

# Environmental Conditions, Entrepreneur Alertness and Social Capital on Performance

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## Abstract

This study addresses the important question of causal complexity as it relates to the influence of social capital, entrepreneurial alertness and the entrepreneurship environment on business performance. Using a relatively new methodological approach, namely fuzzy-set qualitative comparative analysis (fsQCA), this paper aims to investigate alternative complex antecedent conditions (or causal recipes) that lead to high performance. Based on a survey of 194 entrepreneurs in China, this paper shows that business performance is likely to be the result of a combination of causal factors. This study finds that: (1) four different configurations of social capital, entrepreneurial alertness and entrepreneurship environment were “equifinal” causes of high performance, and (2) market openness should fit other environmental conditions to achieve high performance. This study contributes to research on entrepreneurship by applying the ideas of “equifinality” and “fit” to entrepreneurial characteristics and environment theory.

**Keywords:** business performance, fuzzy set, qualitative comparative analysis

## 1. Introduction

Entrepreneurship favors new business/job creation, innovation (Acs & Audretsch, 1988) and economic prosperity (Dubini, 1989); and is increasingly discussed in academic research (e.g., Belso-Martinez, Molina-Morales & Mas-Verdu, 2013; Shane & Venkataraman, 2000).

Studies in the field of entrepreneurship have identified a wide set of factors associated with entrepreneurial outcomes (e.g., Levie & Autio, 2008; Shane, 2002; Tang, Kacmar & Busenitz, 2012; Sheng, Zhou & Li, 2011). Conceptually, these factors can be divided into internal and environmental (external) conditions. Herein, internal conditions refer to entrepreneurial characteristics. Environmental conditions include both national and entrepreneurial environments; however, in this study we focus exclusively on the entrepreneurship environment.

Despite the attention devoted to these phenomena, knowledge regarding the effects of external and internal entrepreneurial conditions on businesses performance is still far from complete. From an institutional perspective, previous literature has generally linked the entrepreneurship environment to national level outcomes (e.g., economic growth, entrepreneurship activities, etc.). From an organizational perspective, most of the analyses focus on only a few external conditions, such as market dynamics or culture. Consequently, a holistic and integrative approach to examining these external environmental conditions along with internal resources would extend our knowledge.

This study seeks to contribute to the field of entrepreneurship by adopting the configuration approach, which links various entrepreneurial conditions to business performance. Interest in these configurations determined the method adopted in this study, namely fuzzy set–qualitative comparative analysis (fsQCA). fsQCA is an analysis of set relations; it connects theory and data based on set theory (Ordanini & Maglio, 2009; Schneider & Wagemann, 2010). Given that this approach has different epistemological foundations, it is thereby able to answer different research questions (Vis, 2012). Several comparative advantages are embedded in fsQCA; three of them are particularly salient in this study: equifinality, fit, and causal complexity. Equifinality is the principle that multiple paths or solutions occur which lead to the same outcome (Woodside, 2014). Fit is the principle that different causes in a given context are not intrinsically

important, but rather that their role depends on how they are aligned (Venkatraman, 1989). Finally, causal complexity is the principle that combinations of causal measures lead to the outcome (Mahoney & Goertz, 2006). Based on the above discussion, our research question can be summarized as follows:

**Research Question:** Which configurations of environmental and entrepreneurial conditions are better able to maximize the performance of an entrepreneur's business?

This paper is structured as follows. First, this paper reviews the literature on entrepreneurs' external and internal conditions. Second, we introduce the propositions for fsQCA testing. We seek to examine these relationships from the perspectives of equifinality and fit as gestalt (Buttermann, Germain & Iyer, 2008; Ordanini, Parasuraman & Rubera, 2013). The 'Method' section describes the data, measurements, research methodology, and model of this research. The 'Findings' section presents the fsQCA results. It is followed by a 'Discussion and Conclusion' section.

## 2. Theory and Propositions

### 2.1 Theoretical Background

#### 2.1.1 Entrepreneurship Environment

Current knowledge concerning entrepreneurial environments is largely derived from Global Entrepreneurship Monitor (GEM) studies. Eight entrepreneurial environment attributes are particularly salient in relation to affecting entrepreneurship activities: internal market openness, financial support, cultural and social norms/beliefs, education and training, commercial and services infrastructure, government policies and programs, access to physical infrastructure, and R&D transfer (Alvarez, Urbano, Coduras, & Ruiz-Navarro, 2011; Levie & Autio, 2008; Chernyshenko et al., 2013).

