

Factors Driving the Sustainable Development of the Chinese SMEs: The Resource-Based Theory Perspective

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Abstract

In the global risky environment for the survival of small and medium-sized enterprises (SMEs), how to improve SME's performance and survival period has become an important topic. This paper refreshes the Chinese SMEs by big data examination of key factors mentioned in literatures. Based on the samples from 1998 to 2007, we find that family-owned enterprises, research and development (R&D) intensity, and income subsidy have a significant and positive correlation with the SME's survival duration. On the other hand, wasted resources from sales and liability activities, and equity participation by state-owned capital are negatively correlated with the SME's performance. Therefore, instead of state-owned investment, we suggest that the government might encourage the Chinese SME's development by providing subsidies and facilitating R&D input.

Keywords: small and medium-sized enterprises (SMEs); family firms; resource-based theory; sustainable entrepreneurship.

JEL Classification: L26, G32.

1. Introduction

By the incentives provided by the Chinese government, numerous innovative small and medium-sized enterprises (SMEs) have emerged in various industries. Under the current national policies, Chinese SMEs are playing a key role in accelerating China's economic growth as well as its global economic prospects. However, although China holds sufficient economic resources, the high failure rates of Chinese SMEs are worsening the country's unemployment and social security situation. Therefore, it is necessary to empirically identify the key factors driving the Chinese SME's performance and survival, as well as the SME's operating characteristics that could boost

regional economies.

Many Chinese SMEs are family-owned (Du and Zeng, 2019). Entrepreneurs usually invite their relatives and friends to participate in the firms' operations, investments, production, and strategy making. Centralized family management can help SMEs develop quickly during the initial period, but might involve improper resource allocation and self-serving behavior on the part of managers (Kraiczky et al., 2015). Further, Chinese SMEs have high failure and low survival rates (Bai et al., 2017), which worsen the problems of resource waste, illegal financing, and poor management. In addition, banking restrictions often prevent the SMEs from borrowing large amounts of funds for business operations. Therefore, the SMEs might turn to private lending companies for initial capital, which negatively affects their long-term development (Wang et al., 2017). Although online peer-to-peer (P2P) lending platforms have emerged in recent years, the public cannot fully assess the credit status of the SMEs (Ali et al., 2007). Finally, the over-optimism of the SME entrepreneurs in the initial stages might induce excessive asset purchase, which hurts their financial condition in the long run.

To increase the SME's survival in China, this paper aims to understand how resource investment affects their operating performance

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and survival duration. Our empirical results show that for the Chinese SMEs, higher HR training and R&D investment, the better operating performance and survival duration. Further, instead of imputing national or state capital, the subsidy supported by the government could be favored for the SME's surviving. Finally, compared with national-capital SMEs, the family SMEs in China have longer survival periods and enjoy better operating performance, which is one of the major characteristics for Chinese SMEs.

The remainder of this paper is organized as follows. Section 2 reviews the literature on the SMEs and discusses their main findings. Section 3 presents the empirical model and defines the variables. Section 4 examines the determinants of Chinese SMEs' performance, makes robustness and discuss the results' implication. Section 5 concludes.

2. Literature Review and Research Hypotheses Development

Even the resource-based theory has been widely used in strategic management (Alvarez & Barney, 2017), it remains underdeveloped. For example, Li and Geng (2012) found that the cluster factor could make SMEs better performance since they could share limited resources. Therefore, it is important to identify what the key factors ensure the Chinese SMEs sustainable development. Alvarez and Barney (2017) also indicated that entrepreneurship research is still in the "describing the phenomena" stage and should pay more attention to "the unique characteristics of decision-making from the different culture, the different stages of entrepreneurial periods, and its legitimacy efforts in SME operation. In particular, Chen et al. (2018) discovered that entrepreneurs who are experts in using their entrepreneurial networks could acquire sustainable resources. In other words, an SME's sustainability is related to the resources it possesses. In this respect, Brown (2018) utilized a case study to describe how entrepreneurs engage in large-scale human resource (HR) training and development programs. Zona et al. (2018) also adopted the agency-resource dependence perspective to demonstrate the relationship among firms' share concentrations, resource holdings, and operating performance.

