

Article

# Research on the Survival and Sustainable Development of Small and Medium-Sized Enterprises in China under the Background of Low-Carbon Economy

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**Abstract:** Given the increase in energy consumption and pollution emissions, China has formulated a low-carbon economic development strategy. Small and medium-sized enterprises (SMEs) are mostly at the bottom of the industrial chain and face problems of high energy consumption and low output. The problems of survival and sustainable development of SMEs are serious under the background of low-carbon economy. SMEs play an important role in optimizing economic structure and social stability. Thus, studying the survival and sustainable development strategies of SMEs in China is necessary. This study adopts the method of market survey to perform the questionnaire design, sample selection, questionnaire issuance, and data analysis from three perspectives of policy, social, and internal environments of SMEs. This study summarizes seven factors, including financing and operation management, which restrict the survival and sustainable development of SMEs in China under the background of low-carbon economy. Moreover, this study proposes specific suggestions from internal and external environments.

**Keywords:** low-carbon economy; SMEs; Sustainability; external environment; internal environment

## 1. Introduction

Given the increase in energy consumption and the continuous deterioration of the ecological environment, low-carbon economy has become a topic of interest [1–6]. Nesticò and Pipolo proposed a model considering the social cost of carbon, not only the financial effect generated by the investment project but also the environmental results [6]. Low-carbon economy are not based only on reducing energy consumption but also in changing the energy source [7–9]. It plays an important role in improving energy efficiency and reducing environmental pollution [10]. At present, China has formulated a national policy for the development of a low-carbon economic line to achieve green economic development through industrial upgrading and economic transformation [11]. China has set a low-carbon target of reducing carbon dioxide emissions per unit Gross domestic product by 40%–45% in 2020 compared with 2005 in the 13th Five-Year Plan [12]. Moreover, China has proposed to achieve carbon emission control objectives, which was set out in the Sino–US Joint Statement on Climate Change by 2030 [13,14]. In this background of low-carbon economy, the development of small- and medium-sized enterprises (SMEs) in China is facing serious problems [15]. Generally, the definition criteria of SMEs vary with different countries and historical periods. In China, the definition standard of SMEs has undergone eight evolutions. At present, SMEs are classified by three indicators in China, including employment, assets, and revenue. Meanwhile, the indicators and standards of different industries are varied. For instance, the revenue index is adopted by the agricultural industry,

and agricultural enterprises with revenue below 200 million yuan are SMEs. However, the indicators of employment and revenue are adopted by manufacturing industry, and the manufacturing enterprises with employees less than 1000 or revenue less than 400 million yuan are SMEs.

As an important force to promote the development of China's national economy, SMEs play an important role in optimizing the economic structure and maintaining social stability [16–19]. Thus far, the number of SMEs in China has exceeded 40 million, which accounts for more than 99.7% of the total registered enterprises and contributes more than 60% of China's GDP, 50% of taxation, 65% of invention patents, 75% of enterprise technological innovation, 80% of new product development, and more than 80% of urban employment opportunities [20]. However, SMEs have weaker competitiveness, greater impact from market shocks, and weaker risk resistance compared with large enterprises [21,22]. For example, 68% of SMEs fail within the first five years of their establishment, 19% survive for 6–10 years, and only 13% survive for more than 10 years [23]. Similar to the definition of SMEs, large enterprises also adopt the three indicators, and the indicators and standards of different industries are varied. When the enterprise's index exceeds the critical value of SMEs' standard, the enterprise is a large enterprise. In addition, most SMEs are at the bottom of the industrial chain, and problems of high energy consumption and low output value exist. Under the background of low-carbon economy, the survival and sustainable development of SMEs in China are facing a severe situation. For example, a large number of SMEs has been forced to shut down because of high energy consumption and low pollution discharge in the process of environmental pollution control in China in the past two years. Therefore, the study of the survival and sustainable development strategy of SMEs in China under the background of low-carbon economy plays an important role in the country. On this basis, this study adopts market research methods to analyze the problems being faced by SMEs in China under the background of low-carbon economy. The survival and sustainable development of SMEs are influenced by many factors, and a comprehensive analysis of the policy environment, industry environment, and internal environment is necessary to clarify the key problems faced by SMEs [24]. Thus, this study also explores the countermeasures for the survival and sustainable development of SMEs from three aspects, namely, government, enterprises, and society [25].

The remainder of this paper is organized as follows. Section 2 describes the sample selection and questionnaire design. Section 3 provides a data analysis of policy, social, and internal environments under the background of low-carbon economy. Section 4 presents the discussion and recommendations.

## 2. Method

Generally, first- and second-hand data analyses can be adopted to solve the aforementioned issues. Second-hand data refer to the use of literature, statistical annual reports, databases, and other data that have been statistically completed. Such data have the advantages of low cost and can be analyzed in a short period of time. However, the initial purpose of second-hand data acquisition may not be related to the research purpose that must be studied. The present work studies the survival and sustainable development of SMEs in China under the new situation of low-carbon economy, and finding sufficient second-hand data for this purpose is difficult. Meanwhile, first-hand data can collect customized information for research purposes, which is often time-consuming and expensive. The method of market survey research can design the research scheme, design the questionnaire, determine the sample and capacity, collect the data according to the research purpose, and obtain the required first-hand data.