*Internal Market Openness* includes both market dynamics and openness. Market openness refers to the ease of entry into a market. Market dynamics refers to the extent to which markets change dramatically over time. Market openness reflects a wider trend in available studies. Economists have identified industry structure and market dynamics as motivating factors in entrepreneurial activity (e.g. Kirzner, 1997). *Financial Support* refers to the availability of financial resources, equity and debt, for new and growing firms. It also includes grants and subsidies (Bosma & Levie, 2010). Access to finance is regarded as an important asset of entrepreneurs. On the contrary, insufficient finance often creates a barrier to starting a business (Kouriloff, 2000). Entrepreneurs need capital in order to start a business, either through their own or family funds or through a business loan. Ribeiro-Soriano (2010) finds that when firms use family resources as a source of financing, their business performance is negatively influenced. *Cultural and social norms/beliefs* indicate the extent to which existing social and cultural norms encourage individual actions that may lead to new ways of conducting business (Alvarez et al., 2011; Inglehart, 1997). Entrepreneurial behavior is normally shaped by culture (George & Zahra, 2002). Entrepreneurship culture can influence the hiring of people who are willing to be co-workers or partners with an entrepreneur. This environmental culture may also influence organizational culture and an individual's attitude in regard to adopting innovative actions. *Education and Training* indicates the extent to which training, in terms of creating or managing small, new or growing businesses, is incorporated within the educational and training system at all levels (Alvarez et al, 2011). Good education and training also influence an individual's abilities to acquire the necessary skills for managing a business (Levie & Autio, 2008). Prior studies show that entrepreneurship-specific training encourages entrepreneurial activity via the following mechanisms (Levie & Autio, 2008): (1) through the provision of instrumental skills required to start up a business (Honig, 2004), (2) through an enhanced cognitive ability in opportunity recognition (DeTienne & Chandler, 2004) and (3) through influencing students' perceptions of entrepreneurship (Peterman & Kennedy, 2003). *Commercial and Services Infrastructure* refers to the presence of commercial, accounting and other legal services and institutions (e.g., law firms, consulting firms, business incubators) that allow for, or promote, the emergence of new, small or growing businesses (Alvarez et al., 2011; Chernyshenko et al., 2013). Entrepreneurs hunt for new partners and resources in order to remain competitive, and external agents may link two or more parties to bring about specific activities that can facilitate the boundary-spanning process in order to obtain critical resources (George & Prabhu, 2000). *Government Policies and Programs* can be divided into two sub-dimensions: *Government policies* refer to the extent to which new and growing firms are favored in government policy through lenient taxes or helpful regulations. *Government programs* refer to the presence and quality of direct programs to assist new and growing firms at all levels of government. Moreover, governments are able to directly affect entrepreneurial firms through regulatory controls (Levie & Autio, 2008) and by providing subsidies, material and informational support for new ventures (Keuschnigg & Nielsen, 2002). Effective government support reduces transaction costs for new businesses (Shane, 2002; Delmar & Shane, 2003); thus, government policies and programs are related to an entrepreneur's business performance. *Access to Physical Infrastructure* indicates the ease of access to the available physical resources (communication, utilities, transportation, land or space) at a price that does not discriminate against new, small or growing firms. Physical infrastructure and its related costs are vital factors when it comes to entrepreneurial activities (Carter, Gartner & Reynolds, 1996; Dubini, 1989). In a large country, physical

infrastructures can vary widely from city to city. Poor physical infrastructure not only influences operational costs, but also limits the business scope of entrepreneurs' firms. *R&D Transfer* refers to the efficiency with which external R&D (or knowledge) is incorporated into a product/service innovation process. Many companies now spend little on R&D and yet are able to successfully make innovative progress by drawing on knowledge from external sources (Laursen & Salter, 2006). R&D transfer makes the exploitation of knowledge more efficient (Hindle & Yencken, 2004), so entrepreneurs are more competitive if they occupy a position that allows them easy access to new knowledge.