Even though the stewardship theory pointed that the interests of family members and non-family managers can be better coordinated (Bardhan et al, 2015), some studies argue that the inability of family firms to make effective internal

control leads to poor financial reporting quality (Brown, 2018). Fang et al. (2017) further stated that family-SMEs are often unwilling to hire non-family talent. Regarding regional development, Amit et al. (2015) found that the Chinese SMEs survived for longer because there was homogeneity in cultural norms, laws, and regulations. But Madison et al (2016) demonstrated that family firms can present good performance in China. Therefore, it is important to confirm whether the family-owned SMEs in China could make better performance and survival or not.

Instead of the debate about family firms occurred in the SMEs, there are also discussion about resource application in literatures. The resource-based theory introduced that the advantage competitiveness hold by the firm could be distinguished into the internal and the external resources. Since it's very difficult for the SMEs to bargain external resources (Bardhan et al., 2015), we divide the competitive internal resources into self-generated R&D and key HR. On the other hand, the Chinese SMEs could get financial supports from the governmental equity participation or from the policy subsidy, that is less risky rather than the industrial joint ventures.

For the internal resource application, literatures support that the SMEs might cooperate with the external public development resources to improve their operating performance (Bellandi & Caloffi, 2008). It could also upgrade their internal governance through increasing HR (Brown, 2018). For the Chinese SMEs, they are more significant to survival if their human resources hold enough R&D capabilities in the start-up period (Li et al., 2018). However, there are some conflicts about whether the Chinese SMEs have self-development capabilities. Dong and Gou (2010) found that the more managers hold control, the larger amount of R&D will be invested in the subsequent growth period. But when the agency cost increases, the risk of bankruptcy would hit the SME's survival. Kansikas et al. (2012) thus considered that the family-controlled SMEs intend to drive down their R&D expenditures. In the middle, Cao et al. (2016) encouraged the SMEs to make better by increasing the equity of external investors.

For the external resource adoption, based on the national equity holdings or policy supporting, the Chinese SMEs could be survived in their start-up period (Xiao, 2011; Zhou, 2011). Velu (2014) also identified that the aggressive SMEs could survive longer than those who operate

moderately, and the industrial joint ventures might hurt them in merge and acquisition risk. However, by more competitive market conditions it shows that many Chinese SMEs began to develop their own core competencies (Gupta et al., 2017). Xiao and North (2018) further demonstrated that the SMEs should adjust their operating strategies in different economic development of China. Such like Brouwer and Huitema (2018) explained that the Chinese SMEs specified to find superior environment to growth themselves. Oppositely, Wu et al. (2020) discovered that the Chinese SME would be stagnant when its outside economic condition could not make poverty alleviation. Therefore, many provinces in China encouraged to make subsidy policies for their SMEs, even the literatures have different opinions. Li and Geng

(2012) supported to build industrial cluster areas for the SME subsidy policy, especially in the cluster areas the SMEs could leverage their social network (Chen et al., 2018). But Cao et al. (2016) argued the Chinese SMEs that accept governmental subsidy would make overinvestment in innovation.

The purpose of this study is to identify the key factors affecting the survival of Chinese SMEs. We consider three dimensions as family-controlled equity, internal resource application, and external resource support. Figure 1 represents our model that determines Chinese SMEs' sustainability. Since Lin et al. (2020) stated that the sustainable competences of the Chinese SMEs could decline the level of poverty, we believe that the results of this paper might also contribute to the analysis of other SMEs in the Asia-Pacific region.

