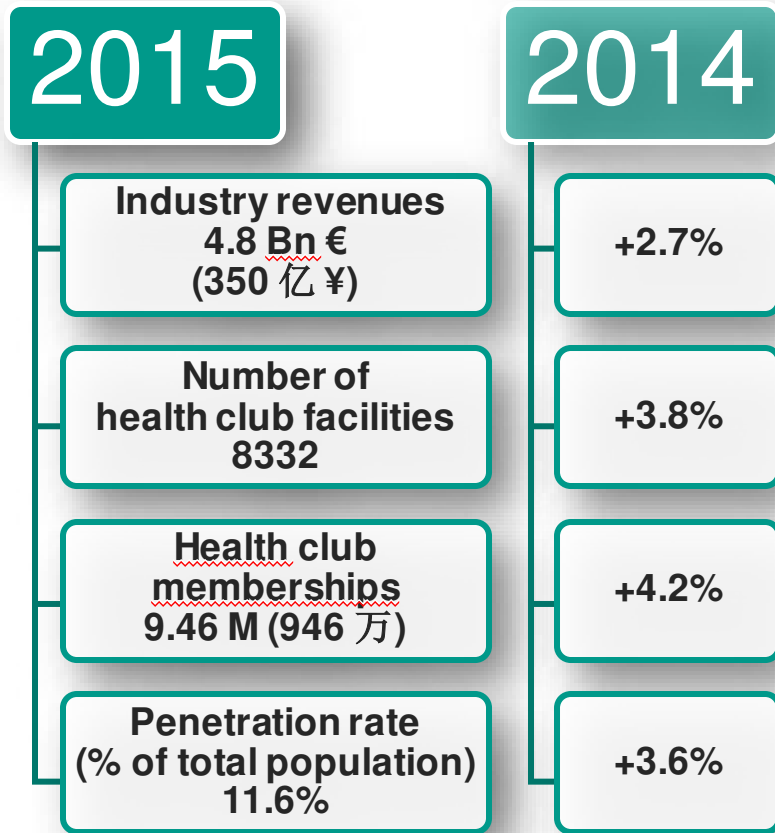
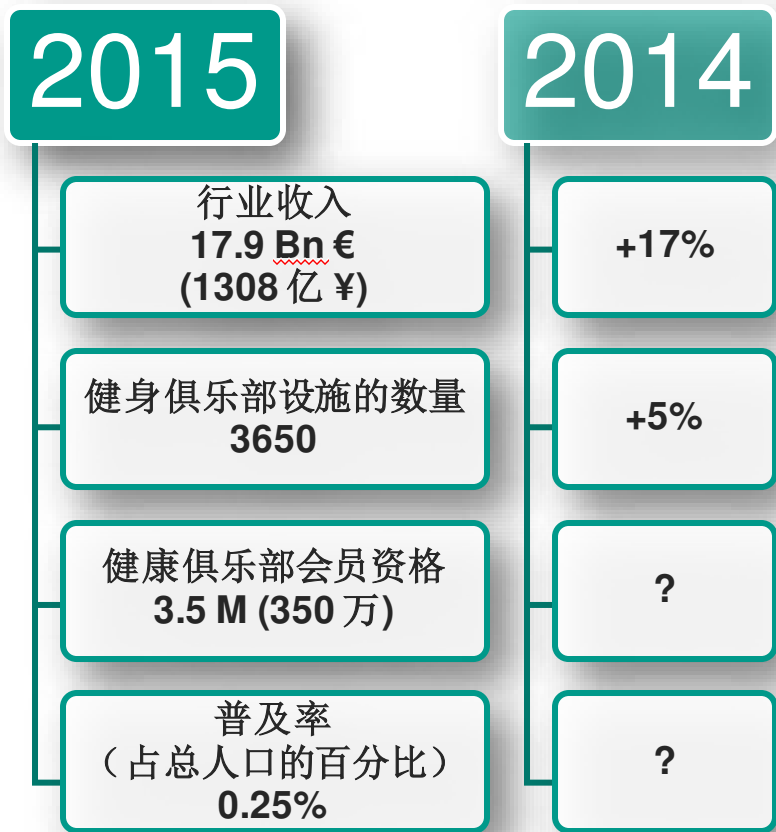


Figure 2: Industry revenues in Germany

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## **Part 4 Information security and recruitment**

### **I Requirements for information security: Possible development in countries like China and impact on student education**

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Information Security, ISMS, ISO 27000, Globalization, SME

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## Abbreviations

IEC	International Electrical Commission
ISMS	Information Security Management System
ISO	International Standard Organization also Information Security Officer
PDCA	Plan DO Check Act (cycle)
SME	Small and medium sized enterprises
VDA	Verband der Automobilindustrie

### **Abstract**

Globalization and intense usage of technology characterize the further development in industry and administrations. SMEs (Small and Medium sized Enterprises) apply this in a similar way; SMEs may be independent companies as well as being part of global enterprises with subsidiaries worldwide. In this technological context the penetration of information technology plays a major role.

Security requirements caused by intense usage of information technology in SMEs changed the responsibility and are to be fulfilled and to be realized in adequate way. The business environment for SMEs in Germany expects security organization and security technology from business partners. Information security has become an important role to be successful in global markets.

An essential condition is the state of knowledge of employees and candidates for a new employment.

## **1 Introduction: Information security for SMEs in Germany**

With the progressive introduction of information technologies in Small and medium sized enterprises (SMEs) in Germany and the globalization of production and market activities information security has become an essential challenge. Background is mostly getting the competitive ability and fulfilling the requirements of the market. Security requirements caused by intense usage of information technology in SMEs changed the responsibility and are to be fulfilled and to be realized in adequate way. Information security also ensures the preservation of a company.



## 2 ISO 27000 Standard

Information security could be divided into three different aspects:

- Organizational security (establishing an Information Security Officer (ISO))
- Information system security (more technical aspect)
- IT product security (includes applications, database systems and operation systems as well).

Establishing information security includes mostly implementing an Information system Management System (ISMS). At present, the most commonly used International Standard for information security management systems is ISO/IEC 27000. The ISO/IEC 27000 Standard is a family of Standards including the 27001 as actual standard, the 27002 as best practice explanations and 27005 for risk management. ISO/IEC 27000 is for companies and institutions to establish a security standard or ISMS. Requirement from market but also from the company itself can be fulfilled by realizing security in adequate manner.

The following examples and descriptions are based on actual version 2013. ISO/IEC 27001 describes methods for establishing ISMS according to PDCA cycle (Plan DO Check Act) also known as Deming cycle (Figure 1):

**Figure 1:** PDCA Cycle for ISO/IEC 27001

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Source: [http://cdn.softbank.jp/en/corp/set/data/csr/management/riskmanagement/policy/img/index\\_pic\\_01.gif](http://cdn.softbank.jp/en/corp/set/data/csr/management/riskmanagement/policy/img/index_pic_01.gif)

ISO/IEC 27001 contains the organizational framework for ISMS and references more than 100 control objectives and controls companies should establish in their organization and should consider for information technology and processes.

At this point, only a representative choice has been done. These examples are exemplary selected to show how extensive information security influences the organization of SMEs not only limited to Germany but also for other countries. Due to globalization and intense usage of information worldwide this is also valid for newly industrialized countries like China:

- **A.7 Human resource security** containing all phases of the employment divided into the areas:
  - **Prior the employment** with the control for contractual agreements with employees and contractors concerning organization's responsibilities
  - **During employment** with information security awareness, education and training containing organizational policies and procedures for job function
  - **Termination and change of employment** with duties that remain valid after termination or change of employment
- **A.14 System Acquisition, development and maintenance** containing controls across the entire application lifecycle divided into the areas:
  - **Security requirements of information systems** with providing services for securing applications on public networks i.e. portals for customer or business partner
  - **Security in development and support processes** with controls for system change procedures i.e. change management due to legal or business requirements system engineering principals or testing security functionality
  - **Test data** with control for selecting data carefully, protected and controlled

- A.18 **Compliance** containing controls to avoid breaches of legal, regulatory or contractual obligations related to information security divided into the areas
  - **Compliance with legal and contractual requirement** with controls for intellectual property rights, privacy of personally identifiable information and regulation of cryptographic controls
  - **Information security reviews** with controls for security policies and standards and technical reviews

Example set shows the intensive and deep going security aspect is handled in the ISO Standard 27000. Information Security is not limited to defending company against virus attacks and installing a firewall to protect assets of companies.

HR has to adopt security aspects from onboarding, during employment and off boarding. Company's application systems are in full responsibility including security of the SMEs. Compliance and political correctness are integral aspects from ISO 27000.

### 3 Security in SME in Germany

Security requirement or better the leakage of security in companies is not limited to major companies. Especially SMEs in Germany with a very specific knowhow about technologies, production technic and market may be occupied by competitors and other companies. The activity of state institutions of other countries are always and every ware present.

The competitiveness depends on the production and product knowledge inside the firm which has evolved over a long time. Security leakage may give this knowhow in a very short time and very comfortable if SME provides not correctly secured server in internet.

Security requirement contains Confidentiality to SMEs data with also includes data of customer. Customer data are also protected by laws like BDSG (“Bundesdatenschutzgesetz”). Beside confidentiality security requirement also include Integrity and Availability.

Integrity keeps data trustworthy by protecting system data from intentional or accidental changes. One goal of integrity is to prevent unauthorized persons like hackers from making modification of data or computer programs.

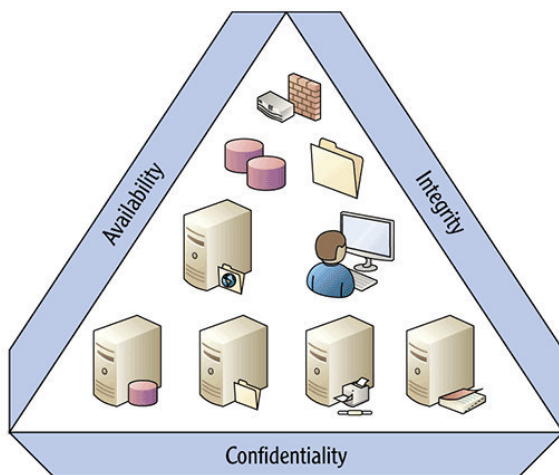
Availability keeps data and resources like server, infrastructure available for authorized user. Availability may be reduced or prohibited caused to different ways like:

- Denial of service (DoS) due to intentional attacks or because of undiscovered flaws in implementation
- Loss of information system capabilities because of natural disasters (fires, floods, storms or earthquakes) or human actions
- Equipment failures during normal use

The security goals **Confidentiality**, **Integrity** and **Availability** are also known as security-triad (Figure 2):

**Figure 2:** Security-triad

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Source: <https://www.safaribooksonline.com/library/view/microsoft-windows-security/9781118114575/c01-anchor-2.xhtml>

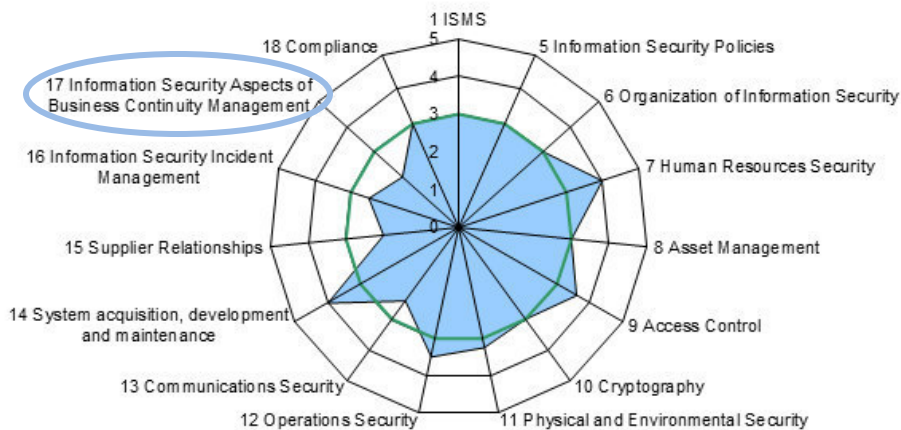
SMEs may be part of just in time production or are producer in automotive market. Quality requirement and requirement for security goals are very important for automotive manufacturers. For this reasons automotive manufacturers and German Association of the Automotive Industry (VDA Verband Deutscher Automobilhersteller) define security according to ISO Standard 27000 and performs assessments according to controls exemplarily shown above.

The so-called VDA Assessment derives from the 27000 controls a questioner which German SMEs have to answer to. Answers are oriented to a degree of maturity from 0= not existent to 5 – optimized).

27000-controls are grouped in domains. Examples above are taken from domains A7, A14 and A17. Following diagram gives an example of answers and lack of security requirements (here A13, A15, A16 and A17) (Figure 3):

**Figure 3:** Spider Diagram for ISO/IEC 27001 Domains (example)

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Source: Own calculation based on VDA assessment for ISMS, 2016.

Example is highlighted for domain A17 – “Security Aspects of Business Continuity Management”, which shows how far the Security assessment initiated by automotive industry influences organization and processes in SMEs involved in production process of larger car producers. Professional competence is required from employees to define and live processes for business continuity management. Manager and decision maker have to approve budgets to establish security process and to exemplify them. Especially because results of VDA assessment are base for further business development whole company’s interest is to fulfil these requirements.

#### 4 Education in China

Present situation in china is characterized by changes in industrial production. Chinese companies and especially SMEs do not want to be extended workbench for industrial nations any longer. They want to play a role in globalization with equal rights. Companies have to develop their own departments like product development, production planning and information technology. Globalization requires accepting and implementing international standard like ISO/IEC 27000. For these activities personal competences are required and employees have to adopt these competences. Education and especially universities have to hand over knowledge and knowhow.

Education of German universities with activities in China looks about the content of their curriculum and methods in Germany. At this point education focal points are set to information technology and processes. Following lists shows curriculum content and point for possible extensions:

- **Enterprise resource Planning Systems (ERP)** containing information about business partners, production planning, purchasing
- **Data Warehouse** containing relevant business data and base information for strategic planning
- **E-Business** containing customer data, product data and is the gate to companies backend-systems
- **Customer Relationship Management Systems** containing all relevant information about customer with operational and strategical planning aspects

There is lot of similar requirements to information security in countries like China. Although there are lot of differences between SMEs in Germany and China following aspect should be appointed:

- Globalization and global networks are unlimited
- Production processes especially for automotive manufacturers are relevant
- Development of Chinese industry show parallels to former German development

Importance of information security is appointed for industry and organizations. Industrial development depends on markets, technics and human resources. Human resources must be provided by competences and behavior respecting information security.

The content of teaching may be expanded for HR and Financials with security aspects. The module "Project Management" may be enlarged with case studies. Information technology should consider security technique, security service management and business continuity.



## **5 Summary**

Globalization and the more intense usage of information technology leads to higher interest for information secure. SMEs adopted already requirements from market and SMEs in china will follow this way. Personal competences are required and competence in information security is base for establishing secure environments and to play a successful role in global markets.

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## **Part 4 Information security and recruitment**

### **J The importance of employee recruitment and employee loyalty for SMEs in the face of demographic change**

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Demography examines causes for the development of the human population like structure and regional dispersal, employment, mortality, interferences of households and family as well as behavioral patterns which are specific for different generations. The demographic change as a finding of this examination identifies tendencies in the development of the population concerning its age structure, the relation of males to females, birth and mortality rates as well as changes in the percentages of different ethnicities. This change in the Federal Republic of Germany (80 Million citizens) is characterized by dropping birth figures, ageing and a general decline of population. It was brought into the public focus due to its importance for the competitive capacity in the economic sector and the consequences for the welfare system.

Since the beginning of the 70s the official figures of new-borns cannot completely replace their parents' generation. Without constant immigration by foreign workers and Germany's strong economic allurements, figures of population would have decreased long before our time. After the turn of the millennium the spillover of deaths over births could no longer be compensated by migration. This excess can be only be equalized by a considerably exceeding migration surplus than registered in the past. The strong immigration to Germany in 2015 due to the critical situation in the Middle East could be interpreted as a chance of compensating demographic tendencies. Until 2030 an enormous decline in birth rate and population figures close to 77 million is to be expected – of which 17% less will belong to the age group of children and juveniles and about 1/3 more will fall upon citizens older than 65 years.

The current structure of the population and a stable birth rate of 1.4 children per fertile woman – while the age of expectant mothers further increases – are significantly responsible for future developments, thus yet in the year 2030 Germany will not have enough citizens at employable age available, resulting in a tremendous deficit of qualified workers (Federal Statistical Office of Germany 2011). This critical tendency of birth rate is primarily responsible for the demographic changes influence on the German state, corporations and the society in its entirety. But this impact of the demographic change is not a challenge for the German society exclusively. The structure of population of the People's Republic of China – with roundabout 1.37 billion citizens – also shows tendencies known from typical industrialized countries: the Chinese population also ages. Birth rate in China enormously decreased in the course of decades. Whereas in 1960 the average Chinese woman delivered 5.5 children, this value dropped under 2.0 births per fertile woman in the nineties. This was primarily caused by the one-child-policy, which

was even circumvented in rural areas or by exceptional rules (Chang 2015). The birth rate today is at 1.7 and the average life expectancy (76 years) lays far above the Asian average. Thus, the Chinese society is threatened by obsolescence too (United Nations 2014). According to the OECD, per 100 people of employable age, there are merely 50 not-working senior citizens or children; this figure will gradually increase. Similar difficulties European societies are confronted with, need to be faced. These demographic tendencies do not simply affect the welfare system, but also the health care sector – through more retirees in need of care, consumption habits and the real estate market. Additionally, the demographic change has an enormous impact on the employment market, particularly challenging employers (Flato/Reinbold-Scheible 2008). There is a noticeable discrepancy between demanded work force and the actual supply on the market of potential employees.

A distinct development from a market determined by employers, where entrepreneurs were able to choose from a pool of potential employees, to a market determined by those employees, who are empowered to select and take the most suitable position with best working conditions among different corporations, is noticeable.

Qualified job applicants, conscious of their value on the market, will question more and more critically which employment to choose. Not only secondary and principal activities will play a prominent role in course of this decision, but also career opportunities, further promotion and the extent of their compensation as material or immaterial goods (Flato/Reinbold-Scheible 2008). Especially small and medium-sized enterprises (SME) are dependent of every single employee's commitment and their competences due to their specific structure. Enterprises in this magnitude notice the demographic effects more intensively and need to act against this by elaborate methods of human resources management. The recruitment of new work forces and above all the future engagement of available employees are of essential significance for SMEs in the face of the demographic change and the accompanying shortage of skilled employees of working age.

A timely discussion on this issue is necessary to prepare for the increasingly serious situation. Human resources are amongst the most valuable capabilities an enterprise has available. The Knowledge of employees is the determinant factor of corporations and national economies' efficiency. The popular strategy in human resources management of age specific task segmentation is no longer functional. Under the changed surrounding conditions enterprises must take specific measures to maintain available human capital or recruit new working forces to

not sustain casualties of innovation and efficiency. Central determinants for mastering the challenges of the demographic change are sustainability and long-term efficacy of applied strategies (Prezewowsky 2007). The partake of people of working age would need to remain at a constant level to maintain the contemporary growth of economy and the accompanying wealth. Workplaces need to stay attractive for the ageing employees and offer lots of schooling and support for new work forces, to maintain qualifications for entrepreneurial objectives and ensure the aged integration into a heterogenic group.

Employment of older workers in adequate occupations is highly economical: Especially small and medium-sized enterprises should consider, if systematic stimulation or even reactivation of older employees might turn out as productive. Primarily occupations supported by experience and mental abilities are to be efficiently filled with older workers, ensuring advantages in the market (Bal/De Lange 2015).

But besides further qualification of available workforces, recruitment of additional employees from a continually shrinking pool of young talents must not be left unattended. For though too few employees inhibit salesmanship and achievement potential of small and medium-sized enterprises, resulting into an unwanted incapability of accepting new orders. This is the starting point of 'Employer Branding' where the enterprises attractiveness compared to the large amount of other available workplaces can be especially emphasized through application of company-specific marketing concepts. Different instruments concerning issues as work-life-balance, competency development or age-based job engineering must be part of the basic repertoire of all future human resources management (Da Cruz/Holtz 2007). The qualified job applicant reveals all demands and wants to be apprised about prospects of promotion in the enterprise itself, about offers concerning professional and methodical progress and personality development as well about possible support to maintain a satisfactory work-life-balance. Focus is not least set upon a distinct presentation of corporate values and the specific management culture.

The work-life-balance refers to a healthy equilibrium of work and lifestyle. A potential employer showing sympathy for specific personal living conditions and offering support for a flexible arrangement of the work schedule for matters of family planning and child care, might be the determining factor for the applicant to decide in favor of this company. Especially for female workers support in this regard is of particular importance. Expectations raised during the application procedure

have to be satisfactorily pleased, since it would otherwise counteract employee engagement.

Evading shortage of qualified workers of working age in the national labor market by employing skilled workers from abroad is reasonable: Though those should be provided opportunities of becoming acquainted with potential everyday situations in suitable enterprises against their cultural and individual background. This includes information about the local traffic, health and welfare systems and above all the opportunity to learn about possible employers and advantages of a potential employment (Flato/Reinbold-Scheible 2008). Another possible outlook on the shortage of qualified workers might offer a solution by another industrial revolution referred to as 'industry 4.0'. Integration of industrial production and modern information and communication technologies is the main objective. The application of web-based technologies for communication between humans and machines is meant to target classical objectives like quality, cost and time efficiency as well as flexibility or efficient management of resources on volatile markets. Shortage of skilled human workers might be compensated by the distinct use of machines or even robotic technologies (Dujin/Geissler/Horstkötter 2014).

Lastly a critical evaluation of strategies due to the cultural differences between China and Germany is necessary. Not every approach to solving a problem working for German employers, turn out as effective for China. These suggestions for measurements of human resources management still offer a useful guideline. It is important for the field of human resources to act on the assumption of a socially oriented human being, which is emotional, limitedly rational and operating in its best self-interest.

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**Part 5 Financing and investment**

**K Research on cloud financing – Model of technical SMEs**

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## 1 Research background and significance

### 1.1 Definition of technical SMEs

Technical SMEs, generally refers to the knowledge-intensive economic entity in which the science and technology personnel occupies higher proportion in all staff. The production or service are full of new and high technology. Research and development funds of enterprises will be 2%—5% of annual sales income.

Technical SMEs have very high value and profound significance for the country's Hi-tech progress, economic development and social harmonious development. According to related statistics, they create about 65% of China's patent, more than 75% of technology innovation, and more than 80% of the new product in China.

### 1.2 Features of technical SMEs and the problem proposal

Technical SMEs have the following features:

- (1) More intangible assets
- (2) Less physical assets
- (3) Stronger innovation willingness
- (4) Faster growth speed
- (5) Higher growth risk
- (6) Higher investment

Technical SMEs are a major power of national innovation and important source of economic growth, however, its "higher risk, less tangible assets" and other characteristics lead to higher financing cost and financing difficulties. Domestic and foreign scholars have put forward many constructive models or advice, but these models have time limits, it is time to solve this problem with more open innovative ideas. There are four great impetus to speed up the financial industry and China's Internet development:

- **Policy:** Central Government puts forward “Inclusive Finance” “Internet+”, “Internet+finance” has risen to the national strategy, similar to industry4.0 in Germany, China promote E-business, Industry—Internet and healthy development of Internet Finance.

- **Technology:** We have moved to the mobile internet era. Four technical support include big data, cloud computing, mobile Internet, vertical search engine. By the end of 2015, China has 780 million mobile internet users, 56.9% of the population.
- **Demand:** SMEs' investment and financing requirements. SMEs occupy about 90% of the total national enterprises; create 80% of the number of jobs, 60% of the GDP and about 50% of the tax, But by the end of 2014, SMEs' loan balance accounted for only 30.4% of the enterprise loan balance
- **Supply:** Residents' wealth and income growth By the end of 2015, China personal investible assets totaled 112 trillion, and China's residents savings rate is much higher than the developed countries. Everybody knows Chinese like saving money.

In conclusion, in China, for a long time, due to historical and other reasons, a financial repression exists, which causes that interest rates cannot play a role of conduction in the allocation of resources, eventually the traditional financial institutions cannot meet the financing needs of long tail clients, such as SMEs, On the other hand, the internet finance is strongly helpful to improve the efficiency of resource allocation.

### 1.3 Research background and significance

At present, modern information technology represented by the internet is changing the format and structure of China's financial sector. "Internet +", "Internet-financing" has written to the government work report, which rises to national strategy. Prime minister Li Keqiang has proposed to use internet tools to carry out mass innovation and entrepreneurship career. Technical SMEs can make use of innovation thinking of the internet era to seek funds and broaden the financing channels globally. Therefore, the thesis is against the background of rapid development of the internet-financing in China, based on a more open, democratic internet time to explore innovation of financing pattern for the technical SMEs in China.

## **2 Research methods and application**

The main research methods include (1) literature research, (2) multi-agent modeling and simulation, and (3) the combination of qualitative and quantitative analysis.

Against the background of the research question, from the viewpoint of a combination of theoretical and applied research, based on the innovation theory of the internet age, the cloud-financing model of technical SMEs is put forward. On this basis, empirical screening of the elements of cloud-financing are carried out. Then, the key operational mechanisms and the evolutionary game mechanism of cloud-financing are explained. At the same time, a simulation modeling method is used to simulate the dynamic evolution process of the technical SMEs under the different conditions.

### **3 Key research contents**

#### **3.1 The construction of cloud-financing of technical SMEs**

##### (1) The connotation of cloud-financing of technical SMEs

Completely using the “open, democratic, equal, sharing” internet spirit, according to the financing demand characteristics and the degree of risks on different stages, under a certain financial ecological environments, cloud-financing of the technical SMEs integrates government-supporting funds, traditional financial institutions, venture capital, private capital etc. to supply capital at low cost, high efficiency and low degree of risk for the technical SMEs according to certain operational mechanisms.

It is a kind of innovation model of financing of “democratic participation, open capability, resource sharing, dynamic interaction, limitless boundaries” to adapt to the internet development stage

##### (2) The main characteristics of cloud-financing of technical SMEs are

- Alleviating the information asymmetry between the financing agents
- Resolving mismatching between risk and return the financing agents
- Forming a win-win ecosystem around the financing platform.
- A kind of multi-dimensional financing model.—
- A kind of stereoscopic, dynamic financing model.

#### **3.2 Elements of cloud-financing of technical SMEs**

(1) Agent elements: the fund-demanding agent, the commercial funds-providing agent, the funds-supporting agent, intermediary service agents

(2) Circulation elements: capital, information, service.

(3) Environmental elements: government supporting environment, the legal construction environment, innovation culture environment, the social credit environment.

### **3.3 Key operating mechanisms of cloud-financing of the technical SMEs**

Key operating mechanisms of cloud-financing of the technical SMEs are:

- Micro-studies
- Dynamic operation
- Benefits orientation
- Coordination
- Credit cooperation
- Risk sharing
- Interactive selection.

### **3.4 Modeling and simulation of cloud-financing**

Modeling and simulation of cloud-financing is done in the following way

- Evolutionary analysis: the evolutionary connotation, the evolutionary level
- Construction for evolution game model of cloud-financing
- The modeling and simulation of cloud-financing
- The results of simulation analysis

#### **4 The main innovative points**

First, the paper explores the innovation of financing model of technical SMEs, and on the basis of rapid growth of the internet, concludes that the cloud financing model can solve the problems of asymmetric information, the unbalance of both risk and income of traditional financing to a certain extent in order to obtain high efficiency, low costs of funds, which can solve the financing difficulty problems of the technical SMEs. Such kind of financing mode breaks through the limitations of the times on the traditional mode of financing theory, furnishes supplement on the corporate financing theory.

Second, the cloud financing patterns of technical SMEs clearly define the role and status of all the participants, explains the various operating mechanism of financing innovation model in details, illustrates the intrinsic mechanism on the financing activities for the technical SME by using scientific simulation modeling methods, and provides resolution in order to solve the problems of difficult and expansive financing for the technical SMEs.

Third, the cloud financing patterns for the technical SMEs are put forward on time when the government has been developing the internet financing vigorously, makes the internet financing truly serve the real economy, realizes the benign interaction between virtual economy and real economy, and having epoch-making significance in practice to the national development of internet financing. At the same time, the theory of cloud financing mode has some reference value for the government to deepen financial reform.