Existing second-hand data can hardly support the research on the survival and sustainable development of SMEs in the context of low-carbon economy due to lack of data and inconsistent research purposes. Therefore, market survey research methods should be used to collect first-hand data that are consistent with the purpose of this study.

### 2.1. Sample Selection

Jiangsu Province is an economically developed province in China, and its SMEs involve a large number of industries. For instance, on the analysis of a research report on the prosperity index of SMEs in China over the years, the prosperity index of SMEs in Jiangsu, Guangdong, and Zhejiang Provinces rank the top three in the country [26]. The statistics of SME Bureau in Jiangsu indicates that the total number of SMEs in the province exceeded 2.88 million by the end of 2017, among which 46886 industrial enterprises have reached the standard of enterprise above the designated size, thereby ranking first in China. Moreover, SMEs in Jiangsu province include all types of SMEs in China. On the basis of the preceding data, SMEs in Jiangsu Province are representative of China [27], and studying their survival and sustainable development under the background of low-carbon economy is necessary. Therefore, the present study takes SMEs in Jiangsu Province as the research object.

Furthermore, on the basis of the factors of geographical location, total economic volume, industrial structure, and lifestyle, Jiangsu Province is usually divided into three sub-regions, namely, North Jiangsu (including Xuzhou, Lianyungang, Yancheng, Huaian, and Suqian), Central Jiangsu (including Nantong, Yangzhou, and Taizhou), and South Jiangsu (including Nanjing, Suzhou, Wuxi, Changzhou, and Zhenjiang). Figure 1 shows a map of Jiangsu Province. In this study, two cities in each region are selected as samples by random sampling. The six cities are Zhenjiang, Yangzhou, Xuzhou, Wuxi, Nantong, and Suqian, and 11 local representative SMEs are selected for each city as the survey object. Hence, the number of selected SMEs is 132. The survey respondents include government officials, managers, employees, and residents. The selected enterprises are mainly SMEs in industrial parks, which are greatly affected by low-carbon economy.



Figure 1. Map of Jiangsu Province.

### 2.2. Questionnaire Design

For the four types of survey respondents, questionnaires on the survival and sustainable development of SMEs have been designed under the background of low-carbon economy. In the scale design, we refer to the Likert scale, and each question is divided into five levels. The respondents can easily answer, and the survey results have good reliability. The design schemes of the questionnaire are as follows.

#### 2.2.1. Design of Government Questionnaire

Under the background of low-carbon economy, the government needs to construct a good external policy environment and promote the sustainable development of SMEs [28]. The government

questionnaire can be mainly divided into three aspects, namely, the existing support policy, government self-evaluation, and the work direction for SMEs.

The first part of this questionnaire focuses on the existing support policies for the sustainable development of SMEs. In the second part, the government self-evaluates its service to SMEs. Specific evaluation aspects include policy propaganda, support measures, implementation policies, service impact, service convenience, and service effect, and the five evaluation grades include very unsatisfactory, unsatisfactory, mediocrity, satisfactory, and very satisfactory. In the third part, we can obtain the work plan and attention of the government on the survival and sustainable development of SMEs under the background of low-carbon economy.

### 2.2.2. Design of Enterprise Questionnaire

In this part, the questionnaire subjects for survival and sustainable development of SMEs include two groups, namely, managers and employees. For managers, we need to survey basic information of the SMEs, including location, industry, time of establishment, and business income of employees [29]. We further obtain the key issues, including financing, sales, talent, technology that enterprises encounter [30], and the evaluation of the effectiveness of government policies and services. Human resources are strategic resources in market competition [31]; thus, they are the key factors that restrict the survival and sustainable development of SMEs. In the employee questionnaire, we collect and analyze the basic information of employees in SMEs, including gender, age, seniority, and education. On this basis, the enterprise satisfaction in the development prospect, management methods, welfare benefits, working environments, and corporate culture under the background of low-carbon economy is also analyzed [32].

### 2.2.3. Design of Resident Questionnaire

In this part, the questionnaire obtains social perspectives on the survival and sustainable development of SMEs under the background of low-carbon economy and analyzes the social environment of the development of SMEs.

## 3. Results

We conducted a survey in 12 counties of the 6 cities on the basis of the questionnaires. During the investigation, we visited 132 SMEs and local government departments. We investigated the internal and external environments for the survival and sustainable development of SMEs by introducing the current situation of low-carbon economy, issuing questionnaires, and collecting data.

Tables 1–7 show the questions and results of the survey for government officials. Figures 2 and 3 and Tables 8–14 show the questions and results of the survey for residents. Tables 15–21 present the questions and results of the survey for managers. Finally, Table 22 shows the 14 questions and results of the survey for employees.

### 3.1. Data Analysis of External Environment

We obtained the policy and social environment for the survival and sustainable development of SMEs in China under the background of low-carbon economy from the government and ordinary residents, respectively.