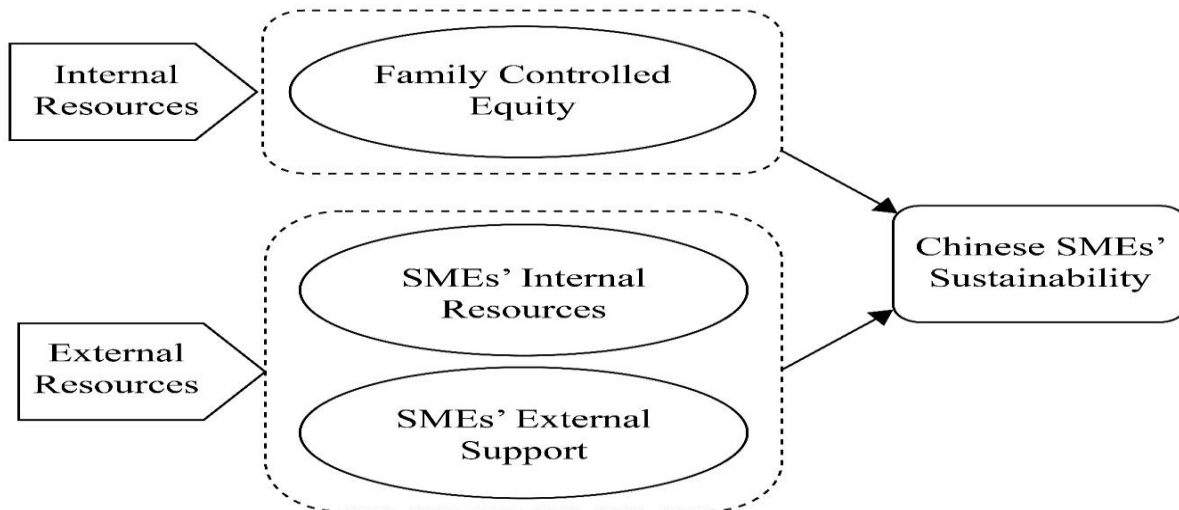


Figure 1. The determinants of Chinese SMEs' sustainability

3. Data Sources and Variable Definitions

We obtained the Chinese SME data from the Angel Investment Database of the China Stock Market Financial Database (CSMAR), which spread from 1998 to 2007. Angel investment mainly refers to angel investors' initial investment

in the SMEs, and can provide information on the basic situation and financial status of the Chinese SMEs. By excluding negative, missing, or abnormal observations, we obtained a final sample of 44,707 observations. The screening process is presented in Table 1.

Table 1. Data and sample selection

Description	Number of firms	Number of observations
Original data	50,707	173,095
Minus:		
Owner equity is negative or there are no details	7,649	31,781
Assets, liabilities, revenue, and operating expenses are negative; or there is incomplete basic information on the SME	25,705	96,607
Sample size	17,353	44,707

We defined the variables and their measurements as shown in Table 2. To determine the influence of the key variables on the performance and survival duration identified in the literature, we defined the dependent

variables of performance, measured in terms of return on assets (ROA), and survival years, measured as the real business age from the time of obtaining a business license (SUR). We also took the natural logarithm of the business age to avoid outlier effects.

Table 2. Definitions of Variables

Variable Type	Definition	Var. Name	Measurement	Definition
Dep. Variable	SMEs' Sustainability	ROA	Operating performance	Earnings before taxes/Avg. assets
		SUR	Survival duration	Natural logarithm of SME age
Indep. Variables	Resource Waste	BE	Business efficiency	Operating revenue/Avg. assets
		Abslack	Absorbed slack	Ratio of selling, general, and administrative expenses to sales (Bromiley, 1991)
	Potslack	Potential slack	Ratio of total debt to total assets (Deb et al, 2017)	
	Capital Resources	Df	Family capital	If the SME is family controlled, then Df = 1; otherwise, Df = 0
		Dn	National capital	If national capital has been invested in the SME, then Dn = 1; otherwise, Dn = 0
	Enterprise Value Creation	R_D	R&D Concentration	Intangible assets/Capital at the end period
Adjusted Variables	Edu	Input into Human Resource	Staff education expenses/Net sales	
Controlled Variables	Dg	Government Subsidy	If the SME receives government subsidy, then Dg = 1; otherwise, Dg = 0	
	Size	Firm Size	Natural logarithm of an SME's average assets	

In the setting of independent variables, we follow the definition from Debt et al (2016) to measure the resource-applied efficiency, business efficiency, and sales and loan waste. We also use dummy variables to measure whether the SME is family-owned, whether the equity contains state-owned capital, and whether they receive subsidy income. According to He (2001), we define the personal capital exceeding 50% as a family business. At last, we define the R&D intensity, human resources investment, and company size shown as Table 2.