### **Appendix 1: Academic paper list**

The Financial Environment, the Financing Ability and the Growth of Technical SMEs (2014)

Research on Modeling and Simulation of Cloud –financing for the Technical SMEs (2015)

Research on Cloud-financing Pattern of Technical SMEs—From the Perspective of Cloud Innovation (2014)

Research on the Pattern of Cloud Innovation of Technical SMEs (2015)

Research of Cloud Innovation Flow on the SMEs

Entrepreneur Characteristics, Competitive Strategy and Growth of SMEs —— Evidence from Listed Companies of China's SME Board in the Manufacturing Industry (2014)

Research on Model Construction of Self-innovation System of Chinese Low Carbon Industrialization Based on CAS Theory (2014)

Analysis on Government Innovation--From the perspective of Cloud Innovation (2014)

Research on Internet Finance from the Perspective of CAS

Research on the Reason, Feature and Application of the Cloud Innovation (2015)

Cloud Innovation: New Development Model for New Energy Automobile Industry -Based on BYD New Energy Automobile Industry (2015)

## **Part 5 Financing and investment**

### **L PPP investment models of a cooperation between the city government and SMEs – The example of the City Ninyang**

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## **Abstract**

A PPP (Public-Private-Partnership) is a long-term cooperative relationship between governments and the social capital in the field of infrastructure provision. It refers to an investment model in which the public sector licenses the private sector to provide public infrastructure services via signing cooperation agreements with the private sector. Governments and the social capital both have equal status as well as clear rights and responsibilities, and assume corresponding risks respectively. Governments are responsible for setting prices for using the facilities and supervising the quality. The social capital is specifically in charge of the design, construction, operation and facility maintenance of projects. The recovery of investment costs mainly relies on the fees charged on facility users. In addition, governments will also provide financial subsidies to the social capital party based on the agreements or the operational status of the infrastructure.

In the traditional supply mode of public service, the infrastructure is normally constructed with government investment, and then handed over to state-run institutions or state-owned enterprises for operation and maintenance after completion. This traditional supply mode cannot meet the needs of economic development any longer, and has many problems such as appalling waste, the prevalence of bureaucracy, insufficient facility maintenance and high operating risk. While PPP investment models were applied successfully in many countries in the 1950s and 1960s, it was not introduced to China until the mid-1990s, so PPP investment patterns in China is still at an early exploratory stage.

By applying the PPP investment model to infrastructure construction, governments formulate policies to encourage private capital to invest in infrastructure construction and be responsible for the future operation and maintenance of facilities. From the government point of view, on the one hand the PPP investment model solves problems like the current inadequate infrastructure investments and low supply efficiency in rural areas to a large extent, reduces the financial pressure on governments, and broadens the sources of construction funds. On the other hand, the access to private capital can achieve the marketization of the operation of the project, which can fully realize the optimal allocation of social resources, making the financing construction methods more socially beneficial. As a result, the research on the PPP investment model and investment mechanism is significant to the build of a new socialist countryside and the transformation of government functions.

In summary, the PPP investment model generally has three main characteristics. Firstly, the PPP investment model is a project financing model, and is a new financing model which realizes financing through the project's prospective benefits. Secondly, the PPP investment model allows private capital to participate in financing; social investors take charge of the project by signing long-term cooperation agreements with governments. Thirdly, the PPP investment model can achieve the targets of all the involved parties.

## **1 The strengths and weaknesses of PPP investment models**

### **1.1 The strengths of PPP investment models**

As a new financing model, the PPP investment model is different from conventional financing. What it pursues is the long-term cooperation between businesses and governments. The parties involved must adhere to the principle of equality and mutual benefit, and ensure information transparency and timely communication, in order to achieve project success. The short-term behavior of any party can cause the failure of a project. However, it is its characteristics that determine its irreplaceable advantages.

(1) It helps to broaden the financing channels.

In the traditional supply mode, infrastructure construction funds mainly come from government financial allocations and loans from financial institutions like banks. However, government financial allocations are limited, and the lending rates of banks and other financial institutions are high and the capital chains rupture easily. The PPP investment model provides a way for private capital to enter into the field of public goods supply, while the abundant private capital provides effective solution to the shortage of infrastructure construction funds.

(2) It helps to form an investment environment where governments and businesses trust each other.

The basic principle of PPP models is the sharing of benefits and risks, and therefore governments and enterprises will uphold the principle of good faith and mutual benefits during the cooperation. Governments will certainly improve their creditworthiness continuously in order to introduce social funds to promote infrastructure construction. The private sector will certainly establish a good corporate image in order to get profit and achieve development and growth. The joint efforts of both parties will contribute to a good social atmosphere.

(3) It helps to improve the service efficiency of infrastructure.

The ultimate goal of PPP models is to achieve a win-win situation for all the involved parties, and all parties will be devoted to their duties during the project as a result. Governments should take social responsibilities and provide satisfactory

public services, while private enterprises are in pursuit of profits. The combination of governments' strong social credibility and private enterprises' efficient management mechanism can give full play to the advantages of governments and private enterprises and make up for each other's deficiencies, thus improving the service efficiency of infrastructure.

## **1.2 The weaknesses of PPP investment models**

### **(1) Imperfect legal protection system**

Since the PPP model in China is still in an early developmental stage and a lot of content is still being explored, the legal system on PPP models has not been perfect. In addition, relevant legal provisions are often revised and promulgated due to the rapid socio-economic development, which may lead to the loss of legitimacy of the original PPP projects. Moreover, China is lack of mechanisms to protect the originally signed PPP projects. For example, the foreign investors of a sewage treatment plant in Jiangsu constructed with the BOT mode of financing had to renegotiate with the government about the rate of return on investment, because "State Council General Office's Notice on properly handling the issues of the existing programs that ensure foreign investment in fixed recycling programs" was published after the they had signed the contract.

### **(2) Long approval period and inflexible decision-making mechanism**

The complicated government decision-making procedures, the time-consuming project feasibility studies, and the bureaucracy in the departments concerned lead to the long approval and decision-making periods and the high operating costs of PPP projects. After the approval of the projects, it is difficult to make timely adjustments to the construction and operation modes of the projects in accordance with changes in the market due to the lack of flexibility in decision-making mechanisms, which results in unnecessary losses.

(3) Great political factors

Most PPP projects are closely related to people's lives and the vital interests of the public. In the process of operation, the operating costs of some projects may increase because of various factors. However, the increase of user fees to compensate for the cost will often lead to public opposition. Governments will stop the increase in order to maintain social stability, and the social investors of PPP projects will suffer economic losses in this way, although they are not in violation of the terms of the contract provisions.

(4) High government credit risks

Local governments that are anxious to speed up the construction of local infrastructure will sometimes promise the social capital party unrealistic rate of return on investment and the project in order to attract social capital investment. However, when the project is completed, the governments cannot fulfill contractual commitments due to the actual conditions, which jeopardizes the interests of their partners.



## **2 The example of the Dawen River Irrigation Project in the City Ningyang**

### **2.1 The project overview of the PPP water conservancy project on Dawen River**

The goal of the water conservancy project in Ningyang is not simply to solve the irrigation problem but to build a large-scale conservancy project which utilizes water resources comprehensively. Launched in 2015 as one of Ningyang's PPP projects, the project is located at the mid-eastern part of Ningyang. The project has multiple functions including flood control, water damming, water diversion, water storage, water supply and irrigation. Its expected initial investment is about 900 million yuan. The project has clear profit points: the urban industrial water price in Ningyang is 2.69 yuan / cubic meter in 2016, and the annual industrial water consumption is 58.4 million cubic meters, which means the income from water supply alone is 157 million yuan; the income from farmland irrigation water is calculated as 36 million yuan; the income from the Reservoir Scenic Spot and other incomes total 22 million yuan. To sum up, the total annual income of the project is around 215 million yuan. In addition, the state government provides 50 million yuan subsidies each year to the project. Therefore, the water conservancy project solves the irrigation problem and ecological problems, and brings Ningyang great economic, social and ecological benefits.

From the point of view of natural conditions, Dawen River is China's longest inverted river with the length of around 239 kilometers of which up to 55 kilometers flows across Ningyang, accounting for one fourth of the length of Dawen River. The altitude of Dawen River is higher than that of Ningyang, so the altitude difference can be used to take advantage of the water resources. This is Ningyang's unique advantage.

The project mainly covers seven areas: water sources, water diversion, water transfer and storage, irrigation and drainage, industrial and domestic water supply, the ecological landscape construction and management facilities construction, among which water sources, water diversion, water transfer and storage, and irrigation and drainage are the focuses of construction. The water sources project has currently been started, and the purpose of management facilities construction is to ensure the smooth operation of the entire project after its completion and provide project management services.

## **2.2 Project participants**

The main participants of this PPP project are the Ningyang government, the Ningyang State-owned Assets Administration Bureau, Luzhu Group, Lingnan Landscape Co. Ltd, and Luxin Water Company. Shandong Agricultural University Survey and Design Institute, Shandong Guangda Hengtai Accounting Firm, and China Development Bank also provide support services

The main operator of the PPP project is the newly formed Luxin Water Company which is a joint venture owned by Luzhu Group, Lingnan Landscape Co. Ltd, and the Ningyang State-owned Assets Administration Bureau. Luzhu Group and the Ningyang State-owned Assets Administration Bureau each holds 40% of the shares, and Lingnan Landscape Co. Ltd holds 20% of the shares. As a company specialized in carrying out this PPP project, Luxin Water Company has a registered capital of 50 million yuan. The formation and operation procedures of the company abide strictly by the Corporation Law. As a result, the company has independent legal personality. The company's daily operations and the construction work are mainly in the charge of Luzhu Group's accredited senior managers.

Lu Zhu Group is a large-scale private enterprises above the scale of Ningyang County, with total assets of more than 400 million yuan, and cement production, which is one of the largest private enterprises in Ningyang County. , Power generation, logistics and mining development in one of a modern enterprise group, Ningyang County is a large water users, but also because of this reason it has caused great concern Wenwen project, which is one of the reasons for cooperation, the other Lu Zhu Group's production of water has always been the extraction of groundwater, and if the project is completed, it can direct the use of Wen River water, which cost savings of nearly a dollar, the profit point is very high, so for this reason Lu Beads Group actively participate in the project.

## **2.3 The basic operation of the project**

The main task of this phase is to build and operate the facility to undertake this work is the previously mentioned Lu Xin Water. Wen cited the early part of the construction project - Dawenhe stone check dam was officially started construction in 2015 after the National Day, invested 60 million yuan to the China Development Bank loans to the main part of the funds invested another cement Lu Chu the construction of the extraction of sand for sale to obtain benefits. After the completion of the project Luxin Water is responsible for operations and get the

benefit, pay taxes to the government, according to its own cement beads Lu the share in profits.

Ningyang government when signing the PPP project cooperation contract with Lu-Group primarily under the Ministry of Finance issued the "PPP Project Cooperation Guidelines" document based on the project contract party of social capital that is Lu-Group and Lingnan Garden shoulder construction costs 60 % owned assets Administration Bureau Ningyang funded 40% after completion of the project by the Luxin water management, franchise period of 30 years, in the operation of the franchise period Lu Xin Wen quoted water affairs is responsible for engineering, maintenance and collection income, in terms of the pricing mechanism, Ningyang government after Lu-Group with 30 years of operation during the consultations conducted every six years to assess, for the parties to fulfill the contract to conduct a comprehensive evaluation, and evaluation results of each issue according to dynamically adjust prices, control project proceeds between 8-12%.

In order to be better able to fulfill the contract and construction, during the duration of the project by means of a multi-agency support services provided. Since the vast investment, Lu Xin water before beginning the first phase of the project to the State Development Bank loans to 60 million yuan, the loan specified in the loan contract can be constructed by a dam project when extracted sand was sold after the money shall repay the shortfall in the revenue generated by the project completed and put into use to repay. Shanghai Dehong law firm signed a contract for the operation and the future of the project to provide legal consultancy services, engineering and exploration survey work in the construction process encountered by the Shandong Agricultural University Institute is responsible for exploration.

After 30 years of the concession period, according to the contract, Lu Xin Water engineering facilities will be free of charge to Ningyang County People's Government or institutions to manage the government.

### **3 Main experience and enlightenment**

The significance of introducing PPP model in Ningyang County is not only the project itself, but also a sample of the new investment and financing mode of infrastructure construction, which can provide reference for the introduction of PPP mode in other areas.

#### **3.1 Small and medium-sized enterprises play an important role in the operation and maintenance of facilities**

The amount of investment in the construction of PPP projects is as high as 1.313 billion yuan, while Ningyang County's fiscal revenue in 2015 is only 2.4 billion yuan, if Ningyang County alone come up with more than half of the revenue and construction of the government's own financial resources, Then the rest of the funds simply can not meet the other government spending. Ningxia County decided to introduce the PPP model to complete the construction of the project, and set up the government and social capital cooperation office to complete the preparatory work for the implementation of the project, to determine the implementation of the PPP program, the project entered Government procurement link, the first Ningyang county government investment advertisements, attracted a number of companies bidding, and ultimately through the selection, selection of the Luzhu Group as a successful enterprise to participate in the construction, according to the provisions of the contract Luzhu Group and Ningyang County State-owned Assets Authority Of Lu Xin water company was the right to operate the project, the franchise period of 30 years, in the franchise period Lu Xin Water is responsible for the operation and maintenance of the project and get the proceeds, which is the Ningyang County Government will project the right to operate And the maintenance of outsourcing to the private capital, in the pricing, in order to prevent the use of water resources Lu Xin water resources monopoly profits, the county government, state-owned Assets Authority, Luzhu Group through multi-party consultation to determine a reasonable fee, Luzhu Group makes profitable, on the other hand to ensure that the interests of the masses of water. Maintenance work outsourcing, but also fundamentally solve the previous facilities after the completion of no one maintenance of its damage to the problem, to further reduce the government's public service costs, save a lot of public resources, indirect Ningyang County socio-economic development Made a contribution.

### **3.2 Seeking for reliable partners**

PPP project is mainly by the government and private capital to participate in the completion of the joint, from the government point of view, to choose a certain economic strength and modern management system with private enterprises, because only in order to ensure the construction and operation of PPP project quality, In order to make the rural infrastructure to serve the rural production and life play its due role.

In the case of Luzhu Cement Group is the local government in the municipal construction of the important partners, is the restructuring of the municipal state-owned enterprises, pre-government and has close relations of cooperation, rich in municipal construction and management experience. It can be said to find a reliable partner not only for the initial construction of the project helpful, but also for the future after the completion of the project put into operation also has important significance.

### **3.3 The formation of special purpose company**

The social participators of PPP project are Lu Zhu Group and Lingnan Garden, with Lu Zhu Group as the leading government. Ningyang County State-owned Assets Administration Bureau, the three parties set up special purpose company - Lu Xin Water Company, The company is responsible for the construction of the project and the completion of the operation and maintenance work.

The formation of special purpose company is another highlight of the PPP project, because according to previous research results and collected relevant information, many PPP projects due to the large number of participants, the relationship between the responsibility is not clear, leading to the project from the preparatory To run a lot of disputes. After the construction of Lu Xin Waterworks, the project of Lu Bin and Lingnan Garden and the State-owned Assets Administration Bureau became members of the board of directors of the company. The equality of status, operation of the company, division of responsibilities. The distribution of interests will be strictly in accordance with the company's articles of association, "the system of a balance, there are degrees", which fundamentally put an end to the rights disputes, conflicts of interest and a series of management chaos, to ensure that the construction project, For the future operation and maintenance of the project paved the way. For small and medium enterprises, PPP project

future revenue cannot be expected, set up an independent company, even if the PPP project investment fails, SMEs can still operate normally.

### **3.4 A dynamic adjustment mechanism for service prices**

Private capital participation in the PPP project aims to obtain income, which is the PPP project can be the main driving force, but how to take care of the interests of the parties under the scientific and rational pricing, and put into operation in the project after the price adjustment mechanism how to play a role, Is the implementation of the PPP project is a problem.

In order to avoid the discontent and low price of public services, the county government has formulated the PPP project cooperation contract with reference to the "PPP Project Contract Guideline (Implementation)" document to promote the PPP project in Ningyang County in order to avoid the high price of public services. Coordination of the interests of all parties, and clearly defined in the contract pricing dynamic adjustment mechanism, according to changes in the market environment and the rate of return of social capital to adjust the pricing of the project every three years on the operation, income, maintenance of science Assessment, and comprehensive socio-economic development such as taxation, consumer price index, bank interest rates and other indicators to re-determine the price.

In order to better adjust the price of science, Ningyang county government, social capital and third-party intermediaries through consultation to determine a more reasonable range of project yield, the range of 8% -12%, when the project's rate of return is lower than 8%, may be appropriate to increase the price charged, but if the increase in the price of water beyond the affordability of the masses of the masses, then the Government will subsidize the project; when the project yield exceeds 12%, will cut prices to ensure that The public interest is not undermined. This pricing mechanism can be said that the PPP project is a major innovation, because the pricing involves many, the interests of which both sensitive and complex, will inevitably lead to disputes of interest, and Ningyang County on this issue has made a very There is a breakthrough in the value of reference and try.

### **3.5 Reasonable distribution of rights and responsibilities**

In the PPP project, it is necessary to allocate the power and responsibility to the government and the private enterprise, which can realize the separation of government and enterprises, solve the problems such as bureaucracy, improve the efficiency of the project; on the other hand, And lead to legal disputes, reduce the operational risk of the project.

In the PPP project, Ningyang County government to grasp the direction of the project from the macro level, take the project financing risk, in the project put into use, monitoring the facilities and maintenance fees follow-up work, but do not intervene in the project specific The operation of the facilities by the Luzhu cement full responsibility for the regular preparation of Luzhu cement facilities operating report, on the record to the Ningyang County Government.

## Part 1 Accounting and taxation

**A** 可持续发展报告：  
气候变化在财会方面的挑战。针对德国中小企业的分析

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## 1 引言

可持续发展最初被误解为是一种时尚潮流，后来被证明为是公司绩效沟通的重要组成部分<sup>1</sup>。不单单是对公司名誉的消极影响或是在资本市场募资时可能出现的弊端的担忧，所有规模的企业不约而同开始开展可持续性与公司生态活动的报告<sup>2</sup>。同样这也带来了风险管理、顾客忠实度和员工满意度等重要因素的提高。尤其是对于中小企业来说，这种趋势在不远的将来能够发展成为自身一种极具竞争力的优势<sup>3</sup>。

在世界上有一些企业，它们的目的是通过出版新的框架和指导方针来开发并且掌握可持续性报告的设计。目前世界上最为广泛使用的指导方针是由全球报告倡议组织（GRI）<sup>4</sup>推行的。此方针为企业的经济、环境及社会活动的透明度提供了指导。除此之外，还有《联合国全球契约》（UNGC）<sup>5</sup>与《德国可持续发展守则》（Deutscher Nachhaltigkeitskodex）<sup>6</sup>的方针与标准，它们也被认为是可持续发展信息自愿披露的起始点。此外，企业还必须满足一系列关于其非财务绩效指标的法律要求。同样除了《德国商业守则》（HGB）之外，由德国会计标准委员会（DRSC）于2012年发表的《DRS 20 准则》也规范了集团管理报告，并为可持续发展报告提供了参考<sup>7</sup>。除此之外，也有一些诸如《国际 IIRC 与美国 SASB 框架》<sup>8</sup>这样的规范性准则。所有这些规范都是针对所有规模的企业而言的。然而这对中小企业来说却尤为重要：它们有较强的灵活性与市场针对性，并且它们也是德国经济的支柱<sup>9</sup>。这就是为什么这样的企业经常被作为创新与发展的重点。

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<sup>1</sup> 对比 EY and Boston College Center for Corporate Citizenship (2014): Value of sustainabilityreporting.

<sup>2</sup> 对比EY (2014): Integrierte Berichterstattung: Wertsteigerungsmöglichkeiten für Unternehmen.

<sup>3</sup> 对比 EY and Boston College Center for Corporate Citizenship (2014): Value of sustainabilityreporting.

<sup>4</sup> IIRC: <http://www.theiirc.org>; 访问日期13.09.2016.

<sup>5</sup> UNGC: <https://www.unglobalcompact.org>; 访问日期 13.09.2016.

<sup>6</sup> DNK: [www.deutscher-nachhaltigkeitskodex.de](http://www.deutscher-nachhaltigkeitskodex.de); 访问日期 13.09.2016.

<sup>7</sup> DRSC: cf <http://www.drsc.de/service/drs/standards/>, 访问日期 13.09.2016.

<sup>8</sup> SASB: cf <http://www.sasb.org/approach/conceptual-framework/>访问日期 13.09.2016.

<sup>9</sup> Zew (2010) Mittelstandsmonitor 2010. cf [ftp://ftp.zew.de/pub/zew-docs/mimo/MittelstandsMonitor\\_2010.pdf](ftp://ftp.zew.de/pub/zew-docs/mimo/MittelstandsMonitor_2010.pdf), 访问日期 13.09.2016.

## 2 德国企业是如何对可持续发展进行报告：不同企业规模下的不同点

### 2.1 德国上市企业的开发与可持续发展报告

对于德国国内上市企业前 30 强（DAX 30）来说，对于可持续发展的报告已是平常之事<sup>10</sup>。几乎所有这些企业都会单独发布一份《可持续发展报告》<sup>11</sup>。然而对于其他非 DAX 30 的企业来说，情况就不一样了：对榜单中的中型上市企业（MDAX）、小型上市企业（SDAX）与科技型上市企业（TecDAX）的分析同大型和中小型企业相比，有着明显的不同。小型资本市场与低股份交易额的企业可持续发展报告的数量有所减少。这一事实或许有着历史依据：全球运营的德国企业在几年前就因为其行为对环境和社会的影响成为了公众定期批评的焦点。这就是为什么企业在上世纪 80 年代末就已经发布环境报告<sup>12</sup>。因为社会因素而产生的这些报告，成为了最初的可持续发展报告的雏形。在 GRI 的方针指导下，绝大多数的德国上市企业都发布了他们各自独立的环境报告<sup>13</sup>。总体来看，德国国内有 155 份在 GRI 方针指导下发布的报告，而在世界范围内共有 2800 份<sup>14</sup>。由于参考建立在国际基础上的框架及方针，德国的企业能够拥有一个较为透明的针对可持续发展问题的报告，并且对于不同领域与不同国家的社会、经济及环境利益有着一个更好的对比<sup>15</sup>。

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<sup>10</sup> 对比 EY/GRI(2014):Sustainabilityreporting–thetimeisnow.

<sup>11</sup> 对比 here and below: EY-Study 2014, 访问日期 13.09.2016.

<sup>12</sup> 对比 BDA/BDI/DIHK/ZDH (2013): CSR und Diversity: Berichterstattungszwang ist der falsche Weg, <http://www.dihk.de/presse/meldungen/2013-04-17-verbaende-csr>, 访问日期 15.09.2014.

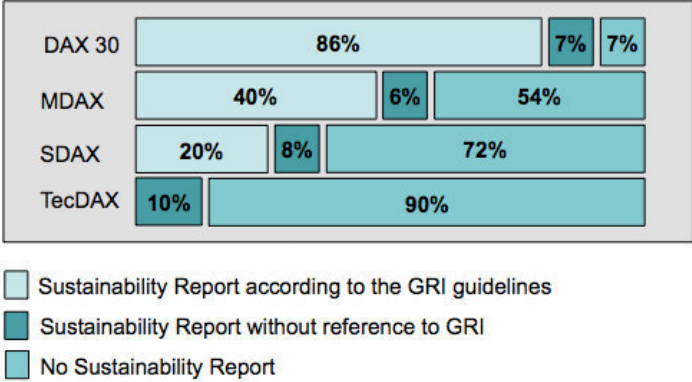
<sup>13</sup> 对比 EY/GRI(2014):Sustainabilityreporting–thetimeisnow.

<sup>14</sup> GRI: G4 (2013): Leitlinien zur Nachhaltigkeitsberichterstattung: Berichterstattungsgrundsätze und Standardangaben, <https://www.globalreporting.org/Pages/resource-library.aspx?resSearchMode=resSearchModeText&resSearchText=G4&resCatText=Reporting+Framework&resLangText=German>, 访问日期 15.09.2014, für Informationen zu den Gemeinsamkeiten mit den „zehn Prinzipien“ (2000) des Global Compact der Vereinten Nationen siehe S. 88.

<sup>15</sup> 对比 here and below: EY-Study 2014, 访问日期 13.09.2016.

图表 1：大中小型上市企业的可持续发展报告

In which DAX-Segment Sustainability Reports are published?



（上市公司发布可持续发展报告依据参照 GRI 指导方针，不参考 GRI

不发布可持续发展报告）

来源：In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

### 2.2 有审核认证的可持续发展报告的份额

除了公众与投资者对于企业的可持续发展的效绩的兴趣日益增长之外，对于报告的审核需求也在增长<sup>16</sup>。除了在公众中拥有良好的信誉的报告之外，其他报告均需通过独立审核公司的审查认证。除此之外，公司还需要主动提高其自身内部数据质量的优化，保证其与公司内部的进程和活动保持一致。一般来说，分析显示了由公司规模的不同导致的审核与报告内容的不同<sup>17</sup>。所以对于中小企业来说这也是一个机会，他们需要以身作则，为资本市场带来一个正面的影响。

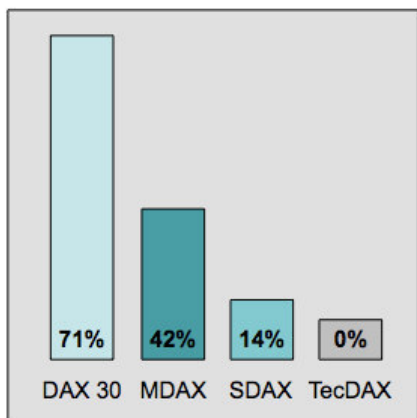
<sup>16</sup> 对比 EY (2014): Integrierte Berichterstattung – Wertsteigerungsmöglichkeiten für Unternehmen.

<sup>17</sup> 对比 EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

图表 2: 有审核认证的可持续发展报告的份额

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What is the proportion of sustainability reports with audit certification?



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(有审核认证的可持续发展报告所占的比例)

上市企业30强，中型上市企业，小型上市企业，科技型上市企业)

来源：In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

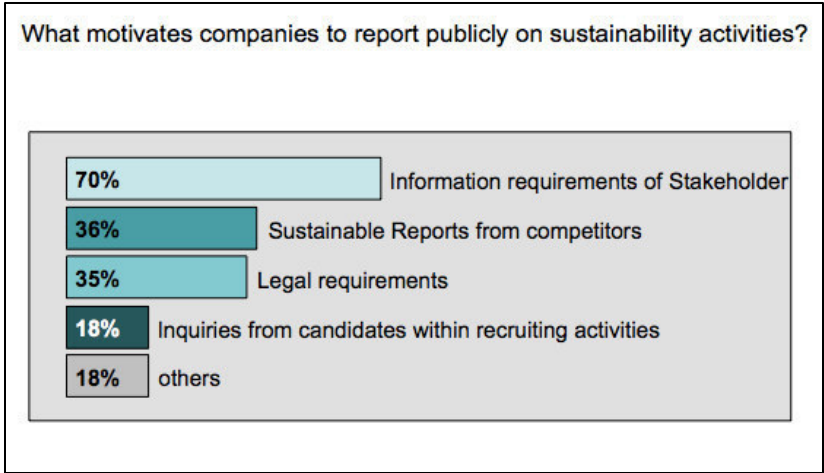
### 2.3 针对分析下利益相关者的信息需求

现如今，企业被更多地解读为是社会行为者。所以所有受访公司的主要动机理由，即可持续发展活动报告的发布是利益相关者的信息需求，这并不令人感到意外<sup>18</sup>。除了消费者及媒体对于环境及社会价值链方面的兴趣之外，可持续发展也逐渐成为一个投资者在作出投资决定时分析风险的重要标准。

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<sup>18</sup> 对比 Europäischer Rat (2014): Offenlegung nicht finanzieller und die Diversität betreffender Informationen durch bestimmte große Gesellschaften und Konzerne, [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/press-data/en/intm/144945.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/press-data/en/intm/144945.pdf), 访问日期01.10.2014.

图表 3: 企业发布可持续发展报告的动机



（企业公开发布可持续发展报告的驱动力

70% 利益相关者的信息要求

36% 竞争对手的可持续发展报告

35% 法律要求

18% 应聘者的相关询问

18% 其他)

来源：In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

### 2.4 竞争对手的报告及作为驱动因素的法律要求

受访的企业表示，他们同竞争对手的交流是他们进行交流活动的一个重要其原因，这一点值得令人称赞<sup>19</sup>。另一个原因（但并不是主要原因）是对于法律资格的需

<sup>19</sup> 对比GRI et al. (2013): Carrots and Sticks: Sustainability reporting policies worldwide today's best practice, tomorrow's trends, [https:// www.globalreporting.org/resource-library/carrots-and-sticks.pdf](https://www.globalreporting.org/resource-library/carrots-and-sticks.pdf), S. 28 ff., 访问日期.11.09.2014.