#### 3.1.1. Policy Environment Analysis

We investigated the financial, tax, talent, and technical authorities of the 12 counties. In view of the comparison between SMEs and large enterprises, the future changes in the number of SMEs, support policies, financing, tax relief, technology support, and other aspects, the data analysis results are as follows.

**Table 1.** Comparison of attitudes of government officials toward large enterprises and SMEs.

Question	Proportion of Large Enterprises	Proportion of SMEs
What type of enterprise does local governments prefer?	76.1	23.9
What type of enterprise contributes more to Gross domestic product?	70.1	29.9
Which enterprise is supported more by the government?	38.8	61.2
What type of enterprise contributes more to tax revenue?	71.6	28.4
In existing industrial parks, what type of enterprise has higher degree of agglomeration?	16.4	83.6
What type of enterprise has better development prospects?	41.8	58.2
What type of enterprise contributes more to technological innovation?	58.2	41.8

Table 1 shows that the government has given more support to SMEs than to large enterprises in the current low-carbon economy. Approximately 83.6% of the survey respondents indicate that the number of SMEs is larger, and the degree of agglomeration is higher in the mixed industrial parks built by the government. In addition, more than 58% of the respondents are optimistic about the development prospects of SMEs. However, 76.1% of the respondents believe that the government prefers large enterprises to invest in construction. More than 70% of the respondents believe that large enterprises contribute more to local GDP and tax revenue than to SMEs; 58.2% to local technological innovation; and 55.2% to government bidding, procurement, and infrastructure cooperative enterprises. Therefore, despite the high number of SMEs, the government is more favorable to large enterprises.

**Table 2.** Trends in the number of SMEs under the background of low-carbon economy.

Options	Frequency	Percentage	Cumulative Percentage
Rapid increase	17	25.4	25.4
Slow increase	34	50.7	76.1
Remain unchanged	10	14.9	91.0
Slow reduction	6	9.0	100.0
Rapid reduction	0	0	100%

As shown in Table 2, 76.1% of the respondents believe that the number of SMEs will increase in the next few years, and 50.7% will increase slowly under the background of low-carbon economy. Therefore, the policy of low-carbon economy will not greatly restrict the growth of SMEs.

**Table 3.** Views of government officials on the level of financing difficulties of SMEs.

Options	Frequency	Percentage	Cumulative Percentage
Easier than large enterprises	3	4.5	4.5
Same as other enterprises	7	10.4	14.9
Relatively difficult	53	79.1	94.0
Very difficult	4	6.0	100.0

**Table 4.** Views of government officials on taxation of SMEs.

Options	Frequency	Percentage	Cumulative Percentage
Further relief	49	73.1	73.1
Maintain the current level	12	17.9	91.0
Appropriately increased	6	9.0	100.0

Table 3 indicates that 85.1% of the respondents think that the financing of SMEs is difficult under the background of low-carbon economy. The financing environment of SMEs is still not optimistic. As shown in Table 4, 73.1% of the respondents believe that SMEs should be further exempted from tax, and the current level of tax still imposes a certain burden on SMEs.

**Table 5.** Views of government officials on technical support for SMEs.

Options	Frequency	Percentage	Cumulative Percentage
Great support	7	10.4	10.4
Strengthened support	22	32.8	43.3
Same as large enterprises	12	17.9	61.2
Almost no support	25	37.3	98.5
Not supported	1	1.5	100.0

**Table 6.** Government self-assessment of SME services.

Options	Very Unsatisfactory	Unsatisfactory	Mediocrity	Satisfactory	Very Satisfactory
Policy propaganda	1.5	3.0	4.5	62.7	28.4
Supporting measures		3.0	10.4	56.7	29.9
Policy implementation		6.0	6.0	52.2	35.8
Service response		1.5	11.9	53.7	32.8
Convenient of service		1.5	7.5	56.7	34.3
Service effect			16.4	55.2	28.4

As shown in Table 5, 43.2% of the respondents believe that the government's technical support to SMEs is sufficient, whereas 38.8% think that the technical support is weak. Differences are observed among officials of various departments in their understanding of the technical support of SMEs. Table 6 shows that the self-evaluation satisfaction of government employees to the service for SMEs is more than 80%.

**Table 7.** Future directions of policy support for SMEs.

Options	Very Unimportant	Unimportant	Less Important	Important	Very Important
Abolishing improper policies	1.5	3.0	19.4	38.8	37.3
Proposing specific industrial development policies under a low-carbon economy			6.0	46.3	47.8
Establishing talent training mechanism for SMEs			10.4	37.3	52.2
Strengthening the coordination and guidance for SMEs		4.5	10.4	44.8	40.3
Reinforcing infrastructure construction of SME agglomeration area			9.0	46.3	44.8
Standardizing the market competition environment			11.9	41.8	46.3
Promoting the construction of public information platform for SMEs			11.9	43.3	44.8
Expanding financing channels			7.5	34.3	58.2
Simplifying the approval procedure		6.0	5.0	40.3	48.7
Reducing the tax burden of SMEs		1.5	6.0	49.3	43.3
Providing technical support			3.0	43.3	53.7

As shown in Table 7, respondents believe that establishing the talent training mechanism, expanding financial service channels, and providing technical support are the most important measures in the process of improving the policy environment for SMEs in the context of low-carbon economy, with percentages of 52.2%, 58.2%, and 53.7%, respectively.