The purpose of this paper is to investigate how to improve the survival period and operating performance of Chinese SME. we propose the regression models as follows:

$$ROA_{i,t+1} = \alpha_0 + \alpha_1 * BE_{i,t} + \alpha_2 * Df_{i,t} + \alpha_3 * RD_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$SUR_{i,t+1} = \beta_0 + \beta_1 * BE_{i,t} + \beta_2 * Df_{i,t} + \beta_3 * RD_{i,t} + \phi_{i,t} \quad (2)$$

Where $ROA_{i,t+1}$ and $SUR_{i,t+1}$ represent the i-th SME's sustainability in the t + 1 year. Based on the literature, we consider that the SMEs' survival ability is based on variations in their resource allocation (measured by business efficiency) and value creation (measured by R&D input).

Additionally, we included a dummy for family-controlled SMEs to disclose the characteristics of Chinese SMEs. We also considered the deferred effect for the firm to avoid possible endogenous associations between variables. To capture the impact of multiple variables on Chinese SMEs' performance and survival time, we constructed a multivariate model, as shown in Equation (3) and (4).

$$ROA_{i,t+1} = \gamma_0 + \gamma_1 * Abslack_{i,t} + \gamma_2 * Potslack_{i,t} + \gamma_3 * BE_{i,t} + \gamma_4 * Dn_{i,t}$$

$$+ \gamma_5 * Df_{i,t} + \gamma_6 * Edu_{i,t} + \gamma_7 * RD_{i,t} + \gamma_8 * Dg_{i,t} + \gamma_9 * Size_{i,t} + \eta_{i,t} \quad (3)$$

$$SUR_{i,t+1} = \delta_0 + \delta_1 * Abslack_{i,t} + \delta_2 * Potslack_{i,t} + \delta_3 * BE_{i,t} + \delta_4 * Dn_{i,t}$$

$$+ \delta_5 * Df_{i,t} + \delta_6 * Edu_{i,t} + \delta_7 * RD_{i,t} + \delta_8 * Dg_{i,t} + \delta_9 * Size_{i,t} + \zeta_{i,t} \quad (4)$$

4. Empirical Results

4.1. Descriptive Statistics

The purpose of this study is to understand the main factors affecting the operation of Chinese SMEs. The descriptive statistics of each variable are shown in Table 3.

Table 3. Descriptive statistics

Variable	Mean	Std. dev.	Min	Max	1 st quartile	Median	3 rd quartile
ROA	0.0649	0.1767	-9.8462	17.3182	0.0035	0.0289	0.0946
SUR	1.9395	0.9564	0	3.3322	1.3863	2.0794	2.6391
BE	1.6379	1.9310	0.0001	93.1035	0.7188	1.1920	1.9297
Df	0.4268	0.4946	0	1	0	0	1
R_D	0.0131	0.0473	0	0.8296	0	0	0
Abslack	0.1615	0.8950	0	86.0063	0.0527	0.1005	0.1785
Potslack	0.5616	0.2438	0	1	0.3824	0.5839	0.7574
Dg	0.2239	0.4168	0	1	0	0	0
Edu	0.0026	0.0424	0	6.4286	0	0.0001	0.0013
Dn	0.1504	0.3574	0	1	0	0	0
Size	9.8082	1.4234	2.3979	20.1507	8.8448	9.6379	10.6083