求。这种理解在各行各业有着很大的不同。对于能源行业，超过半数的受访企业都将与竞争对手的交流视作是对可持续发展报告最重要的一个推动<sup>20</sup>。这或许在当下这个能源改革时期来说尤为重要，因为它能提高企业在市场中的地位<sup>21</sup>。另一方面来说，超过三分之一的受访企业认为按照法律法规要求来发布可持续报告是他们的义务。这点也被近期备受压力的欧盟（EU）内部的特殊可持续发展观点所支持<sup>22</sup>。

## 2.5 中小企业报告标准之间的区别

在可持续发展报告的初期仔细考虑下即将被应用的规范是值得的。如今中小企业可以依据传统概念（比如 GRI 或是 UNGS）选择他们的可持续发展行为的报告；或者他们也可以依据更加现代化和独立的框架（比如 IIRC 和 SASB）来选择。有趣的是，德国企业应用的准则和指导方针是什么呢？在超过 20%的受访企业中，没有任何框架及准则被使用。即使是那些国际上市公司也不例外。

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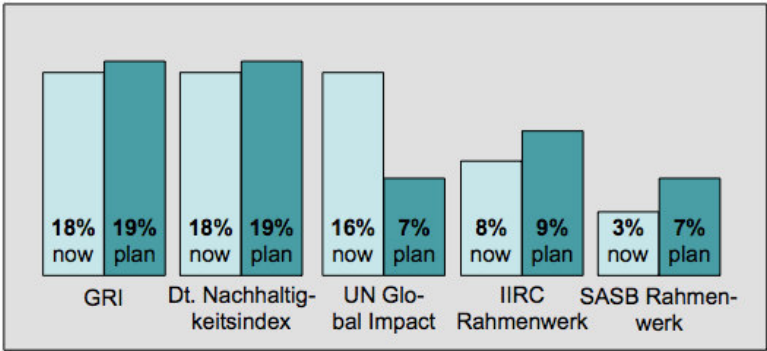
<sup>20</sup> 对比 BDA/BDI/DIHK/ZDH (2013): CSR und Diversity: Berichterstattungszwang ist der falsche Weg, <http://www.dihk.de/presse/meldungen/2013-04-17-verbaende-csr>, 访问日期 15.09.2014.

<sup>21</sup> 对比 here and below: EY-Study 2014, 访问日期 13.09.2016.

<sup>22</sup> 对比 GRI et al. (2013): Carrots and Sticks: Sustainability reporting policies worldwide – today's best practice, tomorrow's trends, <https://www.globalreporting.org/resource-library/carrots-and-sticks.pdf>, S. 28 ff., 访问日期 11.09.2014.

图表 4: 可持续发展报告使用的指导方针

On what Guidelines companies base their Sustainability Reporting?



来源：In dependence on EY and Boston College Center for Corporate Citizenship (2014): Value of sustainability reporting.

### 3 总结与展望

市场指标及交易量都是可持续发展对话中的重要指标。中小型企业目前仍旧落后于人们的期望值。利益相关者的信息需求与竞争对手的可持续发展报告是可持续发展对话中的关键驱动因素。现有的对于可持续发展对话的框架准则的应用将会持续增加。企业对于综合报告的兴趣并不会影响到目前德国国内可持续发展报告的大环境。除去现有可持续发展对话的实际经验，目前仍存在针对欧盟新政策应用的质疑。《德国中小企业可持续发展报告》仍不完善，更多信息将会在未来几年内陆续补充。



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## Part 1 Accounting and taxation

### B 中小企业税费支持政策研究--以山东省为例

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摘要:

当前我国实体经济面临发展困难，企业生产经营成本持续攀升，非常不利于我国经济结构调整和企业竞争力的提升。十八届五中全会“开展降低实体经济企业成本行动”；十三五规划提出“开展降低实体经济企业成本行动……”继而提出去产能、去库存、去杠杆、降成本、补短板“三去一降一补”的五大任务。对于中小企业，在这种经济新常态下，税费负担偏重，本文从降低企业税费负担角度研究其政策支持。

## 1 税费政策理论基础

关于税费政策存在的理论基础，历史上有交换说、义务说和公共需要说等理论。

交换说又称买卖说、利益说。它认为国家征税和公民纳税是一种权利和义务的相互交换；税收是国家保护公民利益时所应获得的代价。自17世纪以来，随着民本主义的契约思想和民生主义的交换意识深入人心，这种认识日渐流行起来，主要代表人物有霍布斯、洛克、斯密和蒲鲁东等。

义务说又称为牺牲说，它是将税收看作是人民对国家应尽的一种义务的学说。义务说源于19世纪初期盛行于欧洲的国家主义。国家主义认为，人类为了共同生活，必须组织国家，国家是人类社会组织的最高形式。人民是国家共同体的成员，个人的生活有赖于国家的存在。国家为实现其职能，就应该具有征税权，这种征税权是国家生存的条件。在国家主义思潮的影响下，德国的一些学者在税收理论上反对以社会契约说为基础的交换说、保险说，提出纳税是人民应尽的义务，任何公民不得例外。“义务说”从国家是人类社会历史发展的产物，国家为了实现其职能具有征税权，可以强制公民缴纳赋税，从而提出公民纳税只是他们应尽的一种义务的税收根据，是一种离开国家阶级属性的税收学说。

## 2 中小企业发展状况

### 2.1 中小企业界定及标准

中小企业(Small and Medium Enterprises), 又称中小型企业或中小企, 它是与所处行业的大企业相比在人员规模、资产规模与经营规模上都比较小的经济单位。不同国家、不同经济发展的阶段、不同行业对其界定的标准不尽相同, 且随着经济的发展而动态变化。各国一般从质和量两个方面对中小企业进行定义, 质的指标主要包括企业的组织形式、融资方式及所处行业地位等, 量的指标则主要包括雇员人数、实收资本、资产总值等。量的指标较质的指标更为直观, 数据选取容易, 大多数国家都以量的标准进行划分, 如美国国会 2001 年出台的《美国小企业法》对中小企业的界定标准为雇员人数不超过 500 人, 英国、欧盟等在采取量的指标的同时, 也以质的指标作为辅助。我国历史上对中小企业的界定经过 8 次修改, 最近的一次是 2011 年 6 月 18 日, 工业和信息化部、国家统计局、国家发展和改革委员会、财政部联合印发了《关于印发中小企业划型标准规定的通知》, 重新界定了各行业类型标准具体见附表 1。与之前标准相比, 行业划分更细, 而且新增加了“微型企业”这一类型。

### 2.2 中国中小企业经济贡献及发展状况

#### 2.2.1 数量多, 贡献大

截止 2015 年末, 我国中小企业超过 1000 万户, 占全部注册企业总数的 90%; 流通领域里中小企业占全国零售网点的 90%以上。中小企业工业总产值和实现利税分别占全国的 60%和 40%左右。

劳动密集型出口产品和一些高新技术出口产品大多是中小企业生产的, 中小企业产品出口额占全国出口总额的 60%;

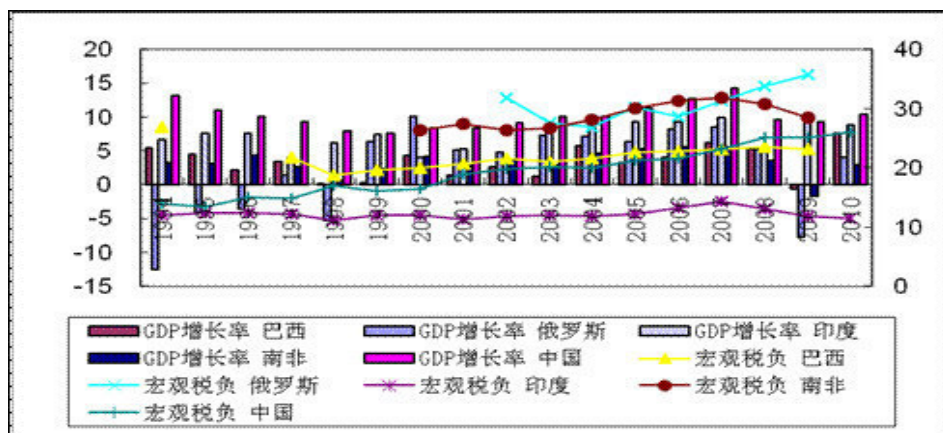
中小企业提供了大约 75%的城镇就业机会。改革开放以来, 从农村转移出来的劳动力绝大部分被中小企业所吸纳。

中小企业每年为国家缴纳的工商税收占总额的 50%左右。在 20 世纪 90 年代以来的经济快速增长中, 工业新增产值的 76.7%是由中小企业创造的。

### 2.2.2 中小企业税费负担重

有关统计表明，2013 年我国全部政府税费收入为 20.87 万亿元，占 GDP 的比重达到 36.7%；2014 年为 23.67 万亿元，占 GDP 的比重达到 37.2%。宏观税负略微超过发达国家水平，平均比发展中国家水平高近 10 个百分点。而综合考虑税收、政府性基金、各项收费和社保金等项目后，我国企业的税费负担高达 40% 左右，超过 OECD 国家的平均水平。

图 1 中小企业国内市场空间承压



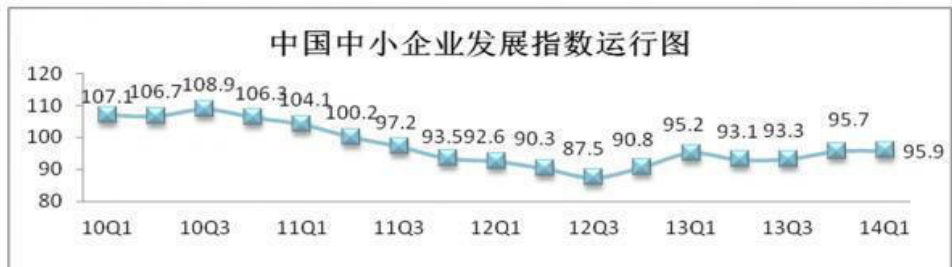
历经 30 多年高速增长后，中国经济当前正处在由高速增长到中速增长的转换期，GDP 增长率 2014 年三季度已经降为 7.3%，在技术创新难以获得根本性突破的情况下，受资本边际贡献率下降和劳动力供应下降、成本上升影响，中国经济中期潜在增长率不断下滑。在此背景下，中国经济增速下滑已经超越阶段性波动范畴，成为未来一段时间的趋势性问题。截至 2014 年三季度，工业品出产价格指数（PPI）延续同比负增长的趋势，已持续 31 个月当月同比负增长，同时，民间固定资产投资、社会消费品零售总额、工业增加值等一系列数据均呈现明显向下趋势，反映出经济下行压力逐渐加大。2015 年，随着经济增长和劳动生产率增长减速，住房、汽车带动的消费增长效应逐步减弱，最终消费支出和社会消费品零售总额实际增速延续回调。国内消费需求增速回落影响着中小企业市场空间。

### 2.2.3 中小企业景气状况

中小企业景气状况可以用中小企业发展指数(SMEDI: Small and Medium Enterprises Development Index)来表达。SMEDI 由中国中小企业协会主持,国家统计局中国经济景气监测中心提供技术支持,北京华通人商用信息有限公司负责组织实施,通过对国民经济八大行业的中小企业进行调查,利用中小企业对本行业运行和企业生产经营状况的判断和预期数据编制而成,是反映中国中小企业(不含个体工商户)经济运行状况的综合指数。

在行业选取的过程中,依据国民经济各行业对 GDP 的贡献度,共选取了工业、建筑业、交通运输邮政仓储业、房地产业、批发零售业、信息传输、计算机服务和软件业、住宿餐饮业、社会服务业等八大行业。每个行业的调查内容,具体包括八个方面,即:宏观经济感受、企业综合经营、市场、成本、资金、投入、效益、劳动力。中国中小企业发展指数调查采取 PPS 抽样,每季度调查 2500 家中小企业。总体抽样误差不超过 2%,分行业误差不超过 10%,置信度达到 95%。调查通过进入企业调查与电话访问相结合的方式,利用扩散指数的方法计算出中国中小企业发展指数。SMEDI 的取值范围为 0—200 之间:(1) 100 为指数的景气临界值,表明经济状况变化不大;(2) 100—200 为景气区间,表明经济状况趋于上升或改善,越接近 200 景气度越高;(3) 0—100 为不景气区间,表明经济状况趋于下降或恶化,越接近 0 景气度越低。

图 2 2010 年—2014 年中小企业发展指数



资料来源:《中国中小企业景气指数研究报告 2014》南京 APEC 中小企业工商论坛

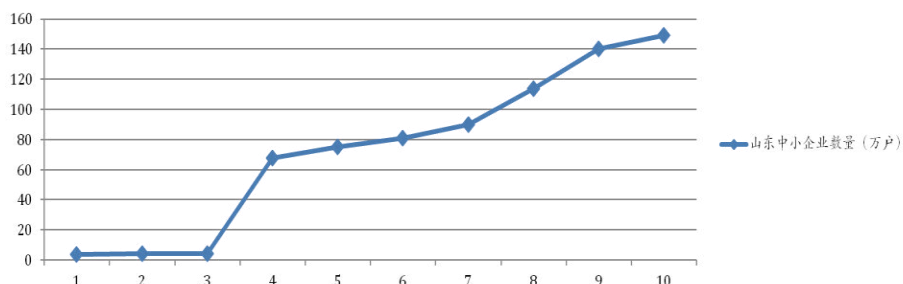
由图 2 可以看出，我国中小企业景气度 2010 年末还高于临界点 100，自 2011 年起持续下滑，2012 年第三季度只有 87.5，之后虽然略有回升，但一直低于临界值。

### 3 山东省中小企业经济贡献及发展

山东已建设 460 家创业辅导基地，中小企业对经济增长的贡献率已经超过 65%，成为全省经济社会发展的新动力、新引擎。2009 年之前，山东省中小企业数量维持在 50000 家之下，自 2010 年开始，中小企业发展迅速，呈现出较大幅度的增长态势。究其原因，受国家提振经济的要求，鼓励万众创新，所以增长数量明显。

#### 1. 山东中小企业数量

图 3 山东中小企业数量（根据山东统计年鉴整理）



#### 2. 山东中小企业质量

总体上看，山东省中小企业能达到在资本市场融资的不是太多，但相比全国各省市，排在前 3 位次的水平。根据对深圳证券交易所中小企业板和创业板山东公司统计，截止 2016 年 6 月中小企业版有 60 家公司，创业板有 22 家公司；根据清科私募通的数据统计，从挂牌企业数量上来看，江苏省、山东省和浙江省分别占据挂牌数量前三甲地区，其中江苏省企业挂牌数量为 19 家，占比 12.8%，山东省挂牌企业数量为 18 家，占比 12.1%，浙江省挂牌企业数量为 18 家，占比 12.1%；累计占比 37%。6 月新三板挂牌企业运营中心所在地共涉及 26 个省市地区，分布范围非常广泛。其中江苏省以 IT 行业的挂牌企业最多；山东省新三板新增企业在 IT、化工原料及加工、机械制造、建筑/工程、清洁技术各行业遍地开花，分布平均；浙江省新三板新增企业则是在机械制造方面表现抢眼。

#### 3. 山东中小企业税负状况

我国实行的全部税种共 18 个，中央税包括：关税、消费税、车辆购置税、船舶吨税。中央与地方共享税包括：增值税、营业税、企业所得税、个人所得税、资源



税、印花税、城市维护建设税。地方税包括：房产税、城镇土地使用税、耕地占用税、契税、土地增值税、车船税、烟叶税。2012年，全国中小企业每百元主营业务收入的成本达到 85.84 元，山东省主营业务成本增长 18.3%。在当前工业制造业中，工人工资成本已占到企业全部成本 30%左右，融资成本占到 11%-13%，物流成本占到 8%-10%，原材料成本占到 50%多，加之税费负担，中小企业盈利空间压缩。根据笔者与中小企业相关财务负责人关于税费负担的调查及访谈，普遍认为税费负担偏重，一些优惠支持政策不能切实落实。

#### 4 近年中小企业税费支持政策状况

在目前阶段，国家不断推出发展中小企业的税费支持政策，总体来看有以下方面：

##### 1) 乡镇企业所得税优惠政策。

乡镇企业所得税可按应缴税款减征 1%，用于补助社会性开支，不再税前提取 1%。

##### 2) 鼓励安置城镇待业人员就业减免税政策。

新办城镇劳动就业服务企业，当年安置待业人员超过企业从业人员总数 6%的，经税务机关审查批准，可免征所得税 3 年；劳动就业服务企业免税期满后，当年安置待业人员占企业原从业人员总数 3%以上的，经主管税务机关审核批准，可减半征收所得税 2 年。下岗职工从事社区居民服务业取得的营业收入，个人自其持下岗证明在当地主管税务机关备案之日起，个体工商户或者下岗职工人数占企业总人数 6%以上的企业自其领取税务登记之日起，3 年免征营业税。

##### 3) 支持高新技术企业减免政策。

国务院批准的高新技术产业开发区内企业，经有关部门认定为高新技术产业开发区内新办的高新技术企业，可减按 15%的税率征收所得税；并自获利年度起免征所得税 2 年。企事业单位进行技术转让及在技术转让过程中发生的相关技术咨询、服务、培训所得，年净收入在 3 万元以下的，免征所得税。

##### 4) 支持贫困地区发展所得税减免政策。

在国家确定的革命老根据地、少数民族地区、边远地区、贫困地区新办企业，经主管税务机关批准后可减征或免征所得税 3 年。民族自治地方企业，需照顾鼓励的，经省政府批准，可定期减征或免征所得税 3 年。

##### 5) 支持和鼓励第三产业税收政策。体现在：

(1)对农村的农业生产服务的行业，即乡村的农技推广站、植保站、水管站、林业站、畜牧兽医站、水产站、种子站、农机站、气象站以及农民专业技术协会、运输业合作社对其提供的技术服务或劳务所获得的收入，以及城镇其他各类事业单位开展上述技术服务或劳务所取得的收入免征所得税；(2)对科研单位和大专院校技术转让、技术培训、技术咨询、技术服务、技术承包所取得的技术性服务收入免征所得税；(3)新办独立核算的从事咨询业、信息业、技术服务业的企业或单位，自开业之日起，第一年至第二年免征所得税；(4)新办独立核算的交通运输、

邮电通讯企业或单位，自开业之日起，第一年免征所得税，第二年减半征收所得税；(5)新办独立核算的公用事业、商业、物资、外贸、旅游、仓储、居民服务、饮食、文教卫生企业或单位，自开业之日起，报经主管税务机关批准，可减征或免征所得税1年。

#### **6)福利企业减免税政策。**

民政部门举办的福利生产企业可减征或免征所得税；安置“四残”(盲、聋、哑和肢体残疾)人员占生产人员总数 35%以上免征所得税；安置“四残”人员占生产人员总数超过 1%不足 35%的，减半征收所得税。

#### **7)有利于小企业的所得税、增值税政策。**

税制改革之前确定的企业所得税为 33%的比例税率。为照顾盈利较少企业税负能力，减轻中小企业的税收负担，对年利润在 3 万元以下企业，减按 18%征收所得税；3 万-1 万元企业，减按 27%征收所得税。目前国务院决定年销售额 18 万元以下的小型商业企业，增值税率由 6%调减为 4%。

## 5 中小企业税费支持政策存在问题

### 1)政策目标起点不高，支持力度不足

现行对中小企业的税收优惠政策分散于各个税种的单行法、实施细则中，而且多以补充规定或通知的形式发布，优惠内容多，补充规定零散，而且政策调整过于频繁，虽然这种做法较好地体现了税收政策的灵活性，但却缺乏系统性、规范性和稳定性，缺乏有效的法律保证，透明度低，不利于实际操作，影响到中小企业长期发展战略的制定，也使得政策措施缺乏有效的法律保障，不利于实现公平税负和平等竞争。

### 2) 税收优惠政策设计不合理

现行对中小企业的税收优惠政策局限于税率优惠和减免税等直接优惠方式，而像国际上通行的加速折旧、投资抵免、延期纳税、专项费用扣除等间接优惠方式运用较少。这样，不能真正体现公平税负、平等竞争的原则，不利于鼓励中小企业对于投资规模大、‘经营周期长、见效慢的基础性投资。此外，对中小企业缺乏降低投资风险、筹集资金、缓解就业压力、引导人才流向、鼓励技术创新、提高核心竞争力等方面的税收优惠政策。并且税收优惠主要集中在企业开办之时。

### 3)对中小企业的税收优惠政策导向不明

现行对中小企业的税收优惠政策导向不明，不利于产业结构的调整和优化。税收优惠政策应按照国家产业政策要求对宏观经济进行调控，要体现鼓励、允许和限制精神，引导中小企业的资金、资源流向国家亟需发展的产业，而现行优惠政策未能充分体现导向性原则。

### 4)现行税收政策对中小企业存在歧视和限制

#### (1) 所得税制

企业所得税制仍实行内外两套税法，对外商投资企业优惠多，税负轻，对内资企业优惠少，税负重；同属内资企业，又是对大型企业优惠多，对中小企业优惠少，税负偏重。据测算，现在内资企业的实际税负率比外商投资企业高出约一倍左右，其中内资中小企业实际税负率则更高。

#### (2) 增值税制

现行增值税税制把纳税人分为一般纳税人和小规模纳税人两类，凡达不到销售额标准的纳税人，一般不得认定为一般纳税人，都划为小规模纳税人征税。小规模纳税人的征税规定是：进项税额不允许抵扣，也不得使用增值税专用发票；经营上必须开具专用发票的，要到税务机关申请代开，而且只能按“征收率”填开应纳税额。

## 6 改进建议

### 1)支持中小企业的税收政策应该税制统一，税负公平。

根据《中华人民共和国中小企业促进法》，对现行的中小企业的税收优惠政策进行清理、规范和完善，按照效率优先、兼顾公平，平等竞争、税负从轻、便于征管的原则，并以正式法规的形式予以颁布，以增强税收政策的规范性、稳定性和透明度，使中小企业税收优惠政策具有有效的法律保证，以此积极营造有利于中小企业生存和发展的税收环境，引导中小企业经营行为，提高中小企业自身素质和竞争能力。

### 2)科学选择税收手段的作用方式、方法和作用范围

注重发挥加速折旧、税收投资抵免、风险投资扶持、费用扣除等间接税收优惠政策的作用；注重系统的观点，与其他政策手段，如财政支出、投资政策、金融政策、产业政策等的配合运用。

### 3)支持中小企业发展的税收政策应与产业政策、就业政策结合起来。

税收优惠政策涉及税种太少，且主要集中在企业所得税一个税种，限制了税收对中小企业的调控和支持力度，降低中小企业所得税，允许增值税抵扣。

### 4)重视税费支持政策执行。

针对中小企业税费支持政策，各级管理部门应该重视政策执行，落到实处，并实行跟踪管理。

总之，中小企业目前在各个领域贡献不可抹杀，税费支持政策应该向着公平环境建设方向发展，使其在国际经济舞台上发挥更大的作用。

**主要参考文献:**

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- 【2】** 刘畅 新时期我国中小企业税费政策分析及对策思考经济问题探索 2012-08-01
- 【3】** 孙玉霞 中小企业就业贡献、税费负担及相关财税政策建议地方财政研究 2013-09-15
- 【4】** 郑怡中小企业挂牌“新三板”成本效益及发展策略分析企业改革与管理 2015-04

附录：

附录 1：中小微企业类型划分标准

附表 1 中小微企业类型划分标准

行业	指标	微型企业	小型企业	中型企业
(一) 农、林、牧、渔业	营业收入	50 万以下	50-500 万	500-2000 万
(二) 工业	从业人员	20 人	20-1000 人	1000-2000 人
	营业收入	300 万以下	300-2000 万	2000-4000 万
(三) 建筑业	营业收入	300 万以下	300-6000 万	6000-80000 万
	资产总额	300 万以下	300-5000 万	5000-80000 万
(四) 批发业	从业人员	5 人以下	5-20 人	20-200 人
	营业收入	1000 万以下	300-5000 万	5000-40000 万
(五) 交通运输业	从业人员	20 人以下	20-300 人	300-1000 人
	营业收入	2000 万以下	200-3000 万	3000-30000 万
(六) 零售业	从业人员	10 人以下	10-100 人	100-300 人
	营业收入	100 万以下	100-500 万	500-20000 万
(七) 住宿业和餐饮业	从业人员	10 人以下	10-100 人	100-300 人
	营业收入	100 万以下	100-2000 万	2000-10000 万
(八) 信息传输业	从业人员	10 人以下	100-300 人	300-2000 人
	营业收入	100 万以下	100-2000 万	2000-10000 万
(九) 软件和信息技术服务业	从业人员	10 人以下	10-100 人	100-300 人
	营业收入	50 万以下	50-1000 万	1000-30000 万



(十) 仓储业	从业人员	10人以下	10-100人	100-200人
	营业收入	2000万以下	200-1000万	1000-3000万
(十一) 邮政业	从业人员	20人以下	20-50人	50-300人
	营业收入	100万以下	100-1000万	1000-2000万
(十二) 房地产开发经营	营业收入	100万以下	100-1000万	1000-200000万
	资产总额	2000万以下	2000-5000万	5000-10000万
(十三) 物业管理	从业人员	100人以下	100-300人	300-1000人
	营业收入	500万以下	500-1000万	1000-5000万
(十四) 租赁和商务服务业	从业人员	10人以下	10-100人	100-300人
	营业收入	100万以下	100-800万	8000-12000万
	资产总额			
(十五) 其他未列明行业	从业人员	10人以下	10-100人	100-300人

## 附录 2: 近年出台的中小企业相关政策

《财政部、国家税务总局关于企业所得税若干优惠政策的通知》财税字[1994]001

《关于进一步改善对中小企业金融服务的意见》银发〔1998〕278号

《关于下岗职工从事社区居民服务业享受有关税收优惠政策问题的通知》国税发〔1999〕43号

2003年1月1日起实施 《中小企业促进法》；

国发〔2005〕3号《关于鼓励支持和引导个体私营等非公有制经济发展的若干意见》；

国发〔2009〕36号《关于进一步促进中小企业发展的若干意见》；

国发〔2010〕13号《关于鼓励和引导民间投资健康发展的若干意见》

《国民经济和社会发展第十二个五年（2011—2015年）规划纲要》首次安排专节论述促进中小企业发展。

2011年以来，国务院多次召开常务会议研究确定支持小型微型企业健康发展的政策措施。

国发〔2012〕14号《关于进一步支持小型微型企业健康发展的意见》

2014年9月推出小微企业税收优惠措施，在现行对月销售额不超过2万元的小微企业、个体工商户和其他个人暂免征收增值税、营业税的基础上，从10月1日至2015年底，将月销售额2-3万元的也纳入暂免征税范围。

2013-2014 政府进行了一系列行政审批和收费整顿工作，取消清理了大量不合理收费；

央行于2014年4月和6月连续两次实施了定向降准，8月份又出台了《国务院办公厅关于多措并举着力缓解企业融资成本高问题的指导意见》。

2014年11月召开的国务院常务会议，决定实施普遍性降费，进一步为企业特别是小微企业减负添力，会议部署了四项具体减费举措，每年将减轻企业和个人负担约400多亿元。

截至2014年11月,已经建立500家国家级中小企业公共服务示范平台,初步构建起“省级枢纽平台+各地窗口平台”架构的覆盖全国的中小企业服务平台网络,为中小企业提供涵盖创业辅导、管理咨询、融资、技术创新、法律、市场拓展等领域的专业服务。各级财政资金对中小企业服务体系支持力度不断加大。

《国家税务总局关于扩大小型微利企业减半征收企业所得税范围有关问题的公告》(国家税务总局2014年第23号公告)

《财政部 国家税务总局关于小型微利企业所得税优惠政策有关问题的通知》(财税〔2014〕34号)规定的优惠政策(简称减半征税政策)

自2014年10月1日至2015年12月31日,对月销售额2万元至3万元的增值税小规模纳税人和营业税纳税人,暂免征收增值税和营业税,政策范围涵盖小微企业、个体工商户和其他个人。(财税〔2014〕71号)

财税[2016]42号关于扩大18项行政事业性收费免征范围的通知

## Part 2 Innovation

### C 德国的创新型中小企业与全球化: 企业, 战略与政策趋势

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**摘要:**

全球化与新科技机遇改变了德国的创新型中小企业的商业环境。这种改变发生在不同的领域, 并且同时给他们自身带来了不同的影响。与此发展背景不同, 创新型中小企业基本都能够成功发展其有竞争力的优势。创新型中小企业在企业家族中独树一帜。它们中的许多都来自工业领域, 也有一些涉足服务业。创新战略在不同行业 and 不同科技领域中的选择也有所不同。在中型科技领域(如汽车或机械部门), 许多企业都成功发展了自身的累加知识, 并在竞争中保留了独有性。在高科技领域, 框架条件(大学研究, 创业资金)也有了显著改善, 尽管一些企业的规模并没有发展很大, 新的风险也在出现。在德国经济中, 创新型企业不仅重视创新, 它们还熟知研究与创新政策。政府调整了框架条件, 并且重视企业的创新研究, 以使得企业能够增加其竞争力。开展研发合作是政策中的重要一点(非强制企业参与)。

**关键词:**

全球化, 研发, 中小企业

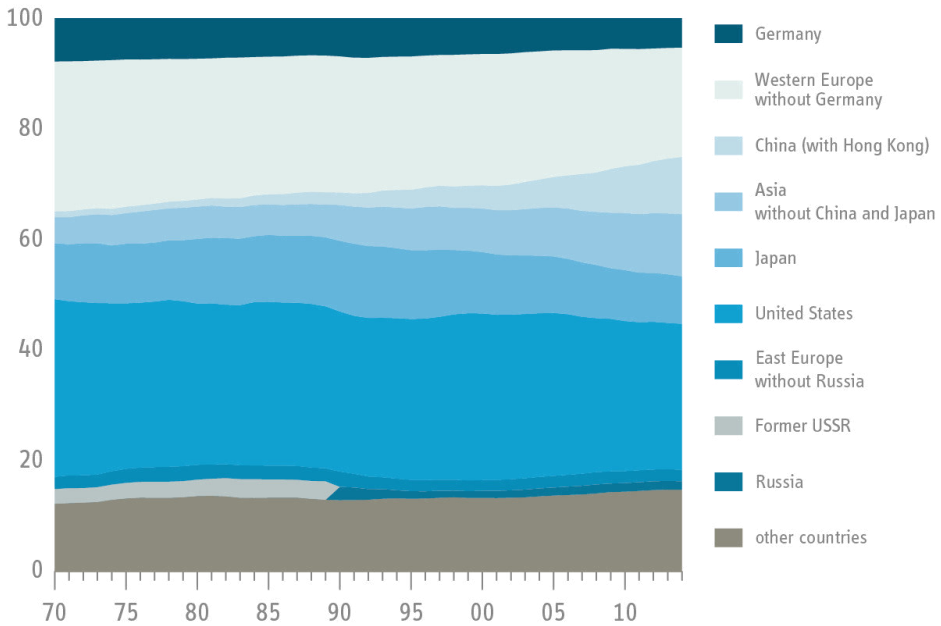
**JEL-Classification:**

O33, O38

## 1 引文: 全球化, 科技进步与中小企业的挑战

上一个十年间, 德国的创新型中小企业在商业环境方面发生了实质性的改变。这些变化中的一点在图表 1 中体现的尤为明显。图表 1 显示了不同国家之间增值行业领域的显著变化。德国的总增加值份额在十年内逐渐下降, 而亚洲国家的份额在增长。德国在 1970 年的总增加值份额有 8%, 而 2014 年这一数字下降到了 5%。在欧洲、美国和日本也有类似的发展情况。而中国的总增加值份额由 1% 增长到了 10%。

图表 1: 不同国家在工业领域占据全球总增加值的份额 (1970-2005, 保持在稳定价格的总增加值 (2005) 单位: US-\$, %)



(德国, 西欧 (除德国外), 中国 (除香港外), 亚洲 (除日本和中国外), 日本, 美国, 东欧 (除俄罗斯外), 前苏联, 俄罗斯, 其他国家)

来源: Own calculation based on United Nations Statistical Division 2016.