### 2.1.2 Entrepreneurs' Conditions

Shane & Venkataraman (2000) ask the question, "Why do some people and not others discover particular entrepreneurial opportunities?" They point to two reasons: (1) *possession of prior information* and (2) the *cognitive properties* to evaluate it. Entrepreneurs with better social capital have better access to new information/scarcely resources, and entrepreneurs who are more alert have a higher cognitive ability to recognize opportunities. Therefore, *Social Capital* and *Entrepreneurial Alertness* are identified as critical internal resources.

*Social capital* refers to the social ties or relationships between social actors (Xiao & Tsui, 2007); it can influence the ability of actors to extract benefits from their social networks (Lin, Ensel & Vaughn, 1981). Social capital can occur at both the individual and organizational levels (Nahapiet & Ghoshal, 1998), and facilitates the discovery of opportunities and the identification, collection and allocation of scarce resources (Hoang & Antoncic, 2003; Birley, 1985). It also helps to reduce transaction costs. Social capital has also been identified as a potential source of competitive advantage (Alvarez & Busenitz, 2001; Nahapiet & Ghoshal, 1998). Previous studies find that social relationships have a positive effect on business performance (Sheng et al., 2011; Yeung & Tung, 1996). Stam, Arzlanian & Elfring (2014) conducted a meta-analysis of the performance effects of entrepreneurs' social capital, and found that the social capital-performance link is both positive and significant. *Entrepreneurial Alertness*, a distinctive set of perceptual and information processing skills, has been advanced as the cognitive engine driving the opportunity identification process (Gaglio & Katz, 2001). The theory of entrepreneurial alertness was initially developed by Kirzner (1973, 1979), who characterizes individuals who are more alert as having an "antenna" that permits recognition of gaps with limited clues. In a more recent study, Tang et al. (2012) took a broader view of alertness and developed an entrepreneurial alertness scale. They illustrate alertness as having three dimensions: alert scanning and search (information accumulation), alert association and connection (information transformation) and evaluation and judgment (information selection). Alertness exists when an individual has insight into the value of a given resource while others do not (Alvarez & Busenitz, 2001). The importance of entrepreneurial alertness has been widely acknowledged by both scholars and practitioners (e.g., McCaffrey, 2014; McMullen & Shepherd, 2006; Yu, 2001; Tang, Kacmar & Busenitz, 2012). Moreover, Tang et al., (2012) provide evidence that entrepreneurial alertness has a positive effect on business outcomes.

### 2.2 Propositions

A primary belief in the entrepreneurship literature is that the effects of an entrepreneur's characteristics and environment on business performance are additive, with each condition exerting an independent albeit cumulative effect. However, the entrepreneurship environment and entrepreneur's characteristics are highly interactive factors, and so should be perceived as a holistic pattern of interdependent stimuli; the desired outcome is a result of the simultaneous integration of factors. Business performance is a complex, multidimensional phenomenon, in which the configuration of entrepreneurial conditions is more important than the individual conditions taken on their own. Thus, we posit that there are multiple solutions leading to the same high performance outcome, and that these solutions are sufficient configurations of the entrepreneurial conditions that jointly promote firm performance.

**Proposition 1:** Disparate configurations of the entrepreneurial environment and condition are equifinal in leading to high business performance.

Among these environmental factors, internal market openness should be seen as particularly salient. Government inevitably plays a variety of roles in an economy (Porter, 2000), especially in terms of the regulatory controls of market openness (Levie & Autio, 2008; Dutt et al., 2015). Moreover, many entrepreneurial conditions are correlated or interact with internal market openness. Logically, high market openness often implies greater competition, and small firms frequently suffer from existing within highly competitive environments. However, a market with a great level of openness often embraces more critical resources that favor innovation (e.g., professional services, advanced physical infrastructure, supporting institutions for innovation, etc.), which enhance a firm's comparative advantage. While key drivers of the entrepreneurial environment also matter in relation to business performance, we posit that there should be an appropriate fit between market openness and other environmental conditions.

**Proposition 2:** Internal market openness is a salient condition influencing firm performance. A configuration of internal market openness should fit with other environmental conditions in order for a firm to achieve high performance.