Table 3 reveals five main characteristics of Chinese SMEs. The first is the median is smaller than the average, which indicates that there are many SMEs with under-average performance. The second is the large difference between the means and standard deviations of performance, survival duration, business efficiency, R&D intensity, waste from sales, human resources investment, and SME size. These results indicate that the individual SME is quite different from each other. The third is for business efficiency (BE), the distance from the first quartile to the median is greater than that from the third quartile to the

median, indicating that above half of the Chinese SMEs are efficient in their operation. The fourth point is that above 75% of the Chinese SMEs didn't receive support from the Chinese government, as shown by the distribution of Dn and Dg. Finally, most Chinese SMEs input low level of the HR training (Edu). Overall, the descriptive results show that although there are 44,704 SMEs in China, most of them are quite weak for surviving, represented by their operating performance. The Pearson correlation coefficients of the variables are shown in Table 4.

Table 4. The Pearson Correlation Coefficient of Variables

	ROA	SUR	BE	D _f	R_D	Abslack	Potslack	D _n	Edu	D _g	Size
ROA	1										
SUR	0.023	1									
BE	0.261***	0.057***	1								
D _f	0.054***	0.108***	0.114***	1							
R_D	0.047***	0.029***	0.089***	0.018***	1						
Abslack	-0.052***	-0.018***	-0.061***	-0.046***	-0.029***	1					
Potslack	-0.193***	-0.065***	-0.016***	-0.116***	-0.051***	0.010**	1				
D _n	-0.035***	-0.087***	-0.057***	-0.313***	-0.022***	0.065***	0.042***	1			
Edu	0.015***	0.022***	0.023***	0.019***	0.005	-0.431***	-0.003	-0.034***	1		
D _g	0.046***	0.074***	0.053***	0.043***	0.024***	0.003	-0.068***	-0.049***	0.003	1	
Size	-0.052***	-0.227***	-0.363***	-0.234***	-0.142***	0.039***	0.031***	0.019***	0.004	-0.152***	1

*, **, and *** indicate significant difference from zero at the 10, 5, 1 percent levels, respectively.

Table 4 shows all the Pearson correlation coefficients among the variables we selected. The SME's operating performance (ROA) is positive correlation among business efficiency (BE), family capital (D_f), R&D concentration (R_D), input into human resource (Edu), and government subsidy (D_g), but it is negative correlated with absorbed slack (Abslack), potential slack (Potslack), national capital (D_n), and firm Size (Size). The other dependent variable, the SME's survival duration (SUR), holds similar results to operating

performance (ROA). That is, it is also positive correlated with business efficiency (BE), family capital (D_f), R&D concentration (R_D), input into human resource (Edu), and government subsidy (D_g), but it is still negative correlated with absorbed slack (Abslack), potential slack (Potslack), national capital (D_n), and firm Size (Size). Most of these independent variables and the controlled variable affect the Chinese SME's operation and survival duration significant in the high level (significant difference from zero at 1%).

However, their correlation coefficients are quite different with each other.

From Table 4, there is a positive correlation between ROA and the survival time, indicating that the SME's operating performance is helpful to its continuing survival. Resources like R&D, human resource are benefits to the SME, while resource wastes like absorbed slack and potential slack are opposite. The results identify that the Chinese SMEs still exist some resource-wasted condition. However, it's important that the Chinese family SMEs show positive correlation to ROA and survivals, rather than those state-capital SMEs (represented by Dn) that hurt the firm's operating performance. It could infer that the Chinese SMEs with state-capital weaken their efficiency which hurt the SMEs' independent operating capabilities and flexibility. In addition, given the positive relationship between SME survival and government subsidies (Dg), it is more beneficial for SMEs when the government provides substantial subsidies, instead of investing in equity. This result points out that the government should support the SMEs' growth through special subsidies or tax incentive. This

result is consistent with (Hånell et al., 2017) that pointed out the government should support the SMEs' growth through special subsidies or tax incentives, which could guide the industry orientation of the SMEs and improve their profitability. At last, all of the variables in the models are consistent among their correlation. This result represents that our variation selection is effective and significant.