与此同时, 科技进步助长了产品质量的质变以及在生产过程中的改善。这些改善在不同的领域 (如汽车和化工行业) 中显示出了不同的特征。科技进步使得德国

经济在全球经济中持续保持竞争力。并不像像数十年之前人们预测的那样, 制造业会在德国经济中消失并被低成本经济所取代; 相反它如今仍是德国经济中的重要一环。中小企业和它们的为经济注入的创新力将会一直扮演着重要角色。许多中小企业都得以在国际市场中盈利, 并且在不断变革的环境下保持竞争力。

与此背景相对的是, 德国经济占全球总增加值的份额有所下降, 虽然这却并未给德国的中小企业带来任何的负面影响。此数据表达的实际是中国以及其他亚洲国家的经济追赶过程。这个过程给中小企业带来了不同的结果: 首先, 新市场的建立使得创新型国际中小企业的产品可以被销售。其次, 新兴竞争对手快速发展, 欲在亚洲市场提高其份额。再次, 新兴热门创新产业的出现, 使得新产品能够发展, 生产进程得到优化。就上述这些全球趋势来看, 对于德国的创新型中小企业来说, 可谓机遇与挑战并存。本文讨论了这些在德国的创新型中小企业的研究战略发展所带来的结果。在第二部分中, 创新型中小企业的特征图被详细描述。第三部分着眼于中小企业应对这些挑战的不同研究战略。第四部分则探讨了针对全球化的机遇与挑战的政策趋势。

## 2 创新型中小企业的特征

本文中, 我们定义“创新型中小企业”为“致力于系统创新研究(即研发)的中小企业”。这在经合组织《奥斯陆手册》(OECD, Oslo Manual 2005: 16, 17)中已被定义, 故其与创新的定义并不相同。根据此定义, 如果企业供应对企业本身而言新的产品, 那么它就是在追求创新。然而在许多情况下, 这代表着并非创造一个全新的产品, 而是作为在经济中创新扩展的一部分。

依据《奥斯陆手册》的定义, 仅有一部分中小企业定期进行研发。他们包括:

- 不同领域的高新技术企业, 常与科学研究搭界。
- 在中型科技领域的创新型中小企业, 比如制造业与汽车业。
- 定义模糊企业, 例如一些并非欧盟(EU)对于中小企业最多 250 名员工的定义, 然而却在相对较小的国际市场中扮演着积极与重要的角色。这些企业常被称为“小型大企业”(Simon 2007)。
- 低科技含量产业中进行研发的创新企业(比如纺织业)。

虽然传统观点认为中小型企业是独立的经济个体, 这种观点已不再流行。许多中小企业都属于较大型的企业。因此, 它们在商业管理决策中的独立性取决于他们所属的企业集团(RWI and WSF 2010: 325)。

图表 2 提供了一个关于进行创新与研究的德国企业的总览。2014 年, 在全部 320 万企业中, 有 7% (2340 所企业) 处于工业领域(Statistisches Bundesamt 2016)。多年前, 在超过 20 名员工规模的所有企业中, 进行常规研发的中小企业的份额一直是 24%<sup>1</sup>。在服务业, 创新型企业仅占有企业中的相对一小部分。

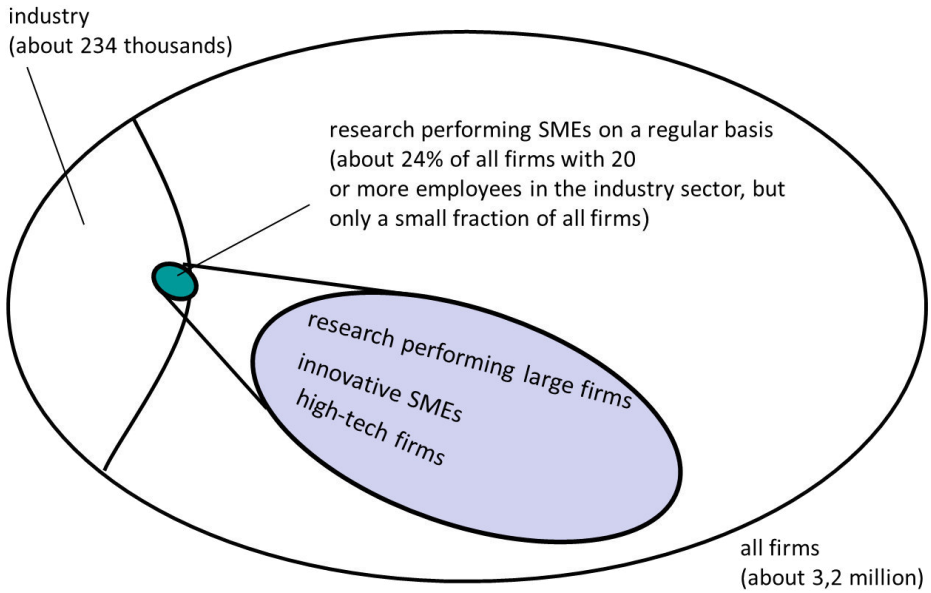
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<sup>1</sup> 此数字基于 2004 年官方的“成本结构调查”。遗憾的是, 在 2014 年进行的调查的结果还未实时更新。不过, 此类数字并不容易随着时间而改变。



图表 2:德国的创新与研究企业

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(left to right: 行业 (大概 23.4 万个), 常规进行研究的中小企业 (在工业领域占员工超过 20 人的企业总数的 24%, 但在所有企业中仍占很小比例), 进行研究的大企业, 创新型中小企业, 高科技企业)

来源: Own representation based Rothgang and Dürig 2008.

### 3 研发战略

在德国, **创新型中小企业的研发战略与活动**有着明显的特性。一般来说, 大企业的研发份额能够占到 90%左右。不过在许多领域, 来自中小企业的创新也尤为重要。比如在机器制造业中的企业通过其产品传递给消费者市场它们的创新能力。一般来说, 中小企业更加灵活, 而且更倾向于尝试新的创新方法, 因此能够更好地开发出创新理念以适应创新市场。与此同时, 中小企业的研发战略与大型企业相比也更加非正式。

不同行业与科技领域的研发战略有着本质的区别。以中型科技产业(如制造业, 汽车业和化工业)为主的企业研发与创新有着以下特征:

- 企业竞争力取决于生产与公司内部的产品信息。这已经过长时间的蜕变, 并且仍在继续发展。
- 在此领域的企业强调技术与市场发展, 这样做虽使其市场地位岌岌可危, 但是与此同时能够基于其知识信息的积累产生新的机遇。
- 这些领域的研发通常在总部周边进行。

应对两手都要抓(使现有知识积累的发展更进一步与开发新产品和运用新科技)的挑战是对于在此领域的中小企业竞争力的核心任务, 同样也是对于在增值产业链中所有企业的核心任务。对于增值产业链的创新和消费者企业与领域来说, 中小企业的创新通常十分重要。虽然中型科技企业的研究战略的特征有着许多相似性, **高科技企业**(比如生物科技或者信息与交流科技, 包括软件领域)的研究战略特征有许多不同之处:

- 这些企业的竞争力通常取决于开创新理念, 并快速将其投入市场。
- 科技股发展迅速, 带来新的机遇与对于流行怎样的产品的极大不确定性。
- 一般来说, 研发压力非常大。
- 对于知识发展来说有很多不同的战略(取决于领域的特征)。在某些领域(如软件开发)中, 一些研发活动是在合作中进行的, 其创新过程是开源的。在其他领域, 新企业需要大型企业的帮助, 从而获得准入全球市场的资格(比如商业软件)。在另一些领域(比如生物科技), 企业战略目标并不在于将产品推向市场, 而是将研发结果出售给一些大型企业(比如医药行业)。

- 由于许多想法来自科学研究, 故科学及联合研究的资助与发展非常重要。

由于高科技企业经常在新领域创造高发展的潜力, 它们对于经济来说非常重要的。此外, 它们的创新想法同样给经济中的其他领域注入新鲜血液。

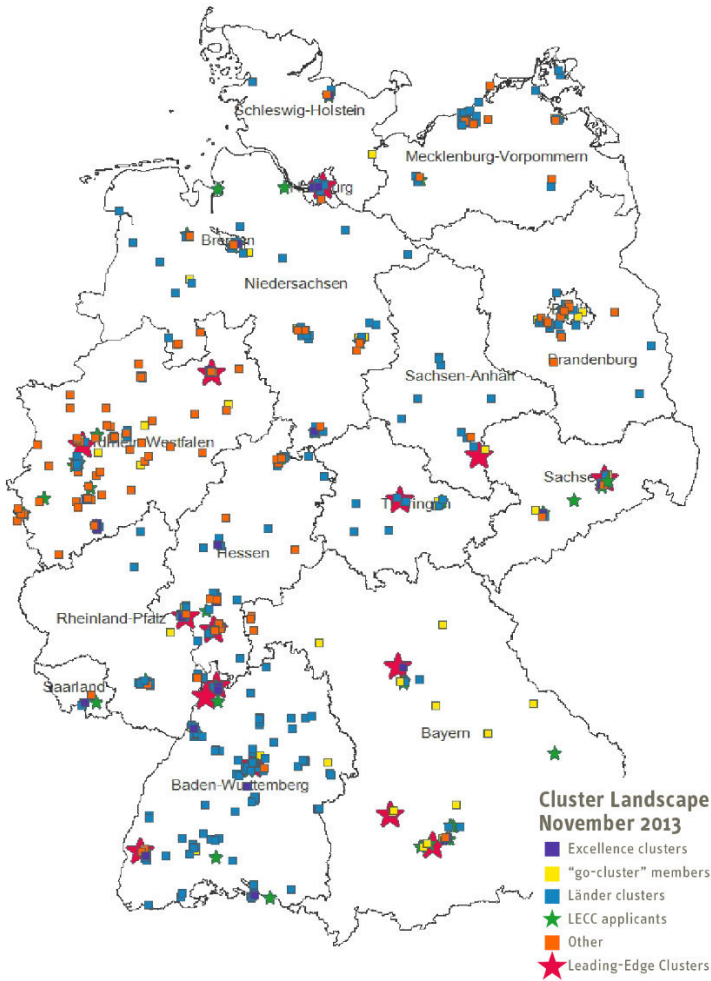
#### 4 政策

对于德国的中小企业来说, 推广创新活动一直以来都是研发政策的一个重要目的。研发推广大部分都是出自联合研究 (RWI and WSF 2010) 不同类别的手段有: 对于绝大部分企业合作研究的研究补助, 各自推广技术转让合作等 (RWI and SV Wissenschaftsstatistik 2007; Rothgang and Dürig 2009)。目的在于弥补市场的不足, 形成长期的行业发展, 给经济增长增添生机。

一个例子是促进工业集体研究的方案, 该计划由大学和研究机构资助, 这些问题有关中小企业在德国经济的不同部门。这个计划在 1954 年已经开始, 并已经适应了在中企业经营环境的变化 (Böttger 1993)。然而, 核心的目标是随着时间的推移, 促进中小企业的创新一直保持不变。

为促进中小企业创新的一个最近的方法是集群政策 (Kiese 2012)。这种方法促进地方产业合作, 以加强对中小企业的与大公司, 大学和研究机构的共同研究。图表 3 显示了一个景观: 640 多个投资集群处在联邦和州水平之下。这些举措中有一半的特点是专注于创新, 而其他人则在合作中促进不同的目标。他们中的大多数人接受来自联邦或州政府资金援助。

图表 3: 德国的集群景观



(集群景观 2013 年 11 月)

良好集群, go-cluster 成员, 州集群, LECC 成员, 其他, 前沿集群) 来源: Rothgang, Cantner, Dehio et al. 2015: 25.

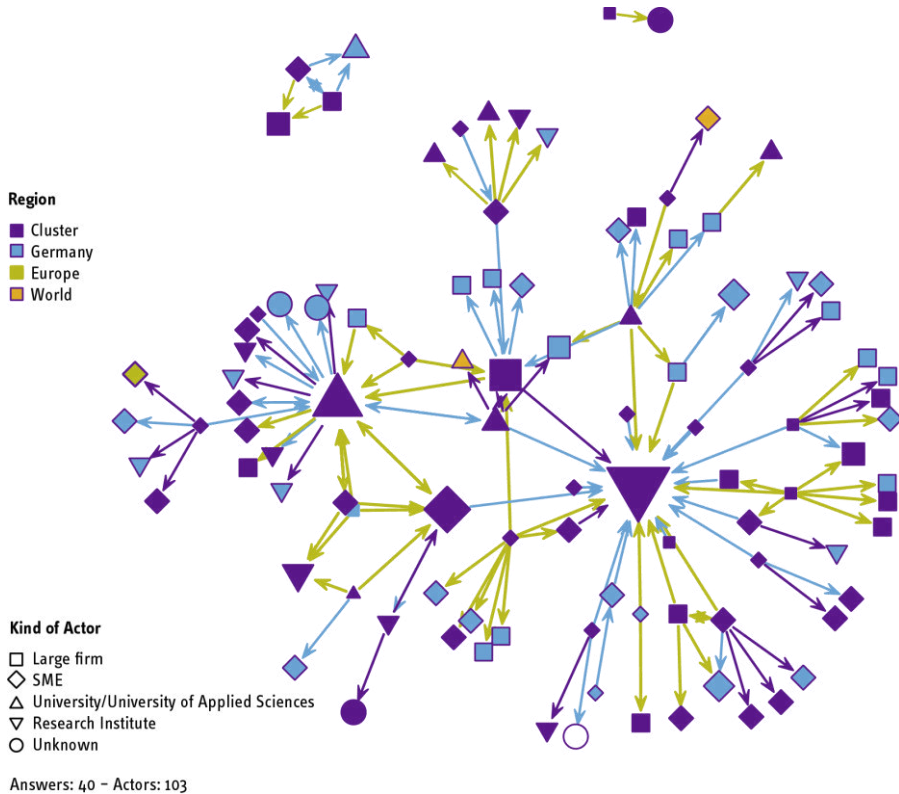
这些举措为中小企业提供服务, 也同时给大公司、大学和研究机构提供服务。高数量的举措显示了集群资金对德国创新政策的重要性。不同的集群政策的区域分

布是由于诸如州政策、区域产业结构、地方经济的研究力度, 公司、科研院所和政府力量的策略等不同的因素所致。金融支持在大多数情况下仅限于一段时间。

在不同的集群推广中脱颖而出的一项目是在联邦水平上的“前沿集群竞争”。这个 2008 年-2017 年的项目的目标是形成高科技领域的合作, 以便加强德国经济的创新能力。这使得企业之间的合作更加密切, 绝大多数都是在超高科技领域与常规战略中 (RWI 2014; Rothgang, Cantner, Dehio et al. 2015)。

在图表 4 中以物流集群“Effizienzcluster LogistikRuhr”的例子显示。此图表显示了这一项目带来了新的创新合作。

图表 4:“前沿集群竞争”Effizienzcluster LogistikRuhr 对于网络的影响



(地区: 集群, 德国, 欧洲, 世界)

参与者种类: 大型企业, 中小企业, 大学与应用自然大学, 研究机构, 未知)

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来源: RWI 2014: 126. – Color of the arrows: green = impulse from the program; light blue = intensified by the program; dark blue = not influenced by the program.

除此之外, 对于中小企业来说, 还有其他一些集群合作的优点:

- 中小企业能够利用共同研究项目的结果。
- 它们可以接触到通常较为难以获得的大企业的代表, 尤其是对于新兴企业来说。
- 它们能够在集群可视化增长中获利。
- 通过集群合作, 它们可以紧追科技发展潮流, 提高它们自身的竞争力。

作为“领先集群竞争”评估的结果, 集群政策有着帮助中小企业解决科技和市场挑战的潜力。此政策方法的另一个优势在于其对于不同领域的灵活性

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## Part 2 Innovation

### D 产业融合角度下的“互联网和中小微企业创新”——以农产品流通企业为例

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#### 关键字:

产业融合, 中小微企业创新, “互联网+”, 农产品流通

## 1 背景

随着越来越多的工业交互作用发生，产业融合成为了经济领域一个非常重要的话题，政府也在执行政策以促进产业融合。由于科技进步和管制放松，产业融合发生于工业和技术业的每个角落，这改变了传统工业产品的定义和市场需求，导致了企业竞争和合作的关系改变。产业融合可以理解为工业创新的一个过程，也可以理解为工业创新的结果。

根据产业融合的基本概念，互联网和中小微企业创新融合可定义为最优化配置互联网和中小微企业或他们的内部部门，基于技术，产品，服务，商业，和市场资源的部门。杰出表现在于它们之间的界限渐渐模糊，然后依赖于互联网科技新工业属性出现了。

农产品流通是指从供应商到消费者之间的实体流动，其中包括农产品生产，购买，运输，储存，加工，包装，分销，信息整合，市场反馈和其他别的功能，因此增加农产品的附加值。应该注意，大部分农产品流通企业是中小微企业，所以在这篇文章中，将以农产品流通为例。

## **2 五个限制中小微企业发展的问题**

随着 30 年来的改革开放，中国中小微企业高速发展，取得了重大的成就，而且成为中国经济和社会发展的重要力量。然而，中国中小微企业面临这许多问题，比如融资困难，管理问题，信息化不够，高成本和缺乏专业人事。

### **2.1 融资困难**

中小微企业融资渠道非常狭窄，基本上依靠业主个人投资，内部融资和银行贷款融资。其他融资渠道，比如企业风险投资，发行股票和债券对于缓解中小微企业财政困难作用微乎其微。与此同时，由于某些因素的存在如财政管制，这让中小微企业非常难取得银行贷款。大部分银行和金融机构通过设定高信用标准和严格审核程序等来高他们银行的信贷融资的门槛。现有的商业银行实行评价机制对中小为企业来说更是雪上加霜。西南财经大学经济与管理学院根据中国家庭财政报告显示，中小微企业取得银行贷款的比例为 46%，11.6%的申请被拒绝，42.4%从未申请。

### **2.2 高成本和成本快速上涨**

国际经济增长速度将会减慢，进一步加强国内外竞争，同时最低工资上涨进一步增加中小微企业的商业成本。根据国家劳工部 2014 年 6 月的调查显示，目前中国中小微企业的生产成本和经营成本明显增长。64.9%的调查对象表示 2014 年原材料成本比 2013 年增长，其中 66.5%中小微企业和 67.9%的中型服务企业认为原材料价格上涨，72%的西方企业认为原材料成本快速增长。

### **2.3 低信息化**

据统计，中小微企业缺乏信息专家，16%-36%的企业没有设置专门的信息部分，而且超过一半的企业没有特意指定信息管理人员。

### **2.4 不良管理模式**

据统计，中小微企业缺乏信息专家，16%-36%的企业没有设置专门的信息部分，而且超过一半的企业没有特意指定信息管理人员。

### **2.5 缺乏专业人事**

人工成本在近几年快速上涨，中小微企业招聘，招聘成本高，缺乏专业的技术人员和其他等问题已经成为一个重要的可持续发展瓶颈。与此同时，中小微企业的激励机制，和缺乏企业文化建设，也让中小微企业很难留住人才。

### 3 互联网与中小微企业创新融合环境的 PEST 分析

互联网和中小微企业创新融合环境分析主要包括以下四个方面，政治，经济，社会和技术。

#### 3.1 政治环境

平衡城乡发展策略提供了农业和相关工业的融合，城市一体化政策是指融合的发展方向，政府投资于“三农”的稳定增长为产业融合提供了坚实的物质基础。

政府不断发布政府来促进互联和传统流通工业的融合。最近几年，第一份文件继续鼓励互联网和传统农业工业的融合。尤其是 2015/2016 的第一份文件分别提出了“农产品流通模型创新”和“促进互联网和现代农业”的目标。中国是一个农业产品生产 and 消费大国。加强新鲜农产品流通建设，保证市场供应的长期机制，保护生产者和消费者的网上安全，尤为重要。

#### 3.2 经济环境

随着互联网的快速普及，电子商务在农村地区扮演了重要的角色，改变了消费者的行为模式，农产品流通企业的策略和农民的行为。

消费者行为改变了很多。现如今，新鲜农产品消费逐渐增加，居民食品安全意识进一步加强，冷链运输需求增长，网上购物非常盛行，绿色食品有机食品和其他高档农产名需求增加。农产品流通企业调整了他们的策略，开展农业订单，农产品电子商务和其他依赖于互联网的新产业，努力提高他们的核心竞争力，使得企业运营更加标准化，促进企业管理升级。农民的行为也在改变，越来越多的水果蔬菜种植农民，渔民，在网上提供他们的新鲜的产品。电子商务给新鲜农产品销售提供了一条捷径。

#### 3.3 社会环境

一方面，中国经济逐渐转型，转为追求全面发展，节约能源，保护生态环境的密集型发展模式。农产品流通工业和互联网的整合面领着一个非常稀有的发展机会。“互联网+农产品流通”提供了传统农产品流通发展的方法，通过此方法，新型农产品流通企业可以最大化利用信息手机，信息转化，信息处理和其他互联网工业技术，来减少能源消耗，提高效率，减少成本，节约资源，和保护环境。

另一方面，消费者越来越注意农产品安全和健康，关心农产品的生产，储存，运输等全程监督，因此促进了生产，分销，零售信息的需求，而这些提供了“互联网+农产品流通”的发展空间。

### 3.4 技术环境

由技术创新和技术渗透引起的技术融合，是最直接的产业融合要求。互联网信息技术使得消费者，农民，农产品，信息和资本结合的更紧密。同时，由于互联网的普及性，消费者非常愿意接受新的商业和服务模式。互联网提供了另一种农产品流通的技术，包括数据收集，转化，存储，和农产品经销商，批发，零售和国际贸易等之间的数据分享。这些技术改变了传统农产品流通的道路和管理内容。

信息技术本身的快速发展，降低了农产品批发零售产业信息化的门槛。网络普及性降低了建设新鲜农产品网上销售业务的成本。同时，这些技术的内部联系和内部变化加速了它们的渗透，改变了农产品流通企业的内部竞争关系。

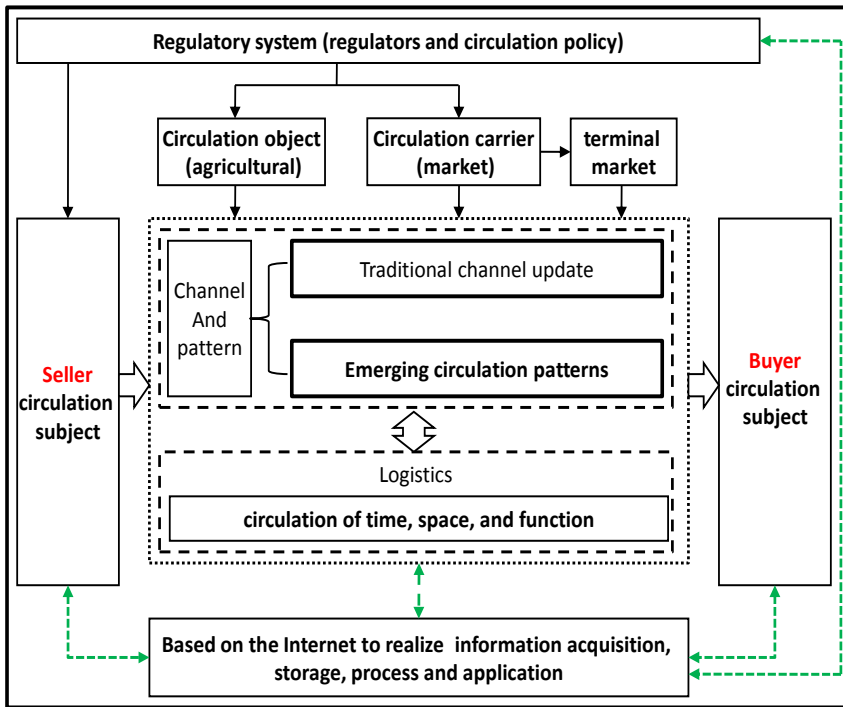
通过 PEST 分析，我们发现中国互联网和中小微型企业产业融合面领着一个非常友好的微环境，而且融合能够快速促进中小微企业结构升级，组织改革和格局改变。

#### 4 “互联网+农产品流通”融合机制

新农产品流通价值链需要互联网支持，从早期的生产和采购，到中期的运输，储存，加工和包装，到后期的分销，信息处理，市场反馈和其他功能。互联网技术能够减少农产品流通成本，或者提供技术创新服务的稳定流。