### 3.1.2. Data Analysis of Social Environment

The gender distribution of the residents surveyed is uniform (Figures 2 and 3 and Table 8). In addition, the educational background of the respondents is concentrated in high school or undergraduate, and the number of participants is similar to the overall situation. Thus, the sample surveyed is representative.

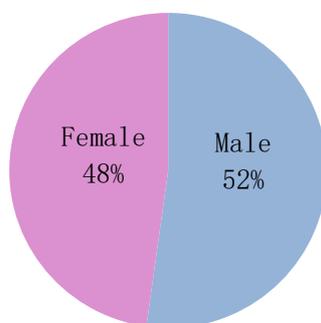


Figure 2. Gender distribution of samples.

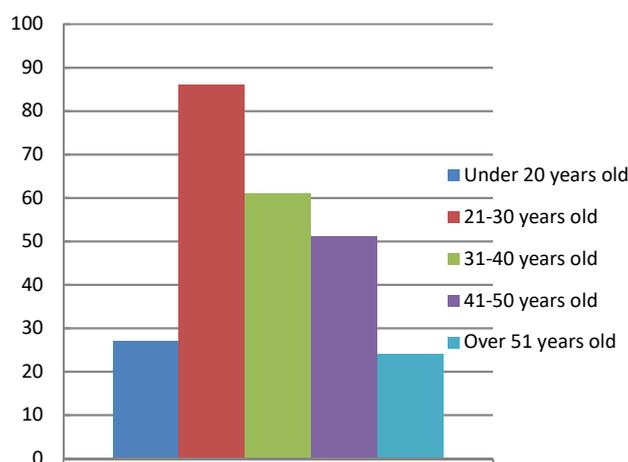


Figure 3. Age distribution of samples.

Table 8. Education distribution of samples.

Options	Frequency	Percentage	Cumulative Percentage
Junior middle school and below	42	16.9	16.9
High school and technical school	82	32.9	49.8
Bachelor degree	119	47.8	97.6
Postgraduate degree	6	2.4	100.0

The survey involves six aspects, namely, government support, development prospect, welfare benefit, working environment, technological development and cultural construction, and operation management of SMEs, as shown in Tables 9–14.

Table 9 indicates that 39.7% of the residents believe that the existing support policies to SMEs is perfect at present. However, 41.8% do not know the quality of the policies, and 85.4% agree that the government should strengthen support for SMEs, which is consistent with the attitude of government officials on these two questions.

Table 10 shows that 40.9% of the interviewees believe that the development prospects of SMEs are optimistic. However, only 34.1% prefer to work in SMEs, and 21.3% of the residents believe that the development of SMEs is better than that of large enterprises. From the table, although the respondents

think that the development of SMEs in the context of low-carbon economy is optimistic, they prefer to work in large enterprises.

**Table 9.** Government support for SMEs.

Question	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The existing support policies are perfect.	2.0	16.5	41.8	30.5	9.2
The government should strengthen its support to SMEs.	0.4	2.0	11.2	45.4	41.0

**Table 10.** Views on the development prospects of SMEs.

Question	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The development prospects of SMEs are optimistic.	2.4	18.9	37.8	34.5	6.4
I prefer to work in SMEs.	10.8	29.3	25.7	27.3	6.8
The development of SMEs is worse than that of large enterprises.	2.0	19.3	25.7	39.4	13.7

**Table 11.** Salary and welfare of SMEs.

Question	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The welfare of SMEs cannot reach the welfare level of large enterprises.	1.6	12.4	24.1	41.0	20.9
The salary of SMEs is better than that of large enterprises.	5.6	28.9	51.0	9.6	4.8

As shown in Table 11, only 14.0% of the respondents disagree that the welfare is as good as that of large enterprises, and 14.4% believe that the salary provided by SMEs is better than that of large enterprises. Among the respondents, 61.9% think that the welfare benefits of SMEs are inferior to those of large enterprises, which indicates that SME employees are poorly paid. Meanwhile, 51.0% of the respondents are unsure whether the salaries of SMEs are better than those of large enterprises, which indicates that the residents pay less attention to SMEs. This phenomenon is not conducive to the survival and sustainable development of SMEs in a low-carbon economy.

**Table 12.** Cognition of the working environment of SMEs.

Question	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
SMEs have poor working condition.	1.2	23.7	27.3	36.9	10.8
SME employees work long hours every day.	0.8	12.9	31.3	36.9	18.1

As shown in Table 12, 47.7% of the respondents think that the working environment of SMEs is poor, and 55.0% think that the working hours of SME employees are longer than those in large enterprises. These results are not conducive to the sustainable development of SMEs.