4.2. Variable Examination

The results of single regressions and multiple regressions are shown in Table 5. It shows that the capital resources and the value creation improve the Chinese SME's surviving, but the resources waste variables do not. Specifically, the Chinese family-owned SMEs hold significant contribution to their operation performance. It infers that the Chinese family culture might be a special characteristic that could reduce management costs, form strong interests inside, and import outside intangible resources (e.g. preferable policy shortcuts). Thus the Chinese family-owned SMEs could improve their corporate profitability.

Table 5. Effects of capital resources and waste on Chinese SMEs

Model	(1)	(2)	(3)	(4)
Dependent variable	ROA	SUR	ROA	SUR
Intercept	0.024*** (18.91)	2.053*** (292.37)	0.031*** (4.52)	0.521*** (13.81)
BE	0.023*** (55.55)	0.021*** (9.12)	0.025** (57.2)	0.016*** (6.72)
Df	0.009*** (5.44)	0.198*** (21.65)	0.020*** (11.38)	0.058*** (6.00)
R_D	0.087*** (5.08)	0.475*** (4.98)	0.147*** (8.75)	0.027 (0.28)
Abslack			-0.008*** (-7.83)	-0.027*** (-5.05)
Potslack			-0.146*** (-44.97)	-0.197*** (-10.86)
Dn			-0.006*** (-2.72)	-0.197*** (-15.22)
Edu			0.039* (1.92)	0.287** (2.50)
Dg			0.018*** (9.37)	0.075*** (7.08)
Size			0.007*** (11.05)	0.151*** (44.05)
Adj. R2	0.369	0.214	0.517	0.325

The numbers between parentheses are t-statistics. *, **, and *** indicate significance at the 10, 5, and 1% levels, respectively.

In addition, even though the government subsidy (Dg) is positive significant to the SME's

surviving, the R&D and HR input is limited significant in the multiple regressions. It seems

some lags in the multiple models, and might imply that if the Chinese SME could not retain talents. Thus the SME's operating performance and survival might be declined for the long term. On the other hand, whether it is a waste of sales by a company or a waste of loans, the regression coefficient is negative and has a significant negative correlation. Although HR and R&D investment have a lagging effect on the dependent variable performance and survival time, but overall it has a more obvious positive effect on the performance and survival time for the Chinese SMEs.

4.3 Robustness Tests and Discussion

Since some of the data come from the same firm's statements, the structures of the financial reports might be correlated with each other. Therefore, it is possible that the waste of sales resources (Abslack) might be nearly collinear with BE in the models (Kai & Prabhala, 2007). We apply collinearity diagnostics for each variable using models (3) and (4). The results are shown in Table 6. The condition index values of all independent variables do not exceed 100, indicating there is no collinearity among the variables. This implies that the variables in our models can catch the resource application and value creation for the Chinese SMEs' sustainability.

Table 6. Collinearity of Variables

Number	Eigenvalue	Condition Index	Number	Eigenvalue	Condition Index
1	4.373	1	6	0.562	2.790
2	1.415	1.758	7	0.495	2.973
3	0.985	2.107	8	0.366	3.455
4	0.941	2.156	9	0.108	6.363
5	0.747	2.420	10	0.008	24.02

Table 7. Cross-sectional examination of Chinese SMEs' resource use

Model	(5)	(6)
Dependent variable	ROA	SUR
Intercept	0.014 (2.06)	0.167*** (5.84)
BE	0.023*** (49.35)	0.007*** (3.65)
Df	0.021*** (12.16)	0.147*** (20.48)
R_D	0.152*** (9.06)	0.922*** (13.25)
Abslack	-0.008*** (-8.62)	-0.001 (-0.24)
Potslack	-0.145*** (-44.58)	-0.074*** (-5.47)
Edu	0.035* (1.69)	0.144* (1.68)
Absl_BE	0.047*** (11.43)	0.099*** (5.83)
Edu_BE	0.238*** (3.60)	4.471*** (16.31)
Dn	-0.006** (-2.54)	-0.177*** (-18.41)
Dg	0.018*** (9.33)	0.003 (0.36)
Size	0.008*** (12.68)	0.131*** (50.96)
Adj. R ²	11.95%	10.63%

The numbers between parentheses are t-statistics. *, **, and *** indicate significance at the 10, 5, and 1% levels, respectively.