### 3. Method

#### 3.1 Target Population and Sample

China was chosen as the target country to survey in this study for three reasons: (1) the increasing amount of entrepreneurial activities in China (Bosma and Levie, 2010), (2) the great diversity in China's local market (Cullinane & Wang, 2007) and (3) the controlling of the national framework conditions. A questionnaire was addressed to the CEO/owners of high technology firms, on the condition that these people were CEO/owners or top managers of a business with five or more employees, so as to ensure that the entrepreneurs addressed were more than just self-employed (Djankov, Qian, Roland, & Zhuravskaya, 2006). Although the data came from the high-technology sector, they include firms operating in several industries, thus offering variations in the market conditions. This study surveyed individuals in China in the following cities: Beijing, Shanghai, Jinan, Dezhou, and Linyi in Shandong, and Guangzhou and Zhongshan in Guangdong Province. The regions were selected as representative of the cultural and economic diversities within China. We surveyed a sample of 500 entrepreneurial firms in the high-technology sector. The sample was provided by the Commerce Committee (a special administrative setup of the government for managing firms in China). The survey was conducted from 2011 to 2012.

Table 1. Respondent Demographic Information

Background	Frequency	Percentage
Gender (N=194)		
Male	124	63.9%
Female	70	37.1%
Age (N=194)		
< 24	70	36.0 %
25–29	43	22.2 %
30–34	28	14.4 %
35–39	35	18.0 %
40–45	18	9.3 %
> 45	16	8.2 %
Education (N=194)		
2 years College, High School or below	63	32.5%
University	88	45.4%
Graduate school or above	43	22.1%
		Standard
Sales Growth Rate	Mean	Deviation
Most Recent Year (N=149)	22.47%	31.54
Average of Three Years (N=150)	23.69%	43.91

Two phases of data collections were conducted. In the first phase, the data were collected by both telephone interviews and questionnaires. Depending on the subjects' readiness to participate, interviews were carried out either immediately or at a later date. Interviewees were first informed of the purpose of this study, and asked to provide demographic information (age, gender and education), background and contact information. Then, they were invited to participate in a structured questionnaire survey: 230 firms agreed to collaborate and returned the questionnaire, constituting a valid response rate of 46%. Six months later, these 230 top managers or owners were asked to participate in a telephone interview; this time the interview concerned only the dependent variable. However, only 222 interviewees received the survey due to eight interviewees having been replaced during the period. The final sample consisted of 194 usable samples.

#### 3.2 Measurements

Our measurements of entrepreneurship environmental factors were taken from GEM survey items (Levie & Autio, 2008; Chernyshenko et al., 2013). Variables included: *Internal Market Openness* (5 items), *R&D Transfer* (6 items), *Access to Physical Infrastructure* (5 items), *Government Policies and Programs* (12 items), *Cultural and Social Norms* (5 items), *Commercial and Services Infrastructure* (5 items) and *Education and Training* (6 items). We adapted the measurement of *Social Capital* from Sheng et al. (2011), which consists of six items to measure the relationships with firm contacts, business parties and political parties. We adapted the measurement of *Entrepreneurial Alertness* from Tang et al. (2012). Finally, we adapted the measurement of *Business Performance* from previous studies (Sheng et al., 2011; Li & Atuahene-Gima, 2001; Murphy, Trailer, & Hill, 1996), which consists of 7 items, including items for financial and non-financial measurements.

All of the measurements employed a 7-point Likert scale; 40 senior executives in an MBA program in China were invited to take the pretest. Three environmental items were dropped on the basis of the reliability and validity of the pilot test. One item, "It is not too expensive for a new or growing firm to get good access to communications (phone,

Internet, etc.),” was dropped from *Access to Physical Infrastructure* measurements. The two items dropped from *Financial Support* measurements were: (1) There is sufficient equity funding available for new and growing firms and (2) There is sufficient debt funding available for new and growing firms. As with Levie & Autio’s (2008) results, *Government Policies* and *Government Programs* were highly correlated ( $\rho = 0.874$ ,  $p < 0.001$ ). An exploratory factor analysis showed that all 12 items were loaded in a single factor. Thus, items were combined as measures of government policies and programs. The survey items, social capital, entrepreneurial alertness and performance are shown in Appendix A.