总而言之，新型农产品流通系统已经意识到互联网对与传统系统的渗透。互联网和农产品流通之间的关系是动态的，意味着渐渐渗透，融合和共生（图 1）。

图 1：“互联网+农产品流通”的融合机制

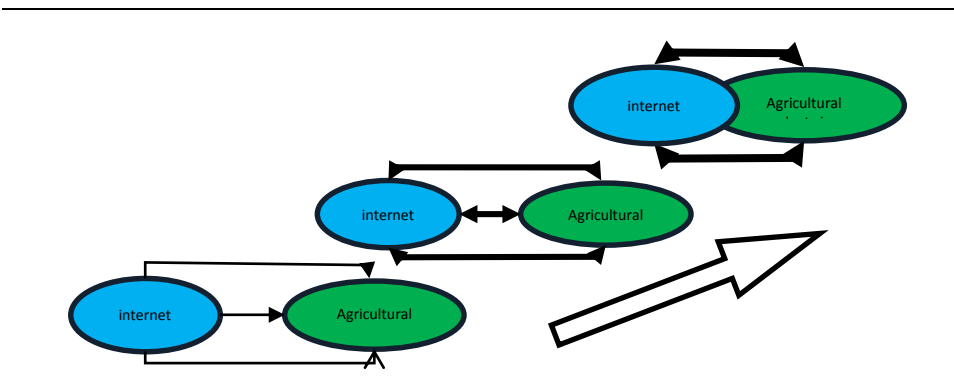


“互联网+农产品流通”融合机制是指围绕其的核心技术价值链发展过程。新型农产品流通价值链，需要互联网支持，从早期的生产和采购，到中期的运输，储存，加工和包装，到后期的分销，信息处理，市场反馈和其他功能，最大优化管理以满足用户需求，实现农产品加值，如图 2 所示。互联网技术能够减少农产品流通成本，或者提供技术创新服务的稳定流。

作为传统产业，农产品流通经历了多年的缓慢发展。农产品流通本质上属于产品服务产业，是劳动分工的延伸，是社会和经济发展到一定程度的产物。互联网和农产品流通的关系不是简单的劳动分工关系，是一个动态的关系，意味着渐渐渗透，融合和共生。

在“互联网+农产品流通”初级阶段，农产品流通是网络存在的逻辑前提，而互联网依赖于农产品流通产业的发展。但是农产品流通产业的快速发展离不开互联网科技。它们之间互相影响现象不是很明显，越来越多表现为互联网科技向传统农产品流通产业渗透（图2）。

图 2: Comparison of three convergence stage 三种融合阶段的比较



随着农产品流通的高速发展，对互联网科技的需求会快速增长，比如新鲜产品质量检测科技，农产品质量跟踪科技，信息和沟通科技等等。流通部门的商业能力需要互联网部门的投入，因此，随着经济发展的改善，互相依赖程度会渐渐加深。

到高级阶段，“互联网+农产品流通”将会变成产业共生模式，就是互联网和农产品流通产业或其内部子产业出现整合，互相影响和内部机制协调等现象。结论是“互联网+农产品流通”经历了初级阶段的渗透中期阶段的紧密整合和高级阶段的产业共生，最终合并了互相影响和整合的机制。



## 5 “互联网+中小微企业”融合影响

### 5.1 产业融合升级产业结构

结合传统农产品流通和互联网将会带来一个新产业结构模式，进而，产业组织结构将会转型。互联网作为新产业，结合农产品流通产业，将会给现代服务产业做出一定贡献。互联网整合促进农产品流通的社会劳动分工。新型农产品流通服务跨越了时间和空间，创造了非常好的合作条件，模糊了农业，运输业和服务业的界限。

在互联网渗透传统农产品流通的基础上，各级组织变得清晰，产生了集中于更加高新知识模式的技术。然后，经营效率提高，促进多种沟通方式。农产品流通的变化越来越快，企业新技术传导更快，多种产业资源分配和服务能够准确的表达。因此，互联网升级了农产品流通技术，提升了产业关联，最后进一步优化了产业结构。

### 5.2 互联网整合改变了产业组织

互联网渗透农产品流通，弱化了传统批发市场和零售市场的角色和位置。可视化经济的发展减少了顾客流入实体农产品商业。某些零售商非常抑郁，甚至在偏远地区关闭了店门。因此，出现了一个分散化趋势。越来越多的农产品贸易发生在网络上。成千上万人同一涌入实体市场模式渐渐减少。可视化农产品贸易平台的发展使得农产品贸易商聚集于网络，因此，各种贸易服务实体中心的位置受到影响。

农业贸易网络平台远离了实体贸易中心资源的显示，拥有了更广阔的发展空间，因此农业贸易很可能影响城市一体化的趋势。以上提到的因素，使农业产品贸易从一个单一地理空间聚群变成一个在网络上同步的虚拟聚群。所以，空间聚群商业模式也改变了。

互联网公司的跨国竞争，已经影响了乃至颠覆了传统农产品流通企业产业状态。互联网公司通过其灵活的制度，不同的商业模式，改变了竞争条件，完全重建了产业组织的农产品流通模式。

### 5.3 互联网改变了农产品流通产业的布局

互联网促进了城市和农村资源接近，引导了城市和农村农产品流通的整合。在城市和农村地区的双重结构下，中国农产品流通产业的发展也表现出了碎片式状态和眼中不平衡。

随着互联网渗透在农村地区增加和运输业基础设置的改善，城市和农村农产品流通的差距正在渐渐缩小。电子商务已经肠胃了农村地区经济发展的引擎，而且满足了城市居民采购高质量农产品的要求。

随着“互联网+农产品流通”的深入，农产品零售商地区横向分配根据行政划分模式被打破，互联网整合能够重新改造农产品流通和商业地区。

## Part 2 Innovation

**E** 在创新驱动经济下的企业决策：企业精神在全球化中的筛面。

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## 1 引言

德国的创业环境是以大量的金融和咨询服务，以及一个繁荣的鼓励创业的行动的经济环境而著称。然而，德国的创业强度却非常低下<sup>1</sup>。对比初创公司和清算的水平，已经有近四年的负平衡<sup>2</sup>。由于不当应用，只有 60%的预算拨款能够支持创业活动。这使得这种情况愈加奇怪<sup>3</sup>。那么，为什么德国人这么不重视创业的机会呢？本文的目的就是联系经济学中的经济发展阶段，踏足创业研究领域。本文旨在提供一个在创新驱动的经济环境下，考察创业行为影响因素的一手尝试。在德国的这种情况下看来，似乎是存在一个需要重新思考各种研究知识创新驱动的经济体的创业精神。本文的结论参考了创新驱动国家的企业家精神，为直接的未来研究提供了研究问题和假设。

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<sup>1</sup> GEM Monitor 2014 and 2015 and the Table in the Appendix, Start up quota of total population in 2012: 1,5%, 2013: 1,67; 2014: 1,8%.

<sup>2</sup> 对比 Meyer 2015a, German statistical Office 2013 – 2015, Institute for SME Research.

<sup>3</sup> 对比 Almus/Prantl 2002, Bernhard 2012, Bouncken 2011.

## 2 基于理论的研究命题

### 2.1 质疑创业的定义

在大量的文献中，创业往往被理解为与企业启动有关。对失业的影响以及作为就业驱动的想法占据了企业家定义的主导地位。创业研究往往是在分析对与决定成为一个企业家的推动和拉动因素，从而促进创业成为一个就业因素。然而，就创业先驱们（如 Schumpeter, Drucker 和 Porter）来说，创业的定义不仅仅只是创立企业<sup>4</sup>。他们把创业精神看作提供新因素组合，以便通过引进新的理念来创造新的市场秩序的能力。他们的观点是建立在 Kondratieff 的“创新是经济、就业和繁荣发展的根源”的理念上的。同时 Drucker<sup>5</sup> 也受到了 Schumpeter 观点的启发。然而，他强调的事实却是企业家有能力将创新转化为有计划的组织行为。因此，他不仅通过新的因素组合或工业发明的应用来理解创新，也通过提供一个对于现有的产品的新的服务层来理解创新。他强调了七个来源（如时间，过程和新知识等）的创新，以及需要把创业转化为实践。对于 Porter 来说<sup>6</sup>，创业也是经济竞争力和发展的关键。创新的创造及其实现对他来说是企业家的核心任务。

看上去文献记载也并不确定是否将创业归为仅创立企业或是包括现有的企业在内，或者二者兼有。然而如果将文献在管理战略角度分析，同样有着明显的提示：对于一个企业来说，为了保持其竞争力与企业整体性，提供创新的需求仍然存在。根据 Drucker、Porter 和 Schumpeter 的理论，这才是真正的创业特质。

然而似乎有一个或多或少是约定俗成的事实：创业被理解是个人的行为，以创造和实施创新的经济机会和风险，从而获得财务上可行的和社会的回报。创业的任务是通过组织发展来实现创新，并将其推向市场。这项任务的指标是分配更多的个人的行为，而不是一个组织的行为。

然而，这种对于创业的不确定的理解可能成为理解具有创新驱动的国家的企业家的行为的重要因素，这体现在就业增长看上去是不仅仅是重中之重。毫无疑问，甚至大型企业也在应用知识管理系统，以便促进以创业为标记的创新。

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<sup>4</sup> 对比 Schumpeter: *Theorie der wirtschaftlichen Entwicklung* (1993).

<sup>5</sup> 对比 Drucker: *Innovation and Entrepreneurship* (1993).

<sup>6</sup> 对比 Porter: *Competitive Advantage* (1990).

## 2.2 创新驱动型经济对创业的启示

根据世界经济论坛（WEF）以及全球创业观察（GEM）显示，依照其经济发展，经济体被划分为下列三种组别：要素驱动经济体，效率驱动经济体和创新驱动经济体。这三种不同阶段的经济体对于创业以及提高劳动力地位等问题有着不同的解释。

在要素驱动经济体中，由于现存的低成本，劳动力被看作是一种生产要素。创业是基于对自然资源的使用（旅游业，农业以及手工业经济）。所有的创业努力都是建立在劳动力是一种生产要素的基础上。为了促进创业的研究问题适用于打造创业环境、提供教育机会以及提供企业繁荣的微观经济等。这些问题多数分布在诸如非洲国家在内的发展中国家。

效率驱动经济体依据工业化的发展程度以及对于大规模经济体依赖程度的增长程度来进行区分。这也暗示了资本聚集型组织的管理以及社会安全体系的发展。因此，促进创业的重点是提高生产力或效率，以便更好地与世界市场竞争。促进创业主要集中在创业合理化，准入世界市场与建立国际组织的标准。中国与东欧一些国家被认为是效率驱动经济体。

创新驱动经济体<sup>7</sup>被认为有以下特征<sup>8</sup>：（1）工作人口的变化，（2）全球化对于一个经济体带来的影响（从以工业为基础转变为以后勤和服务业为基础），（3）极强的知识型增值经济，（4）数量到质量的经济增长导向的改变，以及（5）不断增长的高标准生活和社会保障。竞争异常激烈，而且取决于创新、网络和专业性的高需求，以便应对全球化带来的影响。创新的采用、消费者为基础的本质同通过电子商务的影响进行的改变是创新驱动经济的决定性成功因素。

在创新驱动经济体中，创业带来的影响在知识管理和大型与小型企业之间的关系中体现。由于这些经济体的复杂程度，所以存在着决定有效利用知识的方法的需求。大型与小型企业之间的竞争局面需要被改变。由于大型企业的项目导向，他们需要与小型企业加强在专业知识领域的合作。大型企业有更好的机会来进行金融创新，但是他们需要有效利用知识。作为回报，小型企业需要与大型企业合作，才能在“背包”概念的引领下进入全球市场。

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<sup>7</sup> 对比 Kuckertz/Berger/Allmendinger (2015); Göggel et al 2007, GEM Monitor 2014 and 2015.

<sup>8</sup> 对比 Kuckertz/Berger/Allmendinger (2015), Göggel/Gräß/Friedhelm 2007, Maaß/Chlosta/Icks/Welter 2014.

### 3 方法论

本研究中所采用的方法论是基于归纳定性的方法，与此同时也使用来自全球创业观察（GEM）和其他研究机构的多种研究结果。然而方法论中的重点在于中国与德国之间的比较研究（见附录）。即便二者有着不同的经济背景，但德国是创新驱动经济体，而中国尚处在创新驱动经济体的边缘。因此，更多经过调整的结果被更多地用于判断与评估创业风险中的决策问题。在此研究的实施阶段，全球创业观察（GEM）的数据被长期不断地、多因素考虑地分析，以便衡量各种影响占据创业活动的可能性。

因此，此研究的目的是提出问题，以便进一步深入分析。基于全球创业观察（GEM）的创业研究模型<sup>9</sup>，以下领域被被尤其列出：创业的形象、创新在经济体中的作用、理解经济自由以便实现创业的价值<sup>10</sup>以及创业环境和经济准入。研究所使用的数据是现有的统计和分析其他研究报告更定性为导向，采用归纳法。因此，本文主要从德国企业的角度出发，其次再根据中国企业的角度进行额外的加工。

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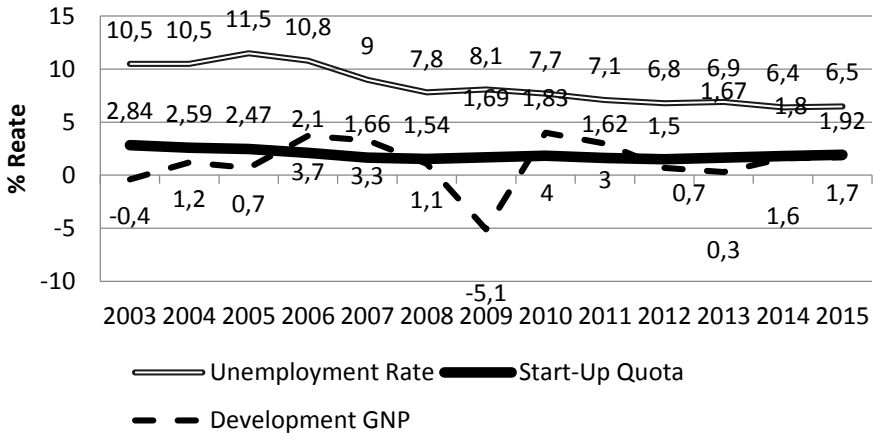
<sup>9</sup> See GEM Monitor 2014.

<sup>10</sup> 对比 Kuckertz/Berger/Allmendinger (2015).

#### 4 初步结果

德国的初创配额、国民经济发展和失业率之间的对比显示，诸如失业率和创业活动这样的推动因素之间呈现明显的负相关（图表 1）。

图表 1: 2000-2015 德国的初创配额、国民经济发展和失业率



（失业率，初创份额，国民经济发展）

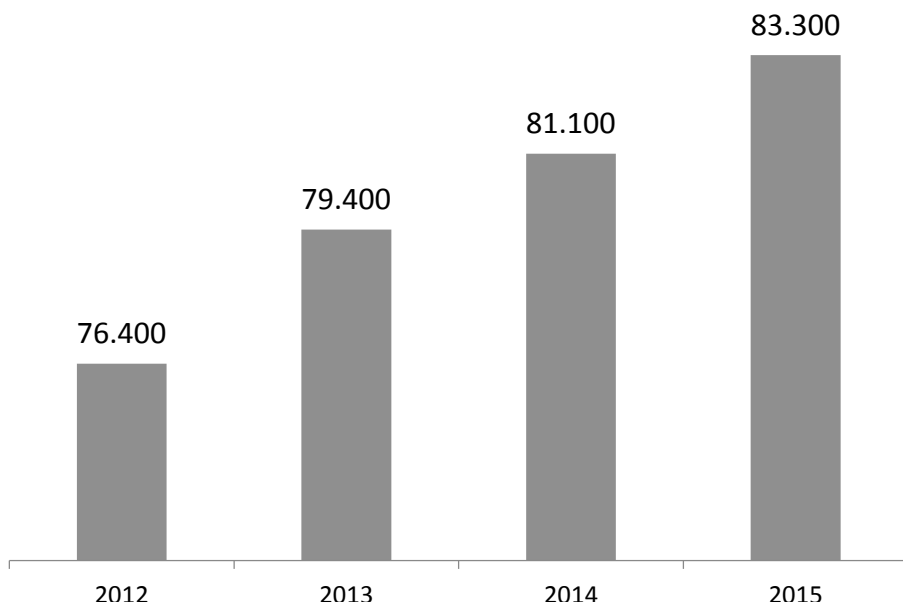
来源: Statistical Year Book 2010 – 2015, own calculations.

然而，初创活动明显地表明了德国是一个创新驱动经济体。在德国的这种情况下，主要的创业活动都由与总体启动相比比例稳步上升的自由从业者组成，这点值得令人注意（图表 2）。排名前十位的创业活动由管理顾问、网络设计师与软件工程师组成。知识与知识的提供被看作是创业的引擎，鉴于知识是德国经济体的重要生产要素。



Figure 2: 德国的自由初创企业

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来源: KFW Gründungsmonitor 2013.

此项观察遵循了此前许多研究中的观点，即大多数初创企业都不能被视为有创新性的<sup>11</sup>。仅有 17.7%的初创企业是有创新性的<sup>12</sup>。在许多情况下，他们都基于之前从业的经验，并且能够参照自身的职业网络。创业在德国仅有很小的就业影响。平均看来，仅有 0.4 的全职工作岗位产生<sup>13</sup>。

然而，由于推动因素的缺失，自从自主创业成为了一个自由选择以来，创业的质量有所提高。据报道，62%的创业者被特殊的想法和改变所驱使<sup>14</sup>。同样地，创业者的人口组成也发生了变化，即他们中的大多数人在失业之后立即开始创业，并且都受到了良好的教育（31%的创业者拥有本科学历，54%的创业者至

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<sup>11</sup> KFW Gründungsmonitor 2013.

<sup>12</sup> 对比 Schauf/Gilpert 2011, Hansch 2006.

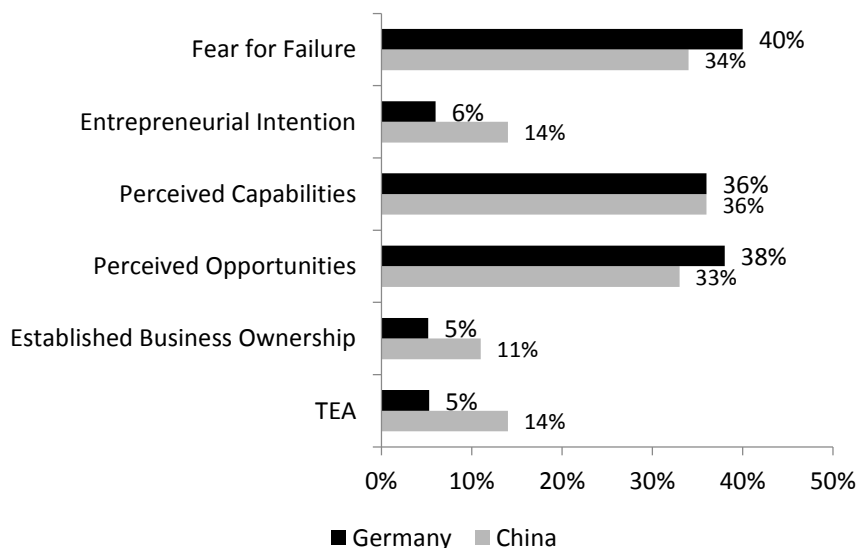
<sup>13</sup> 对比 Schauf/Gilfert 2011, KFW Gründungsmonitor 2013.

<sup>14</sup> KFW Gründungsmonitor 2013, IFM 2011.

少拥有职业培训经历)。创业者的平均年龄也又增长,达到了 34.6 岁。此外, 44-54 这一创业年龄阶段的人数比例相比 2015 年也增长了 17.2%<sup>15</sup>。

对于创业形象而言,在德国,有 40%的创业相关人员冒着失败与恐惧的风险(进行创业),这看起来是一个问题(图表 3)<sup>16</sup>。当潜在创业者在劳动市场有着其他选择的时候,这看起来就更加糟糕了。尤其是与中国这个效率驱动经济体的对比显示在中国有更多的创业活动,尽管两国的创业能力被认为处于同一水平线上。除此之外,由于环境所致,德国人更加重视感觉上的机会。然而, Kuckert 的研究表明,对于感知的经济自由而言,可能存在很大的问题<sup>17</sup>。尤其是德国作为一个高度复杂且规范的经济体,相较中国经济体系而言,可能有着更多的负担。此外值得注意的一点是,在德国,创业并不是学校的一门课程,也不是许多学术课程中的内容<sup>18</sup>。潜在的创业者们在他们商业生涯开始之时才接触创业(图表 3)。

图表 3: 关键创业形象因素的对比



<sup>15</sup> KfW Gründungsmonitor 2014.

<sup>16</sup> GEM Monitor 2014.

<sup>17</sup> 对比 Kuckert/Berger/Allmendinger (2015).

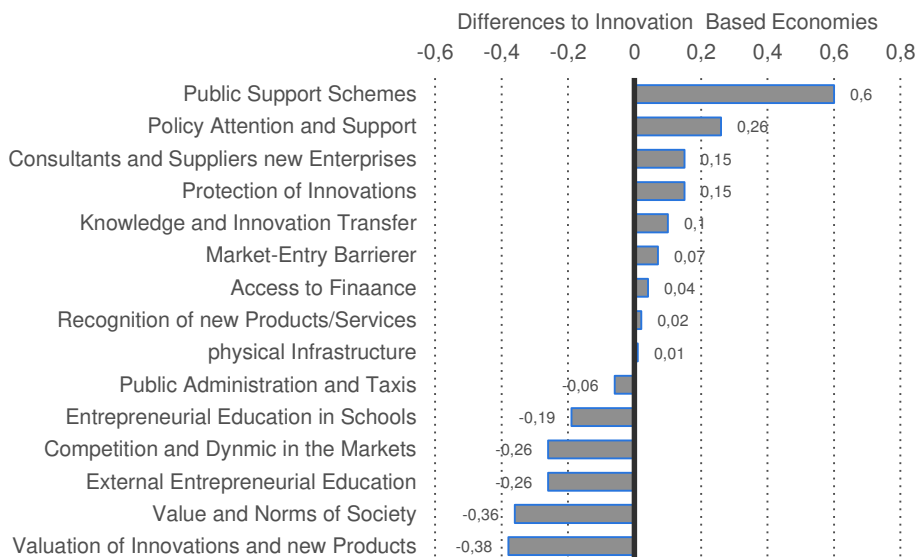
<sup>18</sup> KfW-Gründungsmonitor and IFM 2011, Reller 2013.

（担心失败，创业初衷，感知能力，感知机会，建立企业所有权，TEA）

来源: GEM Monitor 2014.

图表 4 侧重在德国的创业环境。尽管德国为潜在的创业者们提供了优越的环境，引导创业的关键因素似乎还没有发展到提供支持的程度。23%的初创企业在获取投资方面遇到问题。因此，54%的初创企业并没有得到任何的资金援助，由于他们在创业初期是低预算的自由创业者。然而，对于这些创业者来说，资金对于他们进行创业风险的决定时起到了重要的作用。

图表 4: 核心创业指标对比



（公众支持方案，政策重点与支持，咨询供给新企业，创新保护，知识与创新专一，市场准入障碍，商业准入，新产品/服务的认知，实体基础设施，公众管理与税务，学校的创新教育，市场的竞争与动态，外部的创业教育，社会价值与准则，新产品与创新的评估）

来源: GEM Monitor 2014 where the values of Germany have been compared with the average results of the other innovation-driven economies.

除此之外，“创新在创新驱动经济体中是创业的驱动力”这一事实在德国社会中似乎存在一些看法上的问题。大多数的创业者都表示德国人并不认可创新的重要地位，并且对于他们来说，创新的对于带来良好的经济收益的过程十分漫长。这种观点在创业风险的决定中所占的比重要远大于经济环境这一支持因素。

## 5 结论

本研究的结论是更为一套完整的研究问题，而不是对政策制定者或经济机构而言的任何务实的建议。初步分析和观察表明，我们尤其需要扩大我们对于创业的认知，不仅仅只是涉及到初创企业。我们需要回到最初的创业定义，这意味着通过在经济中的发展和营销创新，与最初在市场上的变化，来做出商业风险分析。因此，创新的作用需要在一个复杂的知识环境进行研究，即创新是如何在创新驱动经济体中发展的。网络和支持，以减少复杂性的知识转移的作用似乎是至关重要的因素。对失败的恐惧分散在创业市场的需求中，包括一个失败文化的发展。因此，我们也许需要重新思考创业环境的任务和挑战，因为只有顾问服务似乎不够。我们需要评估网络的作用，知识转移的可能性，以及指导服务。融资问题引发了一系列的问题。正如德国的案例表明，由于严格的财务标准的应用，银行的作用和政策似乎不支持创业活动。贷款或股权担保为基础的融资方式可能会抑制金融创新驱动的创业活动。创业活动似乎更依赖于创新驱动的经济体提供风险资本安排，以降低风险。最后，德国的情况表明，经济相对于市场、管理和税收高度规范化，并且抑制创业活动。创新驱动的国家在一个全球化的世界里无疑改变了创业的形象。已经提出的问题表明，我们也许需要重新思考我们的研究知识，更多地作为一个生产要素，而不是专注于开发一个创业环境等，来专注于创新的发展和知识的影响。

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### Part 3 Sustainability and health

#### F 景区周边乡村旅游博弈分析研究---以山东省济南市长清区万德镇为例

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**摘要:**

本文以山东省济南市长清区万德镇马套村为研究对象,通过问卷调查、访谈和实地调研,应用博弈分析法分析村民与乡村旅游公司(农民专业合作社)合作的博弈关系,从村民、乡村旅游公司(农民专业合作社)和政府三个角度探讨适合当地乡村旅游可持续发展的模式。运行以政府引导、旅游公司(农民专业合作社)运作、居民参与的模式,发展当地乡村旅游,发挥村民的主观能动性,自发地保护与利用资源并形成良性循环,实现真正的乡村旅游可持续发展。

山东省是旅游大省,旅游资源丰富,以一山一水一圣人享誉全球,而拥有世界自然与文化双遗产的泰山作为五岳之首,历代皇帝的祭天之处,更是具备得天独厚的旅游资源优势,泰山的周边具有很多山清水秀、古朴盎然的乡村景观,随着中国经济的腾飞,人们有更多的经济实力用于旅游,旅游需求旺盛,如何利用和开发好景区周边的乡村旅游值得探讨。乡村旅游公司是提升观光农业与乡村旅游产业专业化程度和集约化水平的有效模式之一,它对转变农民观念、整合产业资源、延长产业链、促进农民就业与增收,乃至保护和提升地方文化、创造地方品牌,以及实现国家的环保旅游等方面成效较为显著。

## 1 引言

乡村旅游的自然景观、田园风光、乡风民俗和农业资源是吸引游客乡村游的重要因素，同时它又是拓宽农民增收渠道，促进农村脱贫的重要资源整础。随着经济社会的发展,乡村旅游已成为促进农村经济发展、农村精准扶贫、农民脱贫致富的最有效途径之一。而发展乡村旅游涉及到政府、乡村旅游公司、村民三方面的利益，三者之间的博弈关系影响到乡村旅游的和谐发展，本文对此进行了博弈分析，最后从政府、乡村旅游公司、村民三个角度给出了推进乡村旅游可持续发展的建议。

自二十世纪三十年代我国农民专业合作社开始发展到现在我国农村的合作社组织有 15 万家左右，特别是 2004 年以来，每年发布的中央 1 号文件都对支持农民专业合作社提出了明确要求，发展农民专业合作社已经成为农村经济兴旺发达、农民走上更加富裕生活状态的必由之路。《农民专业合作社法》明确了农民专业合作社的法人资格，确立了农民专业合作社独立的市场主体地位，赋予了农民组织起来发展经济、自愿办社、民主管理的充分权利，是国家支持引导农民专业合作社发展、规范农民专业合作社行为、保护农民专业合作社及其成员的合法权益采取的重要举措。这部法律的实施为我国现代农业的发展和新农村建设奠定了坚实的基础。

发展旅游业有着前期投资数额大、长期收益的特点，仅靠政府投入是不够的，要走多元化的投融资渠道，特别对于农村地区，要充分利用独特的乡村资源和地理优势，发展旅游合作组织，加快旅游产业的发展。