This paper divides the internal resources into tangible and intangible resources. To understand which resources stimulate the growth of Chinese SMEs, we multiply them with business efficiency (BE) in models (5) and (6). The empirical results of the modified models are shown in Table 7.

Based on the result of the modified model (5), both the sales resource multiple (Absl_BE) and human education multiple (Edu_BE) might boost the ROA. However, in the modified model 6 the accumulation of human education might not improve the SME's survival time. It infers that for the long term the Chinese SME should balance its intangible employee education waste, otherwise it might hurt the firm's survival.

Chen (2015) indicated that the SMEs could face different external environments in each of the 31 provinces of China. This paper thus robust of the SMEs' performance and survival in different areas of China. Since 20,803 of the total 44,707 observations (nearly 50%) are from companies registered in Beijing, we divide the sample into firms inside and outside Beijing to perform group regressions on their operating performance and survival. The empirical results are presented in Table 8. There are three characteristics that determine the SME performance and survival in different external environments. The first, wherever inside Beijing or not, the R&D and HR denote more significant advantage for survival rather than for operating performance. It means that the HR input in the SMEs would create large

economic output in China. The second, the governmental equity holding makes more disadvantage in the SME's survival rather than its operating performance, and the interference condition inside Beijing generate more effect rather than that outside Beijing. Compared with the result that the governmental grant input

inside Beijing creates less operating performance rather than that outside Beijing, it infers that the Chinese SMEs registered in Beijing might more "independent" for their operation and management. In addition, the Chinese SMEs outside Beijing could need more grants or other economic input to boost their operation and survival.

Table 8. Group analysis by area

Model	(3)	(4)	(3)	(4)
Area	Inside Beijing		Outside Beijing	
Dependent variable	ROA	SUR	ROA	SUR
Intercept	-0.092*** (-8.41)	-0.108*** (-2.68)	-0.137*** (-16.77)	-0.214*** (-5.39)
BE	0.039*** (49.27)	0.008*** (2.75)	0.015*** (31.98)	0.006*** (2.55)
Df	0.015*** (5.31)	0.152*** (14.45)	0.02*** (9.9)	0.157*** (15.93)
R_D	0.112*** (4.41)	0.836*** (8.98)	0.17*** (7.85)	1.01*** (9.63)
Abslack	-0.007*** (-5.65)	-0.006 (-1.19)	-0.006*** (-3.39)	-0.024*** (-3.05)
Potslack	-0.141*** (-27)	-0.046*** (-2.38)	-0.149*** (-38.3)	-0.092*** (-4.86)
Dn	-0.007* (-1.81)	-0.175*** (-11.89)	-0.001 (-0.53)	-0.163*** (-12.69)
Edu	0.05** (2.08)	0.204*** (2.3)	0.073 (0.75)	4.866*** (10.35)
Dg	0.014*** (4.16)	0.005 (0.38)	0.016*** (7.42)	-0.025*** (-2.45)
Size	0.016*** (16.43)	0.119*** (32.78)	0.001** (1.98)	0.144*** (39.73)
N	20,803	20,803	23,904	23,904
Adj. R2	13.92%	8.80%	11.09%	11.70%

*, **, and *** indicate significance at the 10, 5, and 1% levels, respectively.

4.4 Finding and Implication

In the global risky environment and economic regression by COVID-19, how to strength the SME's operating performance and survival has become an important topic. In China, the SMEs has risen sharply by the policy promotion. Literatures on the SMEs have been identifying some key factors clearly to solve the SME's survival in China (Siu, 2005; Zhao et al., 2010; Gui-long et al., 2017). However, the Chinese government faces that there are still lots of their SMEs going bankruptcy every year. It seems have a contradiction between the literature finding and the policy implication.