**Table 13.** Views on technological development and cultural construction of SMEs.

Question	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
SMEs pay more attention to technological innovation.	1.2	5.2	13.7	47.4	32.5
The corporate culture of SMEs is insufficient.	1.6	12.9	33.7	42.2	9.6

Table 13 shows that SMEs have strong technological innovation capability but poor corporate culture. This finding is conducive to the technological innovation of SMEs; however, deficiencies in cultural support exist in the process of survival and sustainable development of SMEs.

**Table 14.** Views on operation management of SMEs.

Question	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The operation management of SMEs is loose.	6.4	29.3	29.7	27.3	7.2
SMEs will pay more attention to emotional communication.	4.4	21.7	47.0	21.7	5.2

The two questions in Table 14 indicate that the positive and negative perceptions of residents about the internal management of SMEs are roughly the same. The data show that the residents pay less attention to the operation management level of SMEs, or the operation management level of SMEs is inconsistent.

### 3.2. Data Analysis of Internal Environment

We analyzed the internal environment of SMEs from two perspectives, that is, of managers and employees.

#### 3.2.1. Data Analysis of Managers

Table 15 shows that the SMEs in this survey involve more than 15 industries, the largest proportion of which is the manufacturing industry (31.82%), followed by the construction business (7.58%). Information, wholesale, and catering businesses also account for more than 5%. This finding is consistent with the industry distribution of SMEs in Jiangsu Province. Thus, the sample is representative.

**Table 15.** Sample distribution of SMEs.

Industry Type	Frequency	Percentage	Cumulative Percentage	Industry Type	Frequency	Percentage	Cumulative Percentage
Agriculture	8	6.1	6.1	Catering business	6	4.5	62.1
Manufacturing industry	42	31.8	37.9	Information business	1	0.8	62.9
Construction business	10	7.6	45.5	Software industry	9	6.8	69.7
Wholesale business	7	5.3	50.8	Real estate industry	4	3.0	72.7
Retail trade	5	3.8	54.5	Logistics industry	1	0.8	73.5
Transportation	2	1.5	56.1	Leasing industry	3	2.3	75.8
Postal industry	1	0.8	56.8	Other industries	32	24.2	100.0
Accommodation industry	1	0.8	57.6				

We investigated the problems faced by SMEs under the background of low-carbon economy. The key problems faced by SMEs include financing, marketing, human resource management, and technological innovation.

The survey shows that the amount of financing of SMEs is less than 2 million, and the financing success rate is often less than 50% (Table 16).

On the basis of the preceding data, we further analyzed the financing channels and difficulties of SMEs. SMEs usually adopt self-financing and bank loans to obtain funds, which account for 86.4% and 61.4%, respectively. The other financing methods include fund raising, private lending, and equity financing, which account for approximately 10%.

**Table 16.** Statistics on financing of SMEs.

Amount of Financing	Frequency	Percentage	Cumulative Percentage	Success Ratio	Frequency	Percentage	Cumulative Percentage
2 million or less	74	56.1	56.1	Below 25%	48	36.4	36.4
2–4 million	23	17.4	73.5	25%–50%	37	28.0	64.4
4–6 million	11	8.3	81.8	50%–75%	22	16.7	81.1
6 million or more	23	17.4	99.2	More than 75%	24	18.2	99.2
Uninformed	1	0.8	100.0	Uninformed	1	0.8	100.0

We further analyzed the reason of the key problems in financing, marketing, human resource management, and technological innovation of SMEs [33], as shown in Tables 17–20.

**Table 17.** Reasons for financing difficulties of SMEs.

Reasons	Frequency	Percentage
Strict requirements for financial and operational conditions of SMEs	72	54.5%
Strict requirements for financial guarantee of SMEs	75	57.6%
Strict requirements for credit rating of SMEs	54	40.9%
Lack of loans for SMEs	65	49.2%
Tedious business process of bank loan	23	17.4%
SMEs' own problems	18	13.6%
Other reasons	11	8.3%

**Table 18.** Reasons for marketing difficulties of SMEs.

Reasons	Frequency	Percentage
Business communication and etiquette	46	34.8%
Consumer behavior analysis	52	39.4%
Marketing skills	78	59.1%
Customer demand information collection	68	51.5%
Crisis management	53	40.2%
Key customer development	66	50.0%
Brand management	54	40.9%

**Table 19.** Reasons for human resource management difficulties of SMEs.

Reasons	Frequency	Percentage
Division and cooperation	66	50.0%
Professional skills	86	65.2%
Staff quality	87	65.9%
Lack of staff training	66	50.0%
Lack of corporate team spirit	81	61.4%
Lack of communication and feedback	47	35.6%

**Table 20.** Reasons for technological innovation difficulties of SMEs.

Reasons	Frequency	Percentage
Lack of policy support	65	49.2%
Insufficient R&D capacity	59	44.7%
Insufficient protection of intellectual property rights	50	37.9%
Inadequate innovation management	74	56.1%
Lack of R&D funds	59	44.7%
Lack of R&D talents	81	61.4%

The analysis of the aforementioned key problems implies that the main reasons of restricting financing of SMEs include strict requirements for financial guarantee of SMEs, strict requirements for

financial and operational conditions of SMEs, and lack of loans for SMEs, which account for 57.6%, 54.5%, and 49.2%, respectively.