旅游合作社是依托农村地区的旅游资源建立的，既是对农村地区的旅游业发展的配套服务和有益补充，也是带动当地群众开发本地资源发家致富的重要途径。

## 2 济南市万德镇马套村旅游资源现状

济南市长清区万德镇位于泉城济南与东岳泰山之间，境内有全国“四大名刹”之首、国家 4A 级风景区灵岩寺。从济南历城区开始，北起拔山村，经马场，玉皇庙，张庄，房庄，至马套村，全长 12.5 公里。境内自然环境优越，气候四季分明，森林覆盖率达 80%，环境优美，物产丰富，核桃、板栗、柿子、泰山奇石遍布山野。尤其是万德镇南部马套村，距离泰山西侧的桃花源景区最近只有 2 公里，地理位置优越，旅游资源丰富，北马套是古村落，相传在元朝，由任氏建村，以临近泰山西路，赴泰山的香客多在此停车歇马，命名为马套庄。在北马套村的村北，遗留有较完整的齐长城遗址，其中钉头崖是齐长城长清段的终点，也是“以山代城”的典范。齐长城自长城村东翻越大寨山、北顶山，绵亘 12000 米到达钉头崖。自北顶山至钉头崖间的长城则是现存齐长城保存最为完好的一段，相传当年齐长城修建到北马套东边的钉头崖时，因山高坡陡又有悬崖绝壁。城墙迟迟修不上去，惹恼了齐侯，齐侯便把领修的将军斩首，将其头颅钉在悬崖峭壁上，杀一儆百，以威胁民工必须把长城修上去，“钉头崖”由此得名。尽管杀了监工，长城始终没能修上去，只修到悬崖峭壁下为止，从这里以东四十里没有城墙。从此，当地有了“长城修到顶头崖，一降四十里”的传说，流传至今。

作为济南市有名的茶村的北马套村，是长清茶主要的生产基地。上百亩的茶叶种植基地可以让来此游玩的乘客体验采茶休闲活动。2013 年，一座投资 90 万元，建筑面积 700 多平方的茶叶加工车间在万德镇北马套村正式建成并投入使用。其中，茶叶加工机械设备以及配套设施 23 万元，自此，马套村便走上了自产、自己加工、自己销售的路子。北马套村以立泰山茶叶科技开发有限公司为依托，成立了茶叶种植专业合作社，动员村民调整产业结构，积极流转土地 600 多亩，全部种上了茶叶。该村现有集体茶园 150 亩，其中 50 亩已栽植了 2 年，以每亩 1500 元的价格流转给济南市恒泰科技开发公司经营，村里派村民帮助公司管理茶园，每人也可得到 1500 元的收入。为增加村民的收入，村里决定全部承包给有技能的村民管理，每亩只向村里缴纳 3000 元承包费用。村民兰俊忠承包了 20 亩茶园，除去一切开支，年收入也在 10 多万元。村合作社只是收承包费和收购鲜叶进行加工销售。目前，该村已注册“将军山”茶叶商标并投放市场。

### 3 村民、乡村旅游合作社、政府三方合作的博弈分析

在乡村旅游的开发过程中，村民、乡村旅游合作社、政府三者的地位是平等合作的关系，各自作为理性的经济人，会从理性的角度考虑各自的利益，而理性的博弈分析，可以使三方面得利益分配实现最佳均衡点，促进乡村旅游业的健康发展。2015年10月1日山东省济南市首条集现代农业发展、乡村文化创意、农村生活体验为一体的乡村旅游综合体——“齐鲁8号风情路”观光旅游，正式启动运营，将打造成为山东省内重要的休闲度假、养生旅游目的地和国内知名的乡村旅游示范区。在此情况下山东省济南市长清区万德镇成立了“山东8号风情文化旅游有限公司”，山东省济南市长清区万德镇北马套村成立了“济南马套将军山旅游合作社”，旅游公司和旅游合作社分别成立之后开展了很多项目，比如“齐鲁8号风情路”上北马套村的山居文化民宿、乐沃自驾车营地、自助采茶、动物亲密接触等项目。

#### (1) 村民和乡村旅游文化公司之间的博弈分析

村民和乡村旅游文化公司各自根据各自的利益成本关系做出合作或是拒绝合作发展乡村旅游的战略选择。

图 1.村民与乡村旅游合作社的博弈分析

乡村旅游合作社、旅游公司

合作                  拒绝

	合作	拒绝
合作	80, 80	-20, 20
拒绝	20, -20	0, 0

在图 1 中，各方格的两个数字分别表示采取合作或拒绝战略的双方所获得的利益。这样便会出现四种静态博弈结果：第一，村民与乡村旅游合作社及旅游公司博弈双方均表示合作发展旅游业(图 1 左上方格)，双方所得效益均为最大，比如，村民很多有两套在村里的住房，一套是宅基地上的住房，另一处是在自家承包的林地或者土地上新盖的住房，村民利用自己家多余的一套住房，只要配备了空调、卫

生间、厨房等设施,就可以接待游客,旅游合作社有专人负责打扫卫生,一晚住宿费 100 元,村民得 60 元,合作社得 40 元;第二,村民与旅游合作社及旅游公司博弈双方都拒绝进行合作开发乡村旅游景区(图 1 右下方格),双方不需要支付合作投资的成本,但双方所获的收益为零,这是各方面都不愿意看到的情境,村民闲置的房屋没有被利用上,旅游合作社与旅游公司也没有收益;第三与第四都是一方赞成合作,另一方拒绝合作(图 1 左下角与右上角)。赞同方可以获得利益,但由于另一方反对,要付出较大的投资成本。抵制合作的原因很多,概括起来就是投资收益低甚至没有收益。由图 1 分析可见,村民与旅游公司合作关系的静态博弈存在两种均衡状况:一种是图 1 左上方格,社区与旅游公司博弈双方均表示合作发展旅游业,投入合作成本,产生合作效益,双方所获效益均为最大值,这是一种双赢的情形。另一种是图 1 右下方格,博弈双方都拒绝合作发展乡村旅游,此时因没有合作成本的投入故而未产生合作效益。根据利益最大化原则,理性的博弈双方自然选择第一种均衡状态,作出共同发展乡村旅游业的合作决策。

## (2) 村民、乡村旅游文化公司、政府三方的博弈分析

目前,中国乃至山东省乡村旅游地众多,竞争比较激烈,而乡村旅游的核心竞争力就是品牌,旅游地公共品牌具有“公共物品”的一些特征。由于区域内政府、乡村旅游公司、村民都是理性的,从自利角度出发进行决策时只考虑各自的边际效益等于边际成本,总希望“搭便车”而享受收益,如果政府、旅游公司、村民都这么想,“公用地困境”便会出现,博弈经济学中有一个著名的理论模型,就是 1968 年哈丁教授在其著名的论文《公地的悲剧》中提出的理论:假设有一个向一切人开放的牧场,每个牧羊人都从牧羊中获利,并且每个理性的牧羊人都试图扩大自己的放牧量,当过度放牧时,就面临“公地悲剧”即牧场的退化。现实中就是如此,北马套村因为环境优雅,清幽安静,很多城里人来此买地或者租地盖房子或别墅,因为有需要,村委认为可以给村里以及村民带来效益,转让集体土地村里或者村民有收益,转让土地之后的建设房屋,村里或者村民又可以有收入,所以山坡上甚至在常年干涸的河道里都盖上了别墅,济南市国土资源局已经于 2011 年因为侵占了河道强行拆除了这十几栋别墅。山坡上更多的几百套别墅因为没有统一规划,高低不等,甚至有的破坏了山体植被,影响了自然景观。

我们可以发现,在这个旅游地公共品牌构建的博弈中,无论是对旅游地总体来说,还是对政府、旅游公司、村民各自来讲,最好的结果是三方面共同投资塑造旅游地公共品牌,“齐鲁 8 号风情路”就是这样一个品牌,品牌设计有创意,这条旅游线路连接起来济南到泰安之间的六个村,充分体现了当地民居的生态、生活等,



将六村功能分为：茶马风情区（马套）、园艺风情区（张庄）、山居风情区（房庄）、集贸风情区（马场）、八仙风情区（拔山）、灵秀风情区（玉皇庙）六大区域。让游客来到这里，亲近山水，亲近自然，真正过一把原汁原味的农家生活。

在上述三方博弈中，如果一方从区域的利益出发，进行塑造公共品牌的投资，而其他两方不对公共品牌进行培育，坐享其成。那么这家投入方生产成本就会增加，价格就要提高，它的旅游产品就没有竞争力。这就导致了“公共牧地的悲剧”，其实质就是个体理性的聚集而形成非理性的结果。该博弈既揭示了旅游地公共品牌塑造过程中个体理性与集体理性之间的矛盾——从旅游企业个体利益出发的行为往往不能实现区域整体旅游业的最大效益，甚至会得到相当差的结果。在旅游地公共品牌培育过程中，面临的这些矛盾不是市场所能自发解决得了的。因此，实施政府主导型战略，打破旅游企业在塑造旅游地公共品牌中的纳什均衡就显得非常必要了。

#### 4 基于博弈关系特征的合作对策

科斯定理指出，只要产权清晰，交易成本为零，通过市场机制可以实现资源的有效配置。在市场经济中，交易成本降到零几乎是不可能，但清晰的产权正是有效降低社会成本的条件之一，基于以上理论，我们可以提出把产权清晰的分配到位，克服旅游地公共品牌建设所造成的“公地悲剧”的产权途径，就是建立排他性的产权。

（1）从政府的角度：旅游地公共品牌的代表应该是地方政府，产权既然得到了明确的界定，政府就应积极创造出新的机制，将旅游地公共品牌这笔无形资产真正当做有价资产来监督、管理。首先从一开始的规划，就要请专业人士进行调查研究，做到规划合理，在开发的同时保护好生态环境，以“齐鲁 8 号风情路”为例，这就是山东省济南市万德镇政府经过多次考察论证，在济南市园林设计院和泰山旅游规划设计院的帮助下，并且在征求了村委和村民意见的基础上完成了旅游线路规划，在规划的过程中考虑村民和村委的利益，使村委和村民有责任感和使命感。在实际运行过程中，如果乡村旅游公司和村民有博弈冲突，政府应当以引导者和协调者的身份进行引导和协调，减少冲突和矛盾，做到三方面利益共享，风险同担。目前，万德镇政府建立了齐鲁 8 号风情路专业网站，可以让更多的人了解到这里的风俗民情、美丽风光，更好地宣传齐鲁 8 号风情路。

（2）从乡村旅游公司的角度：乡村旅游公司通过和村民的博弈，应该看到村民在发展乡村旅游中的重要性，一定要把村民的利益放在平等互利的基础上，只有双方都有效益，合作才可以长久；另外乡村旅游公司在开发旅游的过程中一定要保护当地生态环境，进行基础建设要与当地的环境相协调，不能破坏山体、植被、古老建筑等，要做到保护和开发相结合，走可持续发展的乡村旅游道路。

（3）从当地村民的角度：村民在发展乡村旅游的同时，要积极参加相关旅游知识培训，提高自己的综合素质、业务技术、业务水平，掌握互联网技术，可以尝试网上开民宿旅游，以主人翁的姿态接待好八方来客，通过真诚的服务、高品质的商品、美丽的风光、淳朴的民风建立良好的口碑，吸引回头客，吸引更多的游客来休闲、观光。

只有依据其博弈关系，从政府、乡村旅游公司（乡村旅游合作社）、村民等角度进行旅游业的发展思考，政府规划好发展方向，制定完整配套的规章制度，村民和乡村旅游公司建立合理的合作机制，三方面通力合作，才能有效地推动乡村旅游村民与乡村旅游公司的良性互动，保证社区和乡村旅游共同繁荣。

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### Part 3 Sustainability and health

#### G 基于预期的主要矛盾新兴概念下的中国可持续发展政策：德国中小企业环保技术项目的发展前景

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## 1 最初考虑

在过去的几年中，中华人民共和国（PRC）对世界经济的多个方面都留下了显著的记号。有多种多样的热门理论来证明这一点。值得注意的是，中国目前是（并已在一个较长的时间内是）世界上最大的贸易国，占据整个全球贸易的进出口的10%。作为合乎逻辑但同样显著的结果，在过去的十年中，中国的经济地位以稳步提升且高于全球平均水平的GDP增长率的而著称。

这些发现也为这个幅员辽阔的国家的经济发展披露几个缺点。早在2011年，中国就超过美国成为世界最大的能源消费国（Gu and Mayer, 2007）。为了满足能源需求，中国的能源结构严重依赖煤炭消费，在高峰时可达70%的总能源消耗。

强有力的经济增长带来了生态系的空气污染和进入水体与土壤的污染物，这不需要详细阐述但却充满了许多问题；主要是因为生态污染的规模所致。

在这种情况下，在中国的日常生活中已经渗透着可持续发展的论述；曾经有过一段时间的努力，这也是不足为奇的。这其中渗透政治，特别是经济政策。

这种发展在以下方面看来是有着双重重要性的。一方面，可持续发展必须在中国从社会主义计划经济向社会主义市场经济的转型过程中的背景下看。在这种情况下，可以得到一致的结论：环境问题和适当的措施，是由其他模式，而非西方工业化国家形成的。另一方面，这个棘手的情况需要考虑中国政治和中国日常生活的基本因素，这点在作者看来，对于理解中国近现代历史和未来是至关重要的。

主要矛盾这一概念被瑞士汉学家胜雅律（Harro von Senger）广泛推崇，尤其是在德语国家，被熟知为“Hauptwiderstandslehre”。归属于此概念的逻辑论证适合于通向更多的证据，在经济发展政策领域中，对于设定详细的稳固的可持续性标准，能够巩固中国未来在其中的角色。

## 2 中国转型进程下的环境政策

正如前面所说的，直到最近，中国的转型政策才由经济增长的意识形态所形成，这几乎不存在任何对可持续发展问题的关注。然而，值得注意的是，环境保护早在 1978 年就已纳入中国宪法，并影响了一大批常规活动（Sternfeld, 2008）。这可以在中国五年计划有关经济和社会政策的政治准则中窥见一斑，（Baumgartner and Godehardt, 2012），并且提供了重要的见解。

因此，第 11 个五年计划（2006-2010）有着根本重要性这一事实昭然若是。直到那时，环保活动也绝非毫无关联。事实上，在许多法律法规中都有不同地体现：如早在 1979 年通过的针对淡水、海洋和大气污染的《环境保护法案》。同样也在《土壤保护法案》以及保护土地免受进一步沙漠化政策中得到体现。

这些措施的范围必定被认为不那么重要，这样才能服从于转型过程中更重要的经济目标。

《保护可再生资源法案》与 2005 年 2 月 28 日被全国人大表决通过，其作为 2006 年 1 月 1 日开始的第 11 个五年计划中的一部分，被视为是在中国转型政策中有关经济和环境准则的转折点。

这一转变可能是由于政治决策者已经意识到了严重的因果关系，因此得出结论认为附带的环境损害会阻碍经济增长。虽然这些相互作用的量化可能有争议，下面的例子提供了合适的证明：

- 在由国家环境保护总局（SEPA）发布的一份报告中显示，环境成本估计至少 510 亿欧元，约占 GDP 的 3%。
- 世界银行的估价高达中国国内生产总值的 12%，约 2000 亿欧元。
- 因此，立法补充的实施条例，指定以下几个方面的可持续发展：
  - 宣布非化石可再生能源改革，如风能和太阳能、水电、生物质能、地热能 and 潮汐能。
  - 发电、热水和燃料生产应用范围的确定。
  - 国家、省、国家各级政府对中国电力生产企业的政策规定义务的分配。

政府的目标是在 2020 年之前，可再生能源占据主要消费需求的 16%，这在那时是一个增加一倍的可用的数量。所需的投资估计约为 1700 亿欧元。

如何使用非化石能源形式，在国家发展和改革委员会（NDRC）的一个预测中被列出，如表 1 所示：

表 1:非化石能源在中国的预估使用量

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	2005	2010	2020
水电	115 GW	190 GW	300 GW
风能	1,3 GW	5 GW	30 GW
光伏能源	70 MW	300 MW	2 GW
太阳能	80 Mio. m <sup>2</sup>	150 Mio. m <sup>2</sup>	300 Mio. m <sup>2</sup>
生物能源	2,3 GW	5,5 GW	20 GW
地热能	30 MW	4 MTCE <sup>1</sup>	12 Mio. MTCE

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来源: Augestad (2007, pp. 69).

这份零散的环境总览作为中国转型期的一部分，使得在此时必须重视现状的这一事实清晰无比。因此可以说，可再生能源行业也成为对于中国的转型政策的方式重要支柱。

有显著而充足的例子可以证明上述观点。正如澳大利亚能源研究者 **Mathews** 和 **Tan** 在最近发表在《自然（Nature）》杂志中的文章中提到，中国的能源法案如今正处于领跑者的位置。（Mathews and Tan, 2014）

*„中国一路领先。通过把重点放在生产规模和市场增长，它比任何其他国家的气候变化解决方案都强。它建立的大规模下的可再生能源系统使得成本降低，以便水、风能和太阳能的普及。”*

同样有趣的是如上所述在 2007 年，可再生能源发展目标与目前可用的数据的比较。2016 年风能的整体性能预测为 30 千兆瓦（GW），相比较而言，风电装机

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<sup>1</sup> Million Tons of Hard Coal Units (MTCE).

容量为 145 千瓦。中国在总量上远超过欧盟，迄今为止是 141,6 GW（见 2015 全球风能报告）<sup>2</sup>。这是一个明确的迹象表明，中国的能源结构是变化的。同样，在 2015 年发布数据显示，国家煤炭能源生产减少了 2.5%。

在这一点上，需要补充的是，关键的反应具有一定的价值。这是由于这样的事实，在中国的能源结构中，煤炭燃料仍发挥主导作用。因此，中国在上世界上排放 CO<sub>2</sub> 水平最高的国家。

西方社会已经表示了对中国的能力的关注，或者说对中国各种政府机构适当应对可持续发展问题的能力的关注。这篇文章的作者认为，考虑到“主要矛盾的概念”将有助于问题的明朗。

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<sup>2</sup> [http://www.gwec.net/wp-content/uploads/vip/GWEC-Global-Wind-2015-Report\\_April-2016\\_22\\_04.pdf](http://www.gwec.net/wp-content/uploads/vip/GWEC-Global-Wind-2015-Report_April-2016_22_04.pdf).



### 3 中国的主要矛盾概念

不同于其他国家在最近几十年间通过监管改革领域的其他改造政策（例如，东欧前苏联），邓小平在八十年代后期推出的监管改革显示出某些特殊的区别。

建立中国设计的社会主义市场经济的目标被许多观察家视为是一个经济现象。因此，取得的成就是值得注意的，因为世界上没有其他国家在一百年内已经证明自己能够通过各种各样和部分非常反对的发展阶段。

乍一看，这是一个西方的思维定势。然而，下面的提纲提供了进一步说明的入口点（Ritter, 2016）。概念的出发点是基于中国人的日常生活——尽管自上世纪30年代以来就有着不连续性——不断以此为特点：中国共产党和马克思主义原理的存在。例如，对于共产主义经济和社会制度优越性的信念。思想基础是根据资产阶级和无产阶级之间的矛盾，通过马克思主义的教学，与有关政府或民族活动的内在一致性。

矛盾的概念形成于 1978 年，强调了与日益增长的物质文化生活和落后的社会生产力之间的巨大鸿沟。从思想的角度来看，这可以被看作是一个解释的转换过程的起飞点。为了解决这个矛盾，中国共产党确定明确的时间框架是一个可以称之为“中国的百年目标”：

到 2021 年，中国共产党成立 100 周年之时，全民富足的中国社会最终形成，伴随着更进一步的经济发展。到 2049 年，中华人民共和国成立 100 周年之时，最终达成社会主义现代化。

就此处提到的情况来看，考虑到百年目标的实施，要具体在哪个阶段实现目标与达成怎样的质量水平，对于中国的决策者而言是可以无视的。更有趣的是，一旦这个目标达成，新的主要矛盾又会是什么。

在汉学家胜雅律（Harro von Senger）看来，这是合理的，可持续发展将采取的中心位置，伴随着维持生命的环境恢复和保护措施。

#### 4 最终考虑

许多西方的观察家认为，中国的经济发展的特点是由众多的悖论组成。通常他们的评估是基于民族为中心的考虑。然而，这种方法没有充分解决眼下的问题。所提出的可持续发展的问题仍需要具体化，考虑如下：

在整个中国转型过程中的具体情况，鼓励的同时—但并不总是同步的经济和环境方面的考虑在中国如何影响经济发展过程。

主体矛盾的概念是一个非常重要的概念。然而，更值得关注的是，对于可持续发展的担忧有可能以从未在中国历史中出现的形式诞生。要记住国家的规模和对世界经济的巨大影响，一个可能的结论是，特定的国民经济可以发展成为一个全球性的关键因素，这需要可持续发展的政策和措施，以及积极主动的方式。

德国环境技术的可用性，无疑将发挥重要的作用，在解决这一新的主要矛盾。事实上，对于活跃的德国中小企业在这个行业中，中长期不可预见的增长机会，现在已经出现。然而，这样的实现依赖于两个问题：

首先，负责利益相关者的能力和意愿，及时和系统地启动必要的国际化进程。

其次实现要处理的项目的规模，需要仔细和当地合作伙伴进行合作谈判。

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### **Part 3 Sustainability and health**

#### **H 体育经济的变化-体育和卫生部门的中小企业的后果**

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## 摘要

本文中的研究结果显示，德国中小企业创业技能中心（KCE）体育经济和管理部  
门体育经济技能领域（KSW）与德国和中国的健身、健康与体育产业中的中小企  
业的严峻形势相互关联。两个重要因素——“螺旋式的市场灵活性”与“真实的虚拟  
性”——一起影响了目前体育经济的改变。由于体育经济（体育经济学与体育管理  
学）领域课程项目与科学研究强度的缺乏，本文结论中对于威胁大多数中国与德  
国中小企业（SME）生存的因素做了展望。

## 1 介绍

尽管并不是对所有企业均适用，但健身、健康与体育产业仍有着稳步增长与良好发展前景。虽然投资者旗下的大型连锁企业和集团公司表现出不成比例的高增长率，中小企业的经营在巨大的竞争性的限制下，危及到了他们的未来业绩。

解决这个问题的方法是处理好商品带来的不安感。每年，此行业的业务咨询专家都会将几十个自制的趋势概念推向市场，使得中小企业得以继续生存。使得这些趋势概念成为在探寻实质原因、评估方法和将这些成果转化为新的可持续的重组概念的基本科学研究缺失的市场竞争环境下的仅有者，而非实现经济复苏的基本结构调整，对于受到影响的中小企业来说是必要的。这一点也正是德国中小企业创业技能中心（KCE）体育经济和管理部门体育经济技能领域（KSW）的研究与咨询中所强调的。

KSW 考察了共同负责适用于德国和中国的变化的体育商业的两大因素。一是属于体育经济学的部门，是指连锁企业和企业的快速成长。这可以结合标题下的“螺旋式的市场灵活性”。第二个因素是内在的关注变化的体育活动由于新技术和连接到虚拟现实和“现实的虚拟性”的前提下。有关体育管理部门和体育管理者进一步结合结果的因素的核心原因首先可以被描述为“空置的体育管理”。由这两个因素造成的这种核心原因，还阻碍了人口变化的巨大影响。

通过现有确定的经济数据给读者关于德国和中国产业的了解后，下列实质性因素——“螺旋式的市场灵活性”和“虚拟的真实性”以及由此产生的核心资产的“空置的体育管理”将被介绍。

## 2 产业收入

2015年，欧洲曾多次将自己作为健身和健康产业中的经济最强的地区。但与其他地区相比，中国仍然有着最快的增长速率。2004年至2014年间，虽然德国的健身和健康产业增长了约74%，但中国在2009至2014年间，仅用了其他国家一半的时间，就达到了约84%的相应管理增长。2014至2015年间，中国增长率是德国的五倍。

中国和欧洲之间的重要区别是，中国的经济结果包括了机器和附件生产的收入；而欧洲的收入，特别是德国，几乎全部来自于服务业。



### 3 连锁店取代个人家族企业

对于德国的健身行业和企业数量这一最重要的市场数字，成员数量和销售数量的趋势变得明显。

2014年和2015年间，企业的数量增加了约3.8%，达8332。相比之下，连锁企业增加约11.8%，达3513。在整个行业中的成员数量上升约4.2%，达946万，而连锁企业产生了14.2%增长，达482万。该行业增加约2.7%，达48亿3000万欧元；相反，连锁企业可以达到14%的增长，达19亿3000万欧元。市场上的五大企业（McFit, Fitness First, clever fit, Kieser Training, Injoy）占了总销量的13.3%，达7亿4400万欧元。

这种巨大的增长链和公司集团（C&C）相比，中小企业也显示了巨大的市场转移。反对整个行业的企业的增长率导致的结论是，他们的增长为承担中小型企业费用。这个假设是支持的整个运动，健身和健康产业，主要是由特许经营引起的销售量略有增加的数据。根据德国特许经营联盟在2014年度的声明，已经有百分之9个下降到这些部门，达约66亿欧元。“据德国健身中心和健康中心的雇主联盟的健身行业（除去体育和健康产业）在2014年度的销售额达到47亿欧元。虽然在健身工作室的销量从2004增加到2014，从前27亿增加到约74%，特许经营经济增加了他们的销售额约162%，在同一时期。一些业主经营的工作室大幅下降在过去的十年里，将继续下降至少10%。”（Pauling 2015,2）：52，引文由作者翻译）。

这已经导致了“银行和资本供应商投资健身特许经营系统，但不是小型健身企业。这种准块的方式，为独立创业者的新业务。现有的旧的单一的也几乎没有获得必要的投资信贷，加快他们的经济衰退。”

Mannheim 大学破产和重组中心提供了一个关于破产原因问题的最广泛的调查，此调查以 Euler Hermes 的名义进行。本次调查提到的“资金缺口”，以百分之76作为第二个最重要的原因。如果缺乏信用作为这些“资金缺口”，框架结构调整和适应竞争是不可能的，下降到破产是不可避免的。

据 Creditreform 在2013年的关于产业的最后分析，37.5%的德国制片商有着小于百分之二的资产回报。在中国的情况更是不稳定的：只有百分之20的体育设施在中国盈利。（China Sports Business 2011）。

C&C 的增长及否认中小企业转危为安所需的要素并不是导致危机的原因，而是它的一个症状。其中一个导致危机的原因是 C&C 巨大的灵活性。它们在市场上适应每年不断变化的趋势，甚至引入自己的冲动的能力，正面临着中小企业无法充分观察市场和过早地认识到变化的压力。这不在于专家知识和人力资源管理的不足。这将进一步以“缺失的体育管理”为特征显现。尽管 C&C 可以提供训练有素的专业体育管理人员，在中小企业中，大多数百事通都在过度进行简单的日常例程。在中国，类似的管理问题也被发现。“大部分场馆在管理策略和操作上都有问题”。(China Sports Business 2011).

C&C 巨大的资源的竞争优势，可以很容易地推动中小企业，特别是在专家知识和人力资源管理。随着每一个小规模的家庭企业在超越行业的市场和每一个尚未访问的地区的进一步扩展，C&C 的销售量也随之增加。这是一个螺旋式的形成，围绕他们在竞争中的出色的灵活性。

“螺旋市场灵活性”最好的例子是欧洲最大的健身企业 McFit 在 2015 年建立的连锁店“High5”。在这个概念下，McFit 迅速和创造性地回应了新一年“功能锻炼”的趋势。低于每月 10 欧元的价格和会员构成了其巨大的竞争力。这个价格无法由“一人经营的中小企业”实现，这也是批评 High5，甚至 McFit 的原因。尽管存在这种批评，但必须承认，“High5 的概念与时代精神相符”。(Pauling 2015,1): 18, 引文由作者翻译).