The purpose of this paper is to make up the gap between the real operating condition of the SMEs and the perception from researchers and regulators. We find that family-owned enterprises, R&D intensity, and income subsidy have a significant and positive correlation with the

Chinese SME's operating performance and survival duration. In addition, wasted resources from sales and liability activities, and equity participation by state-owned capital are negatively correlated with SME performance.

Compared with literatures, our finding has three implications for the entrepreneurial management. The first, many literatures identified the efficiency of family-owned SMEs, such like enhancing network of relationships (Kansikas et al., 2012), less risk of bankruptcy (Gentry et al., 2016), and effective R&D investment (Hillier et al., 2018). Our finding about family entrepreneurs is more persuasive since we apply the big data of the Chinese SMEs. The second, for the technological benefits strengthened (Batjargal, 2010) and metropolitan orientation by SMEs (Coomes et al., 2013), our finding implies that the Chinese SMEs present better performance if they are located in

the capital of the country. The last is we stress the importance of HR input in the SMEs. Even though Bae et al. (2014) demonstrated entrepreneurial education and entrepreneurial motivation are not correlated, but it observed only 73 case studies. On the other way, Mungila et al. (2019) built the conceptual framework for the formation of SMEs, while we realize the empirical results to confirm the factors driving the SME's performance.

There are still two limitations that this study could not finished. The first is that we might not include all of the external factors driving the SME's survival. Brieger and De Clercq (2019) presented that the culture characteristics could affect how the SMEs allocate their resources, such like Imtiaz et al. (2018) took case studies of Pakistan's SMEs to identify the external policy pressure could create SMEs' innovation. Avnimelech et al. (2014) explored that the level of corruption in a country will affect the development of its SMEs. Even in China, the development of market systems in various provinces would affect the diversifications of SMEs (Chen et al., 2020). All of these external factors mentioned above could biased our results. The second limitation is the financing demand from different stages of the SME's development. Atherton (2012) investigated the new venture financing in the initial stage of the enterprise and found that the financing support did not meet the needs of the SMEs. Combined with these two limitations, we find that there are still another drivers which are not full-controlled by the SMEs. And thus they should be explored by future research.

5. Conclusions

In recent years, the number of Chinese SMEs has increased sharply. To improve the SMEs' survival and operating performance, the Chinese government has launched many incentive policies that can boost their economy. However, more than half of all Chinese SMEs go bankruptcy every year, which creates significant resource waste and unemployment problems. While the literature on the SMEs have identified some key factors to address SME survival in China, this approach creates a gap between the real operating conditions of the SMEs and the perceptions of researchers and regulators.

Based on the relevant literature, we identify the determinants of the SME's survival and conduct an empirical examination of the operating performance and survival of Chinese SMEs. Based on our robustness, three main results for Chinese SMEs' operation can be

illustrated. First, the participation of governmental equity is detrimental to the SME's performance and survival. Instead, policymakers should be encouraged to provide substantial subsidy income for the SMEs. Second, the Chinese SMEs' investment in HR and R&D innovation has a significant positive effect on their survival. Finally, compared with non-family-owned companies, family-owned SMEs have better business resilience to face economic uncertainty and poverty.

This paper makes three main contributions to the literature. First, it proves that family-owned SMEs perform better than government-equity-holding SMEs in China. Second, it identifies the operational determinants that can help improve Chinese SMEs' financial output in terms of their regional development. Finally, different from the literature, this paper finds that policy subsidy income has a significant positive impact on the survival and operating prospects of the SMEs. This implies that the monetary resource efficiency of the SMEs is better than that of governmental equity input. Our finding thus enrich the economics, management, and policy governance literature.

The survival and growth of the SMEs might rely on many factors, which become more uncertainty and thus hurt the regional economy. However, our empirical evidence on the Chinese SMEs might provide solutions to increase people's wealth and eliminate resource waste to other developing regions.

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