In terms of marketing strategies, marketing skills (59.1%) are the most important factors that restrict SMEs in a low-carbon economy, followed by customer information collection (51.2%) and key customer development (50.0%). The proportion of customer behavior analysis, crisis management, and brand management also accounts for more than 40%.

In terms of human resource management, the proportion of key factors that restrict the survival and sustainable development of SMEs is relatively higher than others [34]. Among the key problems, low quality of employees is the most serious, which accounts for 65.9%, followed by professionalization (65.2%) and team building of SMEs (61.4%). The proportion of standardizing the work standards and staff training are also more than 50%.

For technological innovation, 61.4% of the investigated managers of SMEs consider that the lack of innovative talents is the main reason that restricts the survival and sustainable development of SMEs under a low-carbon economy. Moreover, 56.1% of the managers think that strengthening the innovation management level of SMEs is necessary. In addition, seeking policy support for technological innovation is crucial.

In addition to the previous data analysis, we further investigated government evaluations with the managers of SMEs. The objects of evaluation include financial, tax, talent, and technical authorities. Table 21 shows the evaluation results.

**Table 21.** Manager evaluation of authorities.

Option	Policy Propaganda	Supporting Measures	Policy Implementation	Service Response	Convenient of Service	Service Effect
<b>Financial Authorities</b>						
Very unsatisfactory	4.5	4.5	4.5	3.8	3.8	4.5
Unsatisfactory	11.4	13.6	10.6	12.1	11.4	9.8
Mediocrity	36.4	34.8	43.9	37.9	34.8	40.9
Satisfactory	39.4	37.9	34.1	38.6	40.9	34.8
Very satisfactory	8.3	9.1	6.8	7.6	9.1	9.8
<b>Tax Authorities</b>						
Very unsatisfactory	2.3	3.0	0.8	0	10.6	0.8
Unsatisfactory	8.3	8.3	6.8	9.8	39.4	9.1
Mediocrity	32.6	36.4	37.1	40.2	40.2	33.3
Satisfactory	45.5	41.7	42.4	36.4	9.8	45.5
Very satisfactory	11.4	10.6	12.9	12.9	10.6	11.4
<b>Talent Authorities</b>						
Very unsatisfactory	3.8	3.8	4.5	2.3	2.3	1.5
Unsatisfactory	8.3	7.6	10.6	10.6	12.1	13.6
Mediocrity	42.4	42.4	44.7	40.9	43.9	46.2
Satisfactory	37.9	36.4	29.5	37.9	34.8	31.1
Very satisfactory	7.6	9.8	10.6	8.3	6.8	7.6
<b>Technical Authorities</b>						
Very unsatisfactory	3.0	1.5	2.3	3.0	3.0	3.0
Unsatisfactory	15.2	16.7	15.9	15.9	15.9	17.4
Mediocrity	34.8	32.6	37.1	37.1	37.9	37.9
Satisfactory	34.8	35.6	32.6	32.6	33.3	31.1
Very satisfactory	12.1	13.6	11.4	11.4	9.8	10.6

As shown in Table 21, the service convenience of financial authorities is the best indicator, with a satisfaction rate reaching 50%. However, its policy implementation is the worst, and the proportion of dissatisfaction and mediocrity reaches 59.05%. For tax authorities, policy propaganda and service effect are the best service items, reaching a satisfaction rate of 55.9%. However, the worst indicator is convenience service, with a satisfaction rate of 20.4%. Moreover, supporting measures and service

response are the best service items by talent authorities. Nevertheless, in comparison with the financial and tax departments, the overall satisfaction is poor. Similarly, the policy implementation of talent authorities is the worst, and only 40.1% of the managers are satisfied with this implementation. For technical authorities, the satisfaction ratios of all indicators are poor, and no satisfaction rate is more than 45%. In sum, the SME managers have a poor evaluation of government services, and only a few indicators are more than 50% satisfied.

### 3.2.2. Data Analysis of Employees

As previously mentioned, human resource is the strategic resource of SMEs, and employee satisfaction is related to the survival and sustainable development of SMEs. Hence, we investigated the internal environment evaluation of employees to detect their satisfaction. The content of the survey includes seven aspects, namely, development prospects, strategic objectives, management methods, welfare benefits, management communication, corporate culture, and salary management. Table 22 presents the evaluation results.