#### 4 人们训练改变的方法

“古代中国运动包括了三种项目：军事体育项目（骑马，射箭，武术等），养生项目和流行体育项目（如蹴鞠）……蹴鞠是类似足球的一种古老体育项目，在古时的中国、朝鲜和日本等国家广泛流行。蹴鞠起源于 2500 年前的战国时期。”(Liu 2008: 40, 引文由作者翻译)

人们总是在锻炼，而且体育总是被打上系统组织和商业化的烙印。历史体育形成了这一点（比如零世代）。

一个关于健身行业发展的总览：

- 经在第一代中，经典的基于设备的健身房是 1847 年源于巴黎的第一健身工作室 Hippolyte Triat。这一代的“设备的运动”的特殊和新的想法是：自动车道上的单运动。“基于设备的锻炼是一种健身和/或健康安全培训，这是完成对机器的设计主要是为锻炼设备，主要是为了发展实力。”(Stemper 1994: 12, 引文由作者翻译).
- 在第二代中，“群体健身/健美操”中的自由空间成为了群体运动的步骤。“在有氧运动中，一种艺术体操的形式为音乐表演。”(Pauling 2016: 34, 引文由作者翻译).
- 然后是第二代的扩大。“第二次革命发生后，转化为服务健身。以前的产品健身告罄。……今天，我们只讲服务，而不是一个产品。(Pauling 2004: 2, 引文由作者翻译).
- 第三代通过个人运动训练变得更加独立。理念：一个单一的客户由一个教练亲自培训。个人训练是一种锻炼支持的形式。一个单一的客户是自己培养，直接和单独由一个合格的培训师根据现有的原则和体育科学研究运动医学、体育教学。”(2004: 2, 引文由作者翻译)。个人训练是不与特定的运动但可以作为每一个体育锻炼的支持。在更广泛的意义上的个人培训是一个普遍的概念，一种生活方式和一个健康管理系统。顾客应该找到一个平衡的生活方式，与他的精神，饮食，运动和放松一起形成一个整体。
- 在第四代，健身是通过家庭、通过网络或作为一个在智能手机和平板电脑的应用程序来实现。这个想法是使健身数字化和移动化。在 2004 年，诺基亚手机 5140 已经通过短信传输了一个心率监测仪的训练数据。在 1995 年，一个无线电系统从极地已经发送脉冲数据到一个在健美操室的

显示系统。2013年，在“健康”类别估计有50亿个应用程序已被下载。

《PC世界》杂志在拉斯维加斯的消费电子展（CES）上被问到：“2014年是否是一个数字时代的历史转折点？”（斯特尔泽 Morawietz 2014: 8, 引文由作者翻译）。“很多厂商提出了所谓的便携，即手环和网络连通的健身活动传感器。”（同上）。在商报发表了标题为《便携：下一个千亿市场？便携式设备在欧洲的销售热潮》的报道，预测销售额将在2016年达到55亿9000万，2017和2018年分别达到72亿2000万和90亿3000万。随着现代游戏的兴起，第五代诞生了。*Eye Toy Camera*在2003被引入，PS2和Xbox游戏机上的*Eye Toy Kinetic*在2010年紧随其后。此阶段发展的重要原因是电脑上动态捕捉功能的兴起。

以下的几点发展为研究多年或目前将要研究的项目。我们要讨论的是在可能的范围内还没有实现的愿景。

- 第六代健身：差不多十年前，私人教练，运动科学家和企业教练 Kai Pauling 开始与欧洲主要电信公司从事秘密对健身运动 6.0 的研究。在不久的将来，公司将通过在技术上，尤其是资金上的可能性，来推行这一想法，包括健身内容提供商和家庭/移动运动全球虚拟网络。此外，动力学和生理数据将以交互方式收集。可以实现个人培训师通过现场流的个人实时培训监督。
- 第七代健身：自体敏感性训练（EMS 训练的继承者）。自体敏感性：通过训练/锻炼作者新术语箱。训练刺激（例如肌肉）是完全自动的。它是没有必要的，身体的刺激或它的神经已经被创造出来之前。基本特征是没有自我运动，没有运动设备，自主学习训练控制，它可以在任何时间任何地点。第七代发展的一个步骤是 Antelope 的发展。“Antelope 健身套装使得跑步者减少动力。Antelope 健身套装给业余运动员的身体带来超过 100 电极上快速形成。试验中的原型……唯一的问题是价格，低于 1300 欧元的成本已是很多钱了。”（Die Zeit 2016, 引文由作者翻译）
- 第八代健身提出了一个与固定的训练相结合的健身房和一个平行的虚拟在线培训（设备支持的云培训）。在这一代进化的第一步是其中包括控制跑步机的谷歌眼镜、3D tecnobody 训练设备。目标是建立以无功电阻控制，运动检测和全局/本地交互网络/控制为特点的混合设备。混合设备是一个人的工作和它的虚拟化身之间的接口交互的教练和网络控制，同时被集成到云端，例如社交媒体或电脑游戏。第八代让虚拟现实成为虚

拟的真实性。另一个超这个目标前进一步的举措是最近健身机 iCaros 的诞生。

很明显，该行业将在可预见的未来进行根本性的变化。可能仍然是经典的健身工作室与锻炼涉及运动设备和有氧课程，但今天已经被称为“特殊利益”工作室的成长是非常强大的。他们提供最新的发明和想法，主要是在形式的微型工作室，不能实现同样快，甚至通过 C&C，因为这些创新是在大多数情况下，非常个人，即一个巨大的专家知识的人是必需的。这些企业家可以是所有中小企业的希望和榜样，而他们将几乎没有任何未来的前景，对老中小型企业的质量没有结构调整的新一代的技术和运动能力。

除了健身工作室作为服务提供商，设备制造商必须同样适应新的锻炼方式，并将此纳入新设备的开发。

## 5 未来管理中的合格专业人员的人员配备

“空缺体育管理”这个术语下，有两种联系被列在一起。首先是意义上的“空缺”，因为没有体育管理人员。第二个假设是那些可用的是精神上的“空缺”，即没有任何新的专家知识或专业能力。

在这一点上，第一个联系的含义的解释如下。KSW 最近公布的一项预估劳动力赤字的预测估计，到 2030 年，德国将有 17 万体育学者和 10 万健身专家（C.P. Pauling 和 vatanparast 2016）。这是由于人口的变化，以及到 2030 年行业的平均年增长（增长率 3.6%，达到 2000 万名成员），即有一个 25% 的普及率（占健身会员的居民）。在这种情况下，至少有 500 名合格的工人（目前为 266）将被需要。在分析即将毕业的学生人数与行业的就业率后，也仅有 50 万体育学者和 30 万健身专家。

有几个小的私立大学已经发现了这个巨大的潜力，并大规模地扩展了体育管理部门的学位课程。特别要求的是双学士学位课程，所以在健身行业从事与大学合作的企业数量下降了 23%，从 2014 年的 3000 所，下降到 2015 年的 3700 所。这些课程的学生人数从 2014 年的 5000 人，上升到了 2015 年的 6300 人。与未来所需的毕业生人数相比，现在的学生人数已经不足够了。

中国的情况更令人担忧。虽然中国是个大国，健身的公民数量在 2014 年增加到 3 亿 8200 万，并且政府预计在接下来的十年里，体育产业将赚 719 亿欧元（5240 亿人民币），但该行业仍比德国的合格工人少 1 万人。同时，体育管理人员管理大学的数量几乎为零。在中国增加授予体育管理学位的课程的过程也十分缓慢，并且在模仿德国成功模式失败之后，双学位课程也非常急需。由于人口和市场变化，德国预计中国将在 2030 年前减少 100 万合格工人。但一些大学已经意识到了潜力，并采取了有利于中-德体育管理学位课程的讨论。

## 6 结论

在没有提供新的体育商业领域学位（即体育经济学和体育管理）课程的大学和没有这方面的深入科学研究的基础下，KSW的观点中几乎没有对德国和中国的中小企业形势根本好转抱有任何希望。C & C 将在很大程度上控制市场，中小企业的经济衰退无疑仍将继续。

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Table 1: Industry revenues worldwide

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	€ (Bn)	¥ (亿)	Global %
<b>Europe 欧洲</b>	23.7	1732	31.6%
<b>USA 美国</b>	21.4	1564	28.5%
<b>China 中国</b>	17.9	1308	23.9%
<b>Others 其他</b>	12	870	16.0%
<b>Total 总</b>	75	5474	

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**Figure 1:** Industry revenues in China 中国行业收入

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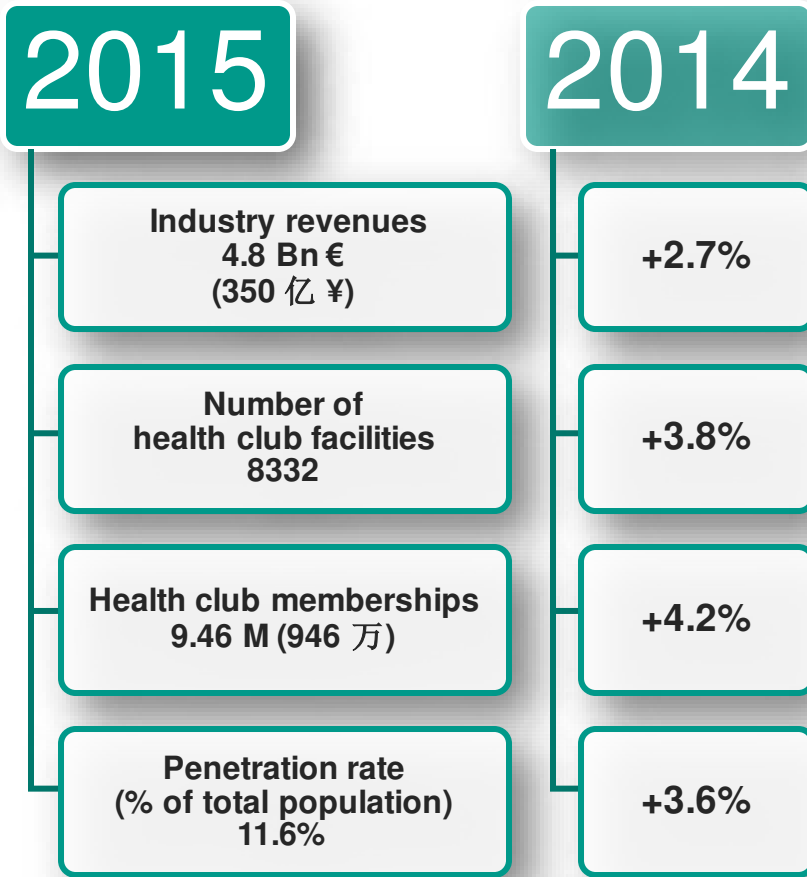
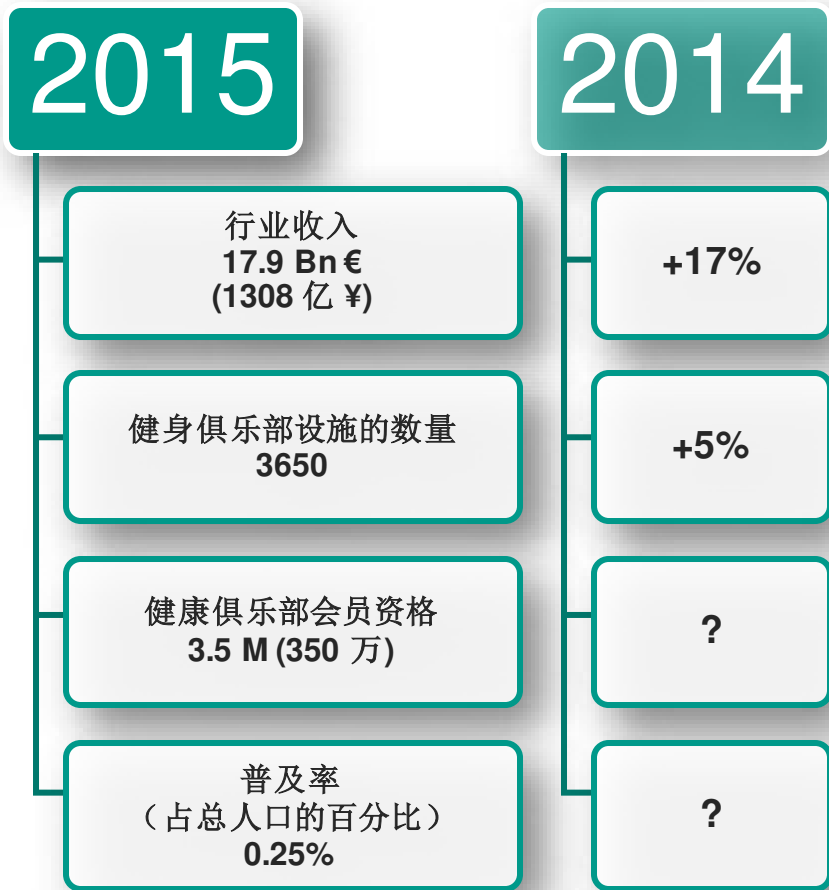


Figure 2: Industry revenues in Germany 德国行业收入

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## Part 4 Information security and recruitment

### I 信息安全的要求：在以中国为代表的国家内的发展与对学生教育的影响

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#### 关键词:

信息安全, 信息及管理系统 (ISMS), ISO 27000, 全球化, 中小企业 (SME)

## 摘要

全球化和技术的广泛使用表征了工业和行政管理的进一步发展。中小企业（SME）以类似的方式对其进行应用；中小企业可能是独立的公司，或者作为有着世界各地的附属公司的全球企业的一部分。在这种技术背景下，信息技术的渗透起着重要的作用。

中小企业信息技术的广泛使用造成的安全要求改变了责任，并且将以充分的方式实现。德国中小企业的商业环境期望着来自商业合作伙伴的安全组织和安全技术。信息安全已成为在全球市场上取得成功的一个重要的角色。

基本条件是员工和候选人对于新职业的知识状态。

## 1 简介：德国中小企业的信息安全

随着德国中小企业信息技术的逐步引进和生产和市场活动的全球化，信息安全已成为一个重要的挑战。大背景主要是获得竞争能力并满足市场的要求。中小企业信息技术的激烈使用造成的安全要求改变了责任，并且将以充分的方式实现。信息安全也确保了企业的安全。

## 2 ISO 27000 标准

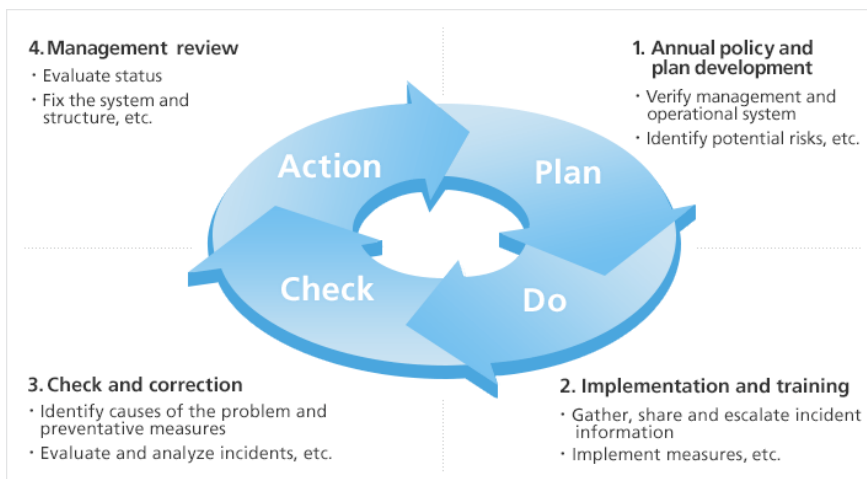
信息安全可以分为三个不同的方面：

- 组织保障（建立信息安全员（ISO））
- 信息系统安全（技术方面）
- IT 产品安全（包括应用程序、数据库系统和操作系统等）。

建立信息安全主要包括**实现信息及管理系统（ISMS）**。目前，信息安全管理系统最常用的国际标准是 ISO / IEC 27000。ISO / IEC 27000 标准是一个包括 27001 作为实际标准，27002 为最佳实践解释和 27005 为风险管理的系列标准。ISO/IEC 27000 是公司和机构建立的安全标准或 ISMS。市场，但也来自公司本身的需求，可以通过以充分的方式达到安全来实现。

下面的例子和描述是基于 2013 实际版本。ISO/IEC 27001 描述了根据 PDCA 循环（Plan DO Check Act），又称为戴明循环（Deming Cycle），来建立 ISMS 的方法（图表 1）：

图表 1: ISO/IEC 27001 的 PDCA 循环



(计划：1.年度政策及计划发展；认证管理及操作系统；认识潜在危机等  
执行：2.执行与培训；集会，分享与升级即时信息；执行措施等  
检查：3.检查与订正；明确问题来源及预防措施；评估与分析问题等  
行动：4.管理复核；评估状况；修复系统与结构等)

来源: [http://cdn.softbank.jp/en/corp/set/data/csr/management/riskmanagement/policy/img/index\\_pic\\_01.gif](http://cdn.softbank.jp/en/corp/set/data/csr/management/riskmanagement/policy/img/index_pic_01.gif)

ISO/IEC 27001 包含组织架构 ISMS。引用超过 100 的控制目标和控制公司应建立在他们的组织之上，并应考虑信息技术和流程。

在这一点上，仅有一个有代表性的选择。这些例子是显示广泛的信息安全如何影响不仅限于德国，但也为其他国家的中小企业的典范。由于全球化和全球广泛使用信息，这在新兴工业化国家，如中国，也是有效的：

- **A.7 人力资源安全**包括了区分就业地区的所有阶段：
  - **现有的就业**与控制合同协议与员工和承包商的责任有关组织



- **在就业过程中的**信息安全意识，教育和培训，包含工作职能的组织政策和程序
- **终止和变更就业工作**，在终止或更换工作后仍然有效
- **A.14 系统采集，开发和维护**，包含在整个应用程序生命周期中的控件的区域划分：
  - **信息系统的安全要求**，为确保在公共网络上的应用程序提供服务，即门户网站为客户或业务合作伙伴
  - **在开发和支持过程中的**安全性与控制系统的变更程序，即变更管理，由于法律或业务需求系统工程原理或测试安全功能
  - **测试数据**，仔细选择数据的控制和保护
- **A.18 遵守**包含控制，以避免违反法律，规范或合同义务有关的信息安全划分领域：
  - **遵守法律和合同要求**与控制的知识产权，个人识别信息的隐私和监管的加密控制
  - **信息安全审查**与控制的安全政策和标准和技术审查

示例集显示了在国际标准化组织标准 27000 中，广泛和深入的安全信息被良好掌握。信息安全不限于防御公司抵御病毒攻击和安装防火墙来保护公司的资产。

HR 在入职、在职期间和离职时都必须采用安全方法。公司的应用系统对包括中小企业的安全等方面全面负责。合规性和政治正确性是 ISO 27000 的方法。

### 3 德国中小企业的安全性

安全要求与更好的防止企业的安全泄漏并不限于大型企业。特别是对技术、生产工艺和市场有着一个非常具体的认识的德国中小企业可能被竞争对手和其他公司所占据。其他国家的国家机构活动总是时刻存在。

竞争力取决于已经发展了很长一段时间的企业的生产和产品知识。安全漏洞可能会在很短的时间内把这个认知毁掉，如果中小企业提供了不正确的安全服务器网络，后果也会如此。

安全需求包含对中小企业数据的**保密性**，还包括客户的数据。客户的数据也通过像联邦数据保护法（“bundesdatenschutzgesetz”）这样的法律来得到保护。除了保密性，安全要求还包括**完整性和可用性**。

完整性通过保护系统数据免于故意或意外的改变来保持数据的可信度。完整性的一个目标是防止未经授权的人利用黑客修改数据或计算机程序。

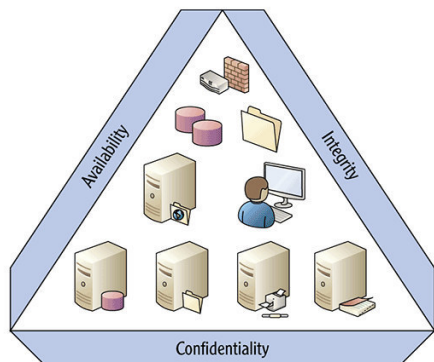
可用性保持数据和资源，如服务器和为授权用户提供的基础设施。可用性可能会由于不同的方式而减少或禁止：

- 由于故意攻击或因执行未被发现的缺陷造成的拒绝服务（DoS）
- 由于自然灾害（火灾，洪水，风暴或地震）或人类的行动造成的信息系统能力的损失，
- 设备正常使用过程中的故障

安全目标的保密性，完整性和可用性也被称为安全铁三角 (图表 2):

图表 2: 安全铁三角（保密性，完整性，可用性）

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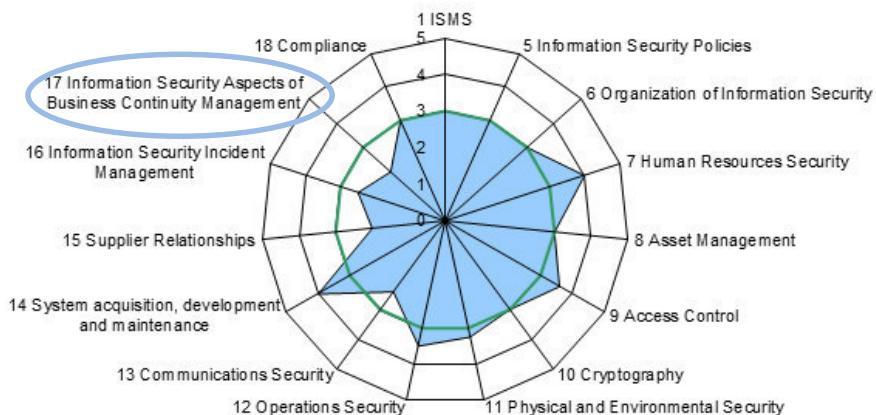
来源：<https://www.safaribooksonline.com/library/view/microsoft-windows-security/9781118114575/c01-anchor-2.xhtml>

中小企业可能是即时性生产的一部分，或是汽车市场的制造商。对汽车制造商的质量要求和对安全目标的要求是非常重要的。出于这个原因，汽车制造商和德国汽车工业协会（VDA Verband Deutscher Automobilhersteller）根据 ISO 27000 标准来定义安全，并根据上述控件模范进行评估。

这个所谓的 VDA 评估源于 ISO 27000 标准，德国中小企业需要对标准的提问进行回答。答案用 0-5 的程度表示，0 表示不存在问题，5 表示需要优化。

ISO 27000 标准以小组形式存在。上述例子分别来自其中的 A7, A14 和 A17。下列图表提供了标准的答案与缺乏安全的要求（在这里是 A13, A15, A16 和 A17）（图表 3）：

图表 3: 蛛网状 ISO/IEC 27001 区域 (例)



(1.信息及管理系统 5.信息安全政策 6.信息安全组织 7.人力资源安全 8.资产管理 9.权限管理 10.加密 11.物理与自然安全 12.操作安全 13.交流安全 14.系统获得, 发展及维护, 15.供应方关系 16.信息安全突发事件管理 17.商业连续性管理的信息安全 18.合规)

来源: Own calculation based on VDA assessment for ISMS, 2016.

A17 (商业连续性管理的信息安全) 区域在图中被圈出, 它表示了最初由汽车行业产生的安全评估是怎样影响到涉及大型汽车制造商的生产过程的中小企业的组织与过程的。员工的职业能力用来定义企业持续经营管理的过程。管理者和决策者批准预算来制定安全流程, 并举例说明它们。特别是, 由于 VDA 评估结果为业务进一步发展的基础, 所以公司整体利益是尽量满足这些要求。

#### 4 中国的教育

在中国，目前形势特点由工业生产中的变化所决定。中国企业，特别是中小企业不希望再成为工业国家工作平台的延长。他们想在平等的全球化中发挥作用。公司必须发展自己的部门，如产品开发、生产计划和信息技术。全球化要求接受和实施国际 ISO / IEC 27000 标准。对于这些活动，个人的能力是必需的，员工必须采用这些能力。教育，尤其是大学必须传递相应知识与认知。

德国大学的教育侧重于课程内容及方法。在此基础上，教育针对的是信息技术以及工艺。以下列表展示了课程内容和可能延长的重点：

- **企业资源计划系统（企业资源计划）** 包含有关业务合作伙伴的信息，生产计划，采购
- **数据仓库** 包含了有关的商业数据和战略规划的基本信息
- **电子商务** 包含了客户数据和产品数据，是公司后端系统的大门
- **客户关系管理系统** 包含了客户与业务和战略规划方面的所有相关信息
- 在中国这样的国家有很多与信息安全类似的要求。虽然有很多的差异，在德国和中国的中小企业应当注意以下几点：
- 全球化与全球网络是无限的
- 生产工艺，尤其是汽车生产制造是有关联的
- 中国工业的发展与德国之前的发展有相似性

在行业和组织内的信息安全尤为重要。工业发展取决于市场、技术和人力资源。人力资源必须通过尊重信息安全的能力和行为来提供。

教学内容可以在安全方面扩展人力资源和财务。模块“项目管理”可能会随着案例研究而扩大。信息技术应考虑安全技术、安全服务管理和业务连续性。

## 5 总结

全球化和信息技术的更广泛的使用带来了更高的信息安全感。德国的中小企业已沿用市场要求，而中国的中小企业将会沿着这条道路前进。个人能力是必需的，信息安全的能力是建立安全的环境，并在全球市场中发挥成功的基础。

### 缩写

- IEC 国际电工委员会
- ISMS 信息及管理系统
- ISO 国际标准委员会
- PDCA Plan DO Check Act , PECA 循环
- SME 中小企业
- VDA 德国汽车工业协会

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## Part 4 Information security and recruitment

J 人口变迁大环境下，员工招聘和员工忠诚度对中小企业的重要性

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人口统计调查是人类人口学发展的成因，比如人口结构，地区分布，人口就业，人口死亡，家庭干预及特定不同年代的行为模式。作为这类调查的结果，人口变迁确定人群发展的趋势，涉及年龄结构分布，男女比例，出生率和死亡率及不同族裔之间的比例变化。这些变化在德意志联邦共和国（8000万公民）表现为，出生率下降，人口老龄化和人口总体下降趋势。由于这对经济部门的竞争能力尤为重要，及对福利体系的严重后果，这些变化已经引起公众的关注。

自79年代初期开始，官方新生儿数据完全不能替代他们父辈一代。如果没有德国强大经济的吸引和长期的外籍工人移民，人口数据会下降的更快更早。这些超额人口只能由相对超额的移民平衡，甚至超过过去登记入籍的人口数。由于中东地区的严峻局势，2015年德国移民增长可视为补充人口下降趋势的一个机会。直到2030年，出生率急剧下降，人口预期接近7700万人，而且其中又少于17%为青少年和儿童人口，超过1/3人口为65岁以上老龄化公民。

目前的人口结构及每名妇女1.4的稳定生育率—尽管女性怀孕年龄不断增长—对未来发展有及其重大的责任，因此到2030年，德国将没有足够的公民处于就业阶段，会导致合格工人数量的严重不足（德国联邦统计局2011）。人口变化对德国总体上的影响，对贸易和社会的影响，严峻的剩余趋势是其主要原因。但是人口变化的影响并不是德国社会独有的挑战。中华人民共和国的人口结构—大约13.7亿公民—也表现出和典型工业化国家相同的趋势：中国人口老龄化。中国人口生育率在过去的几十年急剧下降。然而，在60年代，中国每名妇女平均生育5.5个孩子，这个数据在90年代降到2个孩子。其中主要原因是因为中国的计划生育政策，而这在农村地区可以规避或者有其他特殊政策（chang 2015）。当今中国的生育率在1.7，平均预期寿命为76岁，远远高于平均亚洲人口预期寿命，因此，中国社会也受退化威胁（联合国2014）。根据经济合作与发展组织每100人中符合就业年龄的，就有50人是不工作的老年人或小孩，而且这个数据会逐渐增加。这些类似的问题，都是欧洲国家需要面对的。这些人口学变化不仅会影响福利系统，也会影响卫生部门—因为更多的退休人员需要照看，需要更多的消费习惯市场和房地产市场。另外，人口学变化对就业市场也有极大的影响，尤其是具有挑战性的雇主（Flato/Reinbold-Scheible 2008）。劳动力需求和市场上潜在从业人员的实际供给的矛盾，显而易见。

一个市场的深远发展是有雇主决定的，企业家可以从潜在从业人员中选出最佳人选；而对于由雇员决定的市场，雇员可以选择和从事最合适的职业，在不同公司中选择拥有最良好的工作环境，这些是显而易见的。

合格的应聘者，能够了解到他们对于市场的价值，会越来越严苛地怀疑选择哪个企业最好。不仅仅首要和次要活动，其他如职业机会，未来升职和一定程度上的物质和非物质补偿也在他们的决定中占着主导作用（Flato/Reinbold-Scheible 2008）。尤其是中小企业，由于其特殊的借口，非常依赖于每一位雇员的承诺和竞争力。面对人口变迁和随之而来的在从业年龄中的熟练工人短缺，新劳动力的招聘和现有雇员的未来沟通，对于中小微企业来说尤其重要。