**Table 22.** Employee survey on the internal environment of SMEs under the background of low-carbon economy.

Options	Frequency	Percentage	Cumulative Percentage	Options	Frequency	Percentage	Cumulative Percentage
Question 1: I think the development prospects of our company are very optimistic.				Question 2: I would like to introduce friends to work in the enterprise where I work.			
Strongly disagree	4	1.1	1.1	Strongly disagree	5	1.4	1.4
Disagree	21	6.0	7.2	Disagree	29	8.3	9.8
Uncertain	93	26.7	33.9	Uncertain	85	24.4	34.2
Agree	188	54.0	87.9	Agree	168	48.3	82.5
Strongly agree	42	12.1	100.0	Strongly agree	61	17.5	100.0
Question 3: I have a clear understanding of the strategic objectives of the enterprises where I work.				Question 4: I don't know the focus of the enterprises where I work next year.			
Strongly disagree	2	0.6	0.6	Strongly disagree	31	8.9	8.9
Disagree	30	8.6	9.2	Disagree	103	29.6	38.5
Uncertain	90	25.9	35.1	Uncertain	100	28.7	67.2
Agree	164	47.1	82.2	Agree	101	29.0	96.3
Strongly agree	62	17.8	100.0	Strongly agree	13	3.7	100.0
Question 5: I think many aspects of business management in my company must be improved.				Question 6: I'm not worried about the current management style.			
Strongly disagree	2	0.6	0.6	Strongly disagree	34	9.8	9.8
Disagree	24	6.9	7.5	Disagree	144	41.4	51.1
Uncertain	64	18.4	25.9	Uncertain	88	25.3	76.4
Agree	200	57.5	83.3	Agree	73	21.0	97.4
Strongly agree	58	16.7	100.0	Strongly agree	9	2.6	100.0
Question 7: The welfare system of my company is perfect.				Question 8: The salary of my company is better than that of large enterprises.			
Strongly disagree	3	0.9	0.9	Strongly disagree	4	1.1	1.1
Disagree	33	9.5	10.3	Disagree	51	14.7	15.8
Uncertain	68	19.5	29.9	Uncertain	137	39.4	55.2
Agree	180	51.7	81.6	Agree	126	36.2	91.4
Strongly agree	64	18.4	100.0	Strongly agree	30	8.6	100.0
Question 9: I get along well with my colleagues.				Question 10: Managers consider the emotional needs of employees and involve them in decision making.			
Strongly disagree	0	0	0	Strongly disagree	3	0.9	0.9
Disagree	1	0.3	0.3	Disagree	19	5.5	6.3
Uncertain	21	6.0	6.3	Uncertain	61	17.5	23.9

Table 22. Cont.

Options	Frequency	Percentage	Cumulative Percentage	Options	Frequency	Percentage	Cumulative Percentage
Agree	206	59.2	65.5	Agree	208	59.8	83.6
Strongly agree	120	34.5	100.0	Strongly agree	57	16.4	100.0
Question 11: The enterprise I work for has a unique corporate culture.				Question 12: The enterprise I work for has some deficiencies in the construction of corporate culture.			
Strongly disagree	0	0	0	Strongly disagree	30	8.6	8.6
Disagree	8	2.3	2.3	Disagree	122	35.1	43.7
Uncertain	75	21.6	23.9	Uncertain	98	28.2	71.8
Agree	184	52.9	76.7	Agree	85	24.4	96.3
Strongly agree	81	23.3	100.0	Strongly agree	13	3.7	100.0
Question 13: My working environment is poor, and my work intensity is high.				Question 14: I work long hours every day compared with large enterprises.			
Strongly disagree	33	9.5	9.5	Strongly disagree	31	8.9	8.9
Disagree	151	43.4	52.9	Disagree	125	35.9	44.8
Uncertain	64	18.4	71.3	Uncertain	117	33.6	78.4
Agree	91	26.1	97.4	Agree	57	16.4	94.8
Strongly agree	9	2.6	100.0	Strongly agree	18	5.2	100.0

The data analysis in Table 22 indicates that SME employees think that the development prospects are optimistic. Among the participants, 66.1% agree with the view that SMEs have a good development prospect, and 65.8% are willing to introduce others to work in the SMEs they work for. For strategic direction, the employees surveyed have a good understanding of the direction of the development of the enterprise but do not have a clear understanding of the recent work objectives that should be done to achieve the strategic objectives. Among them, 61.9% clearly understand the company's strategic objectives, whereas only 38.5% clearly understand their recent work plan.

As mentioned in previous studies, operation management is the most critical factor that restricts the survival and sustainable development of SMEs. The findings of the survey indicate that only few employees (7.5%) think that the management of the SMEs they work for need not to be improved, and a few employees (23.6%) do not worry about the management of the SMEs. For the salary and welfare of SMEs, many employees think that the welfare level of their enterprises is higher compared with large enterprises, although the basic wages are relatively low. This phenomenon is consistent with the characteristics of SMEs, that is, SMEs employees should meet the principle of more work and more money, whereas the basic wage level is low. Furthermore, SMEs have a good interpersonal communication environment and a unique corporate culture, which is conducive to their survival and sustainable development. However, some deficiencies remain in the construction and optimization of the enterprise culture, which must be improved in the process of enterprise development. In addition, SME employees have more working hours and worse working environments compared with those of large enterprises.

## 4. Discussion and Recommendations

### 4.1. Discussion

In the analysis of the external environment of SMEs' survival and sustainable development under the background of low-carbon economy, the present study investigates from the perspective of policy and social environment.

For policy environment, a large proportion of the respondents believe that large enterprises contribute more to the economy and taxation compared with SMEs [35]. Many government officials think that the government provides a sound policy environment for SMEs and has a high degree of satisfaction with self-evaluation. However, a large proportion of the managers surveyed have low

satisfaction with the financial, tax, talent, and technical authorities in the process of investigation. For example, no more than 50% of the managers are satisfied with the six evaluation indicators of the financial authorities, and only 20% the managers are satisfied with the service convenience of tax authorities. In addition, the satisfaction of the other authorities rarely exceeds 45%. Therefore, SMEs' satisfaction with the government and the government's self-satisfaction evaluation are inconsistent.

In terms of social environment, the residents are optimistic about the development prospects of SMEs. However, data analysis shows that the residents have misunderstandings about SMEs and negative cognitive tendencies. For example, a large proportion of the residents believe that defects exist in the working environment, welfare benefit, and cultural construction of SMEs. Therefore, the social environment has a negative influence on the survival and sustainable development of SMEs under the background of low-carbon economy.

Moreover, this study investigates managers and employees to analyze the internal survival and sustainable development environment of SMEs under the background of low-carbon economy. Data analysis indicates that the key problems that restrict the survival and sustainable development of SMEs include financing, marketing, and technological innovation. In view of the financing problem of SMEs, more than 50% of the managers say that the financing success rate of SMEs is less than 50%. In terms of financing channels, more than 80% of SMEs obtain funds through self-financing. Bank loans are also the main choice of SMEs, which account for 61.4%. For the financing difficulties of bank channels, the survey data show that the reason is that banks have overly strict requirements on guarantee, financial, and operational conditions for SMEs. In view of the problems of marketing and technological innovation, the survey data show that the SME managers believe that the most important aspects that SMEs should improve on are marketing skills, information collection, and key customer development. Furthermore, the development of innovative talents and resource investment are also important measures to improve the level of enterprise operation. In view of the employee survey, data analysis shows that the employees are optimistic about the development of SMEs and have a clear understanding of the long-term strategic direction of SMEs. However, the employees have no clear understanding of the recent goals and work plans that should be accomplished. In addition, SMEs have better welfare benefits and working atmosphere compared with large enterprises. Nevertheless, some shortcomings exist in operation management; for example, 80% of the employees think that the operation management of enterprises urgently needs improvement.

#### 4.2. Recommendations

On the basis of the preceding discussion, the survival and sustainable development environment of SMEs in China is mediocre. In summary, the main problems that restrict the survival and sustainable development of SMEs in China under the background of low-carbon economy are as follows: (1) SMEs are not satisfied with government support, whereas the satisfaction of government self-evaluation is high; (2) residents do not have a good understanding of SMEs; (3) the tax burden for SMEs is still slightly high; (4) SMEs have a low success rate in financing and have few financing channels, and the main source of financing is self-financing; (5) banks have overly strict requirements for financing qualification of SMEs; (6) SMEs lack operation management skills, especially marketing skills; and (7) employees have no clear work objectives and plans. On this basis, this study proposes the following suggestions.

For the external environment, our suggestions are as follows. First, the main reason for the financing difficulties of SMEs is the information asymmetry between SMEs and banks. Banks are concerned about the anti-risk capability of SMEs [36] and thus have overly strict requirements on their operation status [37]. To solve this problem, the government should develop financing guarantee services for SMEs, eliminate or reduce information asymmetry between banks and SMEs, and help SMEs expand their financing channels. Second, in terms of attracting high-level talents, the government can formulate a policy to entice high-level talents or teams to rely on SMEs to transform scientific research results and reserve human resources for SMEs. Moreover, the government should cooperate

with SMEs to eliminate the cognitive bias of residents toward SMEs and attract social resources to invest in SMEs. Third, the government and SMEs surveyed believe that the tax burden of SMEs is slightly heavy; thus, the tax burden of SMEs should be further reduced and exempted to optimize the tax environment.

For the internal environment, we suggest the following. First, the operation management level of SMEs is low, thereby restricting the survival and sustainable development of SMEs, such as the factors of production, marketing, product assurance, supply chain, financial, and innovation management. To solve this issue, SMEs should optimize recruitment, training, use, and performance appraisal through human resource management department because human resources are the core resources of SMEs in market competition [38,39]. In the operation process, the remuneration management method based on target management can be introduced into the operation management of SMEs. Through the long-term strategic decomposition of enterprises, the short-term work objectives of employees are formulated. In this manner, employees can plan according to short-term goals. Moreover, as mentioned previously, SMEs are facing problems, such as low energy utilization in the context of low-carbon economy. To solve this issue, SMEs can advocate low-carbon culture, establish a good social image, and enhance social awareness. Furthermore, the establishment of low-carbon corporate culture will play a role in promoting government policy support, forming a virtuous circle of continuous optimization of internal and external environments, and promoting the survival and sustainable development of SMEs in China under the background of low-carbon economy.

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