为了应对不断严峻的局势，对于这个问题的及时讨论非常有必要。人力资源是一个企业最有价值的竞争力。对于雇员的了解，是企业和国家经济效能发展的决定性因素。目前对于非常普及的按照年龄划分特定任务的人力资源管理措施，已经不再奏效。面对变化的周围环境，企业必须采取特定的措施，来维持现有的人力资源，及招聘新的劳动力，以避免承担创新和效能的流失。应对人口变化的挑战，决定性因素在于可持续性和应用战略的长期效能(Prezewowsky 2007)。从业年龄人群的参与就业需要保持在一个恒定水准，来维持对应的经济增长和伴随而来的社会财富。工作场所需要对老龄化雇员保持吸引力，对新劳动力提供大量的教育培训和支持，维持企业目标的任职资格，保证老龄化人群整合成一组异质性雇员。

雇佣较年长的劳动力于合适的职位是非常经济合算的：中小微企业尤其应该考虑，制度激励甚至于老年雇员的再度激活，可能非常富有成效。主要由工作经验和心理应对能力支撑的职业，应当有效地补充进老龄劳动力，以保证市场的优势(Bal/De Lange 2015)。

但是除了对现有劳动力的再次就业，从一群持续犹豫不决的年轻人才中招聘另外的员工也不能落下。因为员工太少抑制了中小微企业的销售和潜在的成就，导致了不必要的无能力接受新订单。这就是“雇主品牌”的新起点，相比于其他大量的潜在的工作场所，企业吸引力可以通过特定公司市场概念来特别强调。不同的手段来解决员工关心的问题，如生活工作平衡，自我竞争力发展或以年龄为基础的工程师，必须成为未来人力资源管理的基本保留手段(Da Cruz/Holtz 2007)。一个合格的工作申请者会暴露所有的要求，想要了解企业内部的升迁愿景，专业上和方法学上的进步培训，个人个性品格发展和所有可能提供的条件来保持一个满意的生活和工作的平衡。准备一个非常清楚的展示，表现企业的价值观和特定的管理文化，是非常重要的。

生活和工作平衡是指一个健康的工作和生活方式平衡。一个潜在的雇主表现他对特定个人生活条件的关心，为家庭生活和照顾孩子提供灵活的工作时间安排，可

能是申请者决定加入公司的决定性条件。尤其是对女性员工的支持，这部分尤其重要。在申请程序期间提升的期望，必须让申请者非常满意，否则可能阻碍与雇员的沟通交流。

在国内劳动市场中，为了回避在合适就业年龄中的熟练工人短缺现象，雇佣外籍熟练工人是可取的。与他们不同的文化和个人背景中，在合适的企业中，应该给这些人提供机会，熟悉可能的每天的状况。这就包括了当地的交通，卫生和福利系统等等，和学习潜在雇主好玩成为潜在劳动力的优势的机会(Flato/Reinbold-Scheible 2008).另一个对于熟练工人短缺的可能观点是，这可能带来一个全新的解决办法，另一次工业革命，指“工业 4.0”。主要目标是整个工业产品，现代信息和通信技术。人与机器之间的网络通信技术的应用意在针对传统的目标，如质量，成本和时间效率和灵活度或对不稳定市场的资源高效管理。熟练工人短缺可能被独有的机器应用或机器人技术所取代(Dujin/Geissler/Horstkötter 2014)。

最后，由于中国和德国的文化非常不同，一个关键性策略评价是必须的。不是每一个能够解决德国雇主问题的方法，都适用于中国。但是这些对于人力资源管理的测定的建议仍然是非常有用的标准。对于人力资源领域来说，按照人是以社会为导向的猜想来行事是非常重要的，那就是，人是感性的，有限理性的，及按照自己利益最大化来的。

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## Part 5 Financing and investment

K 云融资研究——技术型中小企业模式

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## 1 研究背景和研究意义

### 1.1 技术型中小型企业定义

技术型中小型企业，是指知识密集型经济实体，其中高比例员工是科技人才。产品或服务充满了高新科技。企业研究和开发资金占到年销售额收入的 2%-5%。

技术型中小型企业有着非常高的价值，对国家高技术发展，经济发展和社会和谐发展有着非常深远的意义。根据相关数据表明，他们创造了大约 65%的中国专利，超过 75%的科技创新和超过 80%的中国新产品。

### 1.2 技术型中小型企业的特点和问题

技术型中小型企业有着以下特点：

- (1) 更多的无形资产
- (2) 更少的实体资产
- (3) 更强的创新意愿
- (4) 更快的发展速度
- (5) 更高的发展风险
- (6) 更高的风险投资

技术型中小型企业是国家创新的重要力量，是经济增长的重要组成部分。但是，其“更高风险和更少实体资产”及其他特点导致了高投资成本和容易困难。国内外学者已经提出了很多建设性模型或建议，但是这些模型都有其局限性，现在急需更多开放性的创新的理念来解决这个问题。有四大动力可以加速金融产业和中国互联网发展：

- 政策：中央政府发布了“专项经费”，“互联网+”，“互联网+金融”，提升到国家政策层面，与德国的工业 4.0 类似，中国推进电子商务，产业-互联网和健康的互联网金融发展。
- 技术：我们进入了移动互联网时代。四项技术支持，包括大数据，云计算，移动互联网和垂直搜索引擎。到 2015 年底，中国将有 7.8 亿移动网络用户，占总人口的 56.9%。

- 需求：中小型企业投资和融资需求。中小型企业占国家企业的 90%；创造了 80%的工作岗位，60%的 GDP 和大约 50%的税收，但是到 2014 年底，中小型企业的贷款余额占企业贷款余额的 20.4%。
- 供给：居民财富和年收入增长，到 2015 年底，中国个人可支配资产达到 112 万亿，而且中国的储蓄率比发达国家更高。大家都知道中国人爱存钱。

总之，在中国，很长一段时间内，因为历史或其他原因，金融压制的存在，导致了利率不能在资源分配传导上发挥作用，最终传统金融机构不能满足长期客户的融资需求，比如中小型企业；另一方面，互联网金融对于改善资源分配的效率非常有帮助。

### 1.3 研究背景和研究意义

目前，现在信息科技代表互联网正在改变中国金融部门的形式和结构。“互联网+”“互联网—融资”已经写入政府工作报告，提升到国策层面。总理李克强提出用互联网工具，开展大量的创新和企业职位。技术型中小型企业能够利用互联网时代的创新性思维，全球性地寻求资金和拓宽融资渠道。因此，这篇文章跳出了中国快速发展得互联网融资，基于一个更加开放，更加民主的互联网时代，探索给中国中小型企业融资模式的创新。

## 2. 研究方法和应用

主要的研究方法包括（1）文献研究（2）多主体模型和仿真和（3）定性和定量分析组合。

根据研究问题的背景，从理论和应用研究的角度，根据互联网时代的创新理论，提出了技术型中小企业的云融资模型。然后，解释了主要的运行机制和进化机制。同时，应用仿真模型方法来仿真中小型企业在不同状态的动态演变过程。



### 3 主要研究内容

#### 3.1 技术型中小企业的云融资结构

##### (1) 技术型中小企业的云融资含义

完全应用“开放，民主，平等，分享”的互联网精神，根据融资需求特征和不同阶段的危险程度，在特定金融生态环境下，技术型中小企业的云融资整合了政府支持资金，传统金融机构，风险投资，私人投资等等。在特定的运行机制下，给技术型中小企业以低成本，高效率和低风险提供资本。

这是一种融资的创新模式，“民主参加，开放容量，资源共享，动态互动，无限边界”，来适应于互联网发展阶段。

##### (2) 技术型中小企业云融资的主要特点：

- 缓解各融资代理间的信息不对称
- 解决融资代理风险和回报的比例失当
- 在融资平台中形成双赢的生态系统
- 一种多维度的融资模式
- 一种立体的，动态的融资模式

#### 3.2 技术型中小企业的云融资的组成

(1) 代理组成：需求资金代理，商业提供资金代理，资金支持代理和中间服务代理。

(2) 流通组成：资本，信息，服务。

(3) 环境组成：政府支持环境，法制建设环境，创新文化环境，和社会信用环境。

#### 3.3 技术型中小企业云融资的主要运行机制

技术型中小企业云融资的主要运行机制包括：

- 微研究
- 动态运行
- 以利益为导向
- 协调
- 信用合作

- 风险承担
- 交互式选择

### 3.4 云融资模型和仿真

云融资模型和仿真根据以下几个步骤进行：

- 进化分析：进化的含义和进化的程度
- 云融资进化演变模型建设
- 云融资模型和仿真
- 仿真分析结果

#### 4 主要创新点

首先，这篇文章探索了技术型中小型企业的融资模型创新，根据互联网的告诉增长，总结出，云融资模型能够解决信息不对称问题，传统融资在一定程度上为了获得高效益出现风险和收益不平衡，资金的低成本，能够解决技术型中小型企业的融资困难问题。这种融资模型打破了融资理论传统模型的限制和次数，丰富了企业融资模型的供给。

第二，技术型中小型企业的云融资模型清楚地定义了所有参与者的角色和状态；详细解释了融资创新模型的各种运行机制；通过应用科学仿真模型方法，展示了技术型中小企业融资活动的本质机制；提供了解决技术型中小企业融资困难和昂贵问题的方法。

第三，技术型中小型企业的云融资提出于政府大力发展互联网融资之时，使得互联网融资真正地服务于实体经济，实现了虚拟经济和实体经济之间的良性互动，对于国家发展互联网融资具有划时代的意义。同时，云融资模型的理论对于真服申日金融改革也具有一定的参考作用。

**附录 1: 论文发表:**

The Financial Environment, the Financing Ability and the Growth of Technical SMEs (2014)

Research on Modeling and Simulation of Cloud –financing for the Technical SMEs (2015)

Research on Cloud-financing Pattern of Technical SMEs—From the Perspective of Cloud Innovation (2014)

Research on the Pattern of Cloud Innovation of Technical SMEs (2015)

Research of Cloud Innovation Flow on the SMEs

Entrepreneur Characteristics, Competitive Strategy and Growth of SMEs —— Evidence from Listed Companies of China's SME Board in the Manufacturing Industry (2014)

Research on Model Construction of Self-innovation System of Chinese Low Carbon Industrialization Based on CAS Theory (2014)

Analysis on Government Innovation--From the perspective of Cloud Innovation (2014)

Research on Internet Finance from the Perspective of CAS

Research on the Reason, Feature and Application of the Cloud Innovation (2015)

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## Part 5 Financing and investment

- L 政府与中小企业合作的 PPP 投资模式—宁阳汶河灌溉工程案例  
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PPP (Public-Private-Partnership) 是政府和社会资本在基础设施供给方面建立起来的一种长期合作关系。是指公共部门与私人部门之间签订合作协议, 特许私人部门提供公共基础设施服务的投资模式。政府和社会资本双方地位平等、权责明确, 各自承担相应的风险。政府负责设施使用价格的制定、质量的监管等工作, 社会资本具体负责项目的设计、建设、运营及设施维护工作。投资成本的收回主要依靠向设施使用者收取的使用费, 另外政府也会根据协议或者基础设施的运营状况向社会资本方提供财政补贴

在公共服务传统供给模式下, 基础设施一般是由政府投资建设, 建成后交由事业单位或国有企业负责经营和维护。这种传统的供给模式已不能满足经济发展需要, 并且存在着浪费严重、官僚作风盛行、设施维护不到位、经营风险大等很多问题。虽然 PPP 投资模式在上世纪五六十年已被国外很多国家成功应用, 但是我国最早在上世纪九十年代中期才引入, 所以 PPP 投资模式在我国仍然处于初期探索阶段。

对基础设施的建设采用 PPP 投资模式, 政府制定相关政策鼓励私人资本投资于基础设施建设并负责设施的日后经营和维护, 从政府角度看, PPP 投资模式一方面在很大程度上解决了目前农村基础设施投资不足、供给效率低下等问题, 减轻了政府的财政压力, 拓宽了建设资金的来源渠道; 另一方面私人资本的进入可以使项目在运作上实现市场化, 这样做可以充分实现社会资源的优化配置, 使融资建设方式更具社会效益。因此对 PPP 投资模式投资机制问题的研究对于建设社会主义新农村和转变政府职能都有着重要的意义。

综上所述, 概括而言 PPP 投资模式主要有以下三个方面的特点: 一是 PPP 投资模式是一种项目融资模式, 并且是新型融资模式, 通过项目的预期收益实现融资; 二是 PPP 投资模式是一种允许民间资本参与的融资模式, 社会投资人通过与政府签订长期合作协议, 共同对项目负责; 三是 PPP 投资模式是一种可以同时实现参与各方目标的模式。

## 1 PPP 投资模式的优劣势分析

### 1.1 PPP 投资模式的优势分析

PPP 投资模式作为一种新型的融资模式和以往的融资活动是不一样的，它追求的是企业和政府的长期合作，项目要想成功，参与各方必须坚持互惠互利的平等原则，彼此之间要保证信息透明并及时交流，任何一方的短期行为都可能造成项目的失败。但正因为其特征决定了其不可替代的优势。

#### (1) 有利于拓宽融资渠道

在传统供给模式下，基础设施的建设资金主要来源于政府的财政拨款和银行等金融机构的贷款，但是政府财政拨款资金有限，而银行等金融机构的贷款利率较高、资金链容易断裂。PPP 投资模式提供了民间资本进入公共物品供给领域的途径，充足的民间资本有效的解决了基础设施的建设资金不足的燃眉之急。

#### (2) 有利于形成政府和企业互信的投资环境

PPP 模式的基本原则是共享利益、共担风险，因此政府和企业 在合作时会秉持诚信原则，互惠互利。政府为了引入社会资金，推进基础设施建设，必定会不断提高自身的信用程度；私人部门为了取得收益，发展壮大，也必定树立良好的企业形象。通过双方的共同努力，将形成良好的社会风气。

#### (3) 有利于提高基础设施使用效率

PPP 模式的最终目的是实现参与各方的共赢，因此参与各方从项目开始到结束都必然会忠于职守。政府要承担社会责任，为民众提供满意的公共服务，而民营企业追求的是利润，将政府强大的社会公信力与民营企业的高效管理机制结合到一起，可以充分发挥政府和民营企业各自的优势，弥补对方的不足之处，提高基础设施使用效率。

### 1.2 PPP 投资模式的劣势分析

#### (1) 相关法律保障体系不健全

由于我国 PPP 模式还处于初级发展阶段，很多内容仍在探索之中，关于 PPP 模式的完整的法律体系尚未健全，并且由于社会经济发展迅速，经常有相关法律条文被重新修订和颁布，这就有可能就会导致原先的 PPP 项目丧失合法性，另外我

国缺少相关机制，对原先签订的 PPP 项目进行保护。如江苏某污水处理厂采取 BOT 模式融资建设，在合同签订后颁布了《国务院办公厅关于妥善处理现有保证外方投资固定回收项目有关问题的通知》，外方投资者被迫与政府重新协商投资回报率。

#### (2) 审批周期长、决策机制不灵活

由于政府决策程序复杂、项目论证时间漫长、有关部门存在官僚作风等因素，导致 PPP 项目审批、决策周期长，运行成本高。项目批准后，由于决策机制缺乏灵活性，难以根据市场的变化对项目的建设和运行模式进行及时调整，导致不必要的损失。

#### (3) 政治影响因素大

PPP 项目大多与人民群众的生活息息相关，关系到公众的切身利益。部分项目运营过程中，可能会因各种因素导致项目运营成本上升，为弥补成本而提高对社会公众的收费往往会招致公众的反对，而政府从维护社会稳定的角度出发，会出面制止项目收费的提高，这样一来 PPP 项目的社会资本方将遭受经济损失，虽然其并未违背合同条款的规定。

#### (4) 政府信用风险高

地方政府为加快当地基础设施建设，急于求成，有时会向社会资本方承诺一些不切实际的投资回报率、项目收益率以吸引社会资金的投入。然而当项目建成后，由于实际条件的限制，政府无法兑现合同承诺，危害了合作方的利益。



## 2 宁阳汶河灌溉工程的 PPP 投资案例分析

### 2.1 PPP 引汶水利工程项目概况

宁阳县引汶工程的建设目的不单单是解决耕地灌溉问题，更是一项规模庞大的水利综合利用工程，该工程位于宁阳县的中东部，是宁阳县 2015 年推出的 PPP 项目之一，工程主要包括防洪、拦水、调水、蓄水、供水以及灌溉多功能于一体的现代化水利工程，预计初始投资额约为 9 亿元。该项目具有明确的赢利点，2016 年宁阳县的城市工业用水价格是 2.69 元/立方米，年用水量则是 5840 万立方米，这就意味着仅供水收入就为 1.57 亿元，灌溉农田水费收入测算为 3600 万元，水库风景区收入及其他各项收入为 2200 万元，综上所述，引汶工程的年收入总额在 2.15 亿左右。另外国家每年对该项目提供的补助达 5000 万元左右。引汶工程解决了耕地灌溉问题和生态问题，为宁阳县带来了巨大的经济效益、社会效益以及生态效益。

从自然条件来看，大汶河横穿宁阳县，大汶河是我国最长的一条倒流河，长度约 239 公里，而宁阳县境内就达到 55 公里，占大汶河总长度近 1/4，大汶河水面的水平高度要高出宁阳县城，因此可以利用天然的高差引用汶河水资源，所以宁阳有着得天独厚的水资源优势。

工程建设内容主要有以下七大方面：水源工程、引调水工程、调蓄水工程、灌溉排涝工程、工业生活供水工程、生态景观建设以及管理设施建设，其中水源工程、引调水工程、调蓄水工程和灌溉排涝工程使项目的建设重点，目前水源工程已正式开工建设，管理设施的建设目的是为了保证整个工程建成后的健康运营，是为工程提供管理服务的。

### 2.2 项目参与方的构成

引汶工程 PPP 项目主要由宁阳县政府、宁阳县国有资产管理局、鲁珠集团、岭南园林以及鲁鑫水务公司参与，另外还有山东农业大学勘探设计研究院、山东光大恒泰会计师事务所、国家开发银行等机构提供辅助服务。

如上图所示，引汶工程 PPP 项目的主要实施者是新组建的鲁鑫水务公司，该公司由鲁珠集团、岭南园林和宁阳县国有资产管理局出资组建，其中鲁珠集团和宁阳县国有资产管理局各占 40% 的股份，岭南园林占股 20%，鲁鑫水务公司作为实施该 PPP 项目的特殊目的公司，其注册资本为 5000 万元，组建手续及公司的运

行程序都严格依照公司法的规定，是独立的法人资格，公司的日常运作和工程的施工建设工作主要由鲁珠集团派驻的高级管理层负责。

鲁珠集团是经过专家评审后，从众多竞标者中脱颖而出，被宁阳县政府选为中标公司，鲁珠集团是宁阳县一家规模以上的大型民企，总资产超过 4 亿元，集水泥生产、发电、物流和矿山开发于一体的一家现代化企业集团，是宁阳县的用水大户，也正因为这个原因它对引汶工程产生了极大的关注，这一点也是合作的原因之一，另外鲁珠集团的生产用水一直都是抽取地下水，而如果引汶工程建成，它可以直接使用汶河水源，这在成本上节省了将近一元钱，这个利润点是很高的，所以基于这个原因鲁珠集团积极参与该项目。

### 2.3 项目的基本运作

这一阶段的主要任务是建造设施并运营，承担这些工作的是前文提到的鲁鑫水务公司。引汶工程的初期建设部分——大汶河拦水大坝已于 2015 年国庆节后正式开工建设，投入资金 6000 万元，以国家开发银行贷款为主，另有鲁珠水泥投入的部分资金，将工程建设中抽取的河沙出售获取收益。工程建成后鲁鑫水务公司负责运营并取得收益，向政府缴纳税款，鲁珠水泥按照自己所占股份分享利润。

宁阳县政府在同鲁珠集团签订 PPP 项目合作合同时依据的主要是财政部下发的《PPP 项目合作指南》文件，项目合同规定社会资本方即鲁珠集团和岭南园林承担工程建设成本的 60%，宁阳县国有资产管理局出资 40%，项目建成后交由鲁鑫水务管理，特许经营权的期限为 30 年，在特许经营期内鲁鑫水务负责引汶工程的运作、维护和收取收益，在定价机制方面，宁阳县政府同鲁珠集团协商后 30 年运营期内每 6 年进行评估，对合同双方履行情况进行综合评价，并根据每期的评价结果对价格进行动态调整，项目收益控制在 8—12% 之间。

为了更好地履行合同和建设工程，项目在进行期间借助了多方机构提供的辅助服务。由于项目投资浩大，鲁鑫水务在第一期工程开始前向国家开发银行贷款 6000 万元，在贷款合同中规定贷款，可以由一期工程修建水坝时抽出的河沙在出售后得来的钱款偿还，不足部分在由工程建成投入使用后的收益来偿还。上海德宏律师事务所为合同的签订以及日后项目的运行提供法律顾问服务，而工程在施工过程中遇到的勘探测量工作由山东农业大学勘探设计院负责。

30 年的特许经营期结束后，按照合同规定，鲁鑫水务公司将工程设施无偿交给宁阳县人民政府或政府制定的机构管理。

### 3 主要经验与启示

宁阳县引汶工程引入 PPP 模式的意义不仅在于该项目本身，而且将成为基础设施建设新型投融资模式的一个样本，为日后其他地区基础设施引入 PPP 模式提供了经验借鉴。

#### 3.1 中小企业在设施的运营与维护中发挥重要作用

引汶工程 PPP 项目的建设投资额高达 13.13 亿元，而宁阳县 2015 年的财政收入仅为 24 亿元，如果宁阳县单靠政府自身的财力拿出超过一半的收入投资与工程建设，那么剩下的资金根本无法满足其他的各项政府支出。穷则思变，宁阳县决定引入 PPP 模式完成引汶工程的建设工作，并成立了政府与社会资本合作办公室来完成项目实施前期的各项准备工作，确定 PPP 项目的实施方案后，项目进入政府采购环节，首先宁阳县政府发布招商广告，吸引了多家企业竞标，最终经过筛选，选择了鲁珠集团作为中标企业参与建设，根据合同规定鲁珠集团与宁阳县国有资产管理局组成的鲁鑫水务公司获得了项目的运营权，特许经营期为 30 年，在特许经营期内鲁鑫水务负责工程的运营与日常维护，并取得收益，这就是宁阳县政府将工程的运营权和维护工作外包给了民营资本，在定价方面，为了防止鲁鑫水务利用水利工程的资源垄断性牟取暴利，县政府、国有资产管理局、鲁珠集团通过多方协商确定合理的收费标准，一方面使得鲁珠集团有利可图，另一方面保证广大用水群众的利益。维护工作的外包，还从根本上解决了以前设施建成后无人维护任其毁损的问题，进一步降低了政府的公共服务成本，节省了大量的公共资源，间接的为宁阳县的社会经济发展做出了贡献。

#### 3.2 寻找可靠的合作伙伴

PPP 项目主要是由政府 and 民间资本方共同参与完成的，从政府角度来看，要选择一个具备一定的经济实力和拥有现代化管理体制的民营企业，因为只有这样才能保证 PPP 项目的建设质量，才能使农村基础设施为服务农村的生产生活发挥应有的作用。

案例中鲁珠水泥集团是当地政府在市政建设方面的重要合作伙伴，是改制的市属国有企业，前期与政府有着密切的合作关系，有丰富的市政工程建设与管理经验。

可以说寻找可靠的合作伙伴不仅对工程的初期建设有帮助，而且对日后工程建成后的投入运营也有着重要意义。

### 3.3 组建特殊目的公司

引汶工程 PPP 项目的社会参与方为鲁珠集团和岭南园林，以鲁珠集团为主导，政府方面是宁阳县国有资产管理局，三方组建特殊目的公司——鲁鑫水务公司，由鲁鑫公司负责工程的施工和建成后的运营维护工作。

组建特殊目的公司是该 PPP 项目的另一大亮点，因为根据先前的调研结果和搜集的相关资料来看，很多 PPP 项目由于参与方众多，彼此之间的责任关系划分不明确，导致项目从筹建到运行发生了很多纠纷。而引汶工程 PPP 项目在组建鲁鑫水务公司以后，意味着鲁珠集团、岭南园林和国有资产管理局都成为了该公司董事会的成员，彼此之间地位平等，公司的运行、权力责任的划分、利益的分配都会严格按照公司章程处理，“制之有衡，行之有度”，这就在根本上杜绝了权利纠纷、利益纠纷等一系列管理乱象，保证了引汶工程的建设工作，为日后工程的运行和维护铺平了道路。对于中小企业来说，PPP 项目未来收益无法预期，组建了独立的公司，即使 PPP 项目投资失败，中小企业依然可以正常运营。

### 3.4 规定了服务价格的动态调整机制

民间资本参与 PPP 项目的目的是获取收益，这也是 PPP 项目能够推行的主要动力，但是如何在能够照顾各方利益的情况下科学合理的定价，以及在项目建成投入运营后价格调整机制如何发挥作用，都是目前推行 PPP 项目的一个难题。

宁阳县在推行引汶工程 PPP 项目时为避免公共服务价格过高导致群众不满和价格过低影响企业合作积极性，县政府参照《PPP 项目合同指南（实行）》文件制定了 PPP 项目合作合同，协调了各方利益，并在合同中明确规定了定价动态调整机制，可根据市场环境的变化和社会资本收益率的高低调整定价，每三年对工程的运行情况、收益情况、维护情况进行科学评估，并综合社会经济发展状况比如税收、居民消费价格指数、银行利率等指标重新确定价格。

为了更好的科学调整价格，宁阳县政府、社会资本方和第三方中介机构通过协商确定了一个较为合理的项目收益率区间，该区间为 8%—12%，当项目的收益率

低于 8%时，可适当调高收费价格，但如果调高收费价格超出了用水群众的承受能力，那么政府会对项目进行一定的补贴；当项目的收益率超出 12%时，将下调价格，保证公共利益不受损害。这项定价机制可以说是该 PPP 项目的一大创新，因为定价牵扯到多方，这其中的利益关系既敏感又复杂，难免会导致利益纠纷，而宁阳县在这一问题上做出了非常有借鉴价值的突破与尝试。

### 3.5 合理分配权利责任

在 PPP 项目中要将权力与责任合理的分配给政府与民营企业，这样做一方面可以实现政企分离，解决官僚作风等问题，提高项目的运作效率；另一方面可以避免由于权责不清而导致的法律纠纷问题，降低项目的运作风险。

在引汶工程 PPP 项目中，宁阳县政府从宏观层面上把握工程的建设方向，承担项目的融资风险，在工程建成投入使用后，监督设施的收费与维护等后续工作，但不插手项目具体的运营工作，设施的运营由鲁珠水泥全权负责，鲁珠水泥定期编制设施的运营报告，上交给宁阳县政府备案。

# FOM German-Sino School of Business & Technology

Die FOM Hochschule bietet seit 2003 gemeinsam mit ihren Hochschulpartnern Shanxi University of Finance & Economics und Shandong Agriculture University ein Wirtschaftsstudium für junge Chinesen an. Nach einem ersten Studienteil in China schließen die Studierenden ihr Bachelor-Studium mit einem zweisemestrigen Aufenthalt an der FOM in Essen ab. In der Folge starten die interkulturell geschulten Absolventen in der Regel entweder eine Karriere in einem international operierenden Unternehmen in China oder Deutschland oder sie qualifizieren sich weiter mit einem FOM Masterstudium.

Seit 2013 bündelt die FOM ihre Kompetenzen für die an junge Chinesen gerichteten Studienangebote in der FOM German-Sino School of Business & Technology. So erfahren die deutsch-chinesischen Studienprogramme eine weitere qualitative Stärkung, sei es durch die intensive Betreuung der Studierenden, durch die enge und vertrauensvolle Zusammenarbeit mit den chinesischen Partnerhochschulen, durch die Förderung eines aktiven Alumni-Netzwerks für Absolventen oder auch durch die anwendungsorientierte Forschung im Bereich deutsch-chinesischer Fragestellungen.

Weitere Informationen unter: [fom.de](http://fom.de)

For more than 10 years now, Chinese students study business in German language jointly conducted by FOM University of Applied Sciences and its distinguished cooperation partners Shanxi University of Finance & Economics and Shandong Agriculture University. After an initial studying period in China the students spend two semesters on the FOM campus in Essen and graduate with a Bachelor of Art's degree. Afterwards most cross-culturally trained graduates either embark on a career with an international enterprise in Germany or China or they delve into a FOM postgraduate Master's degree course.

Since 2013 FOM has bundled the complete range of study programmes for Chinese students at the FOM German-Sino School of Business & Technology. Next to its academic mission, this school is meant to unify an intensive assistance experience for the students, to be a reliable and efficient counterpart for the cooperation partners, to support a vivid alumni network for the graduates and to promote practice-oriented research on Sino-German issues.

Further information at: [fom.de](http://fom.de)