### 3.3 Measurement Evaluation

#### 3.3.1 Internal Consistency and Discriminant Validity

The standard factor loadings reported in Table 2 exceed the threshold of 0.60; Cronbach’s  $\alpha$  was greater than 0.75. All of the item-to-total correlation coefficients range from 0.51 to 0.87, exceeding the value of 0.50. Composite reliability (CR) ranges from 0.83 to 0.96 exceeding the value of .60, and the average variance extracted (AVE) ranges from 0.53 to 0.72, above the recommended cutoff level of 0.50 (Bagozzi & Yi, 1988). The results indicate that the constructs here are reliable and exhibit good internal consistency.

Table 2. Results of Reliability

Factor	Items	Factor loading	Item-to-total correlation	Cronbach’s $\alpha$	CR	AVE
Internal Market Openness	5	.71-.86	.60-.77	.85	.90	.68
Financial Support	4	.67-.80	.51-.61	.75	.83	.55
Access to Physical Infrastructure	4	.78-.87	.70-.82	.87	.91	.72
R&D Transfer	6	.79-.86	.69-.76	.91	.93	.68
Government Policies & Programs	12	.74-.86	.69-.83	.96	.96	.68
Cultural and Social Norms	5	.77-.90	.69-.82	.88	.92	.69
Commercial and Infrastructure	5	.71-.85	.65-.78	.87	.92	.65
Education and Training	6	.70-.88	.57-.82	.89	.92	.65
Social Capital	6	.72-.85	.64-.77	.88	.91	.65
Entrepreneurial Alertness	8	.67-.78	.71-.87	.89	.90	.53
Business Performance	7	.79-.84	.80-.87	.92	.93	.66

As Table 3 shows, the diagonal elements (i.e. the square roots of the AVE for each latent variable) were greater than the off diagonal elements. These results suggest that all measurements of the constructs in the measurement model achieved discriminant validity.

Table 3. Descriptive Statistics<sup>a</sup>

	1	2	3	4	5	6	7	8	9	10	11
1. IMO	<b>.83</b>	.59	.62	.61	.70	.74	.64	.65	.55	.47	.55
2. FS	.60	<b>.74</b>	.56	.66	.62	.67	.42	.68	.52	.38	.43
3. CS	.59	.53	<b>.83</b>	.55	.61	.65	.64	.62	.54	.46	.58
4. ET	.67	.63	.57	<b>.80</b>	.68	.67	.43	.66	.60	.47	.48
5. CI	.63	.68	.54	.73	<b>.81</b>	.69	.54	.65	.57	.48	.54
6. GPP	.74	.73	.64	.69	.71	<b>.83</b>	.66	.79	.62	.45	.66
7. API	.71	.50	.62	.55	.49	.68	<b>.85</b>	.54	.51	.47	.59
8. RD	.67	.70	.61	.65	.70	.80	.60	<b>.82</b>	.66	.55	.64
9. SC	.56	.56	.54	.56	.62	.67	.52	.72	<b>.81</b>	.55	.69
10. EA	.50	.35	.48	.48	.47	.47	.47	.53	.56	<b>.73</b>	.63
11. Performance	.58	.51	.58	.57	.54	.66	.59	.67	.71	.64	<b>.81</b>
Mean	4.56	4.37	4.79	4.08	4.57	4.16	4.68	4.26	4.51	5.13	4.79
Std. Deviation	1.27	1.32	1.29	1.46	1.31	1.46	1.33	1.34	1.26	1.00	1.17

*Note.* All correlations are significantly less than 1. The lower triangular matrix is the correlation of raw data, and the upper triangular matrix is the correlation of fuzzy scores. Figures on the diagonal are the square roots of the AVE score for each construct. IMO = internal market openness, FS = financial support, CS = cultural and social norms, ET = education and training, CI = commercial and services infrastructure, GPP = government policies and programs, API = access to physical infrastructure, RD = R&D transfer, SC = social capital, EA = entrepreneurial alertness.

#### 3.3.2 Validity of Performance Measurement

Because our measurement of performance is based on subjective items, we further tested the validity of performance with other objective measures; 149 interviews that provide growth rates for the most recent year, average growth rates over the past three years and business performance are used for our analysis. Our investigation involves a correlation analysis, which shows that performance is significantly and positively correlated with a firm’s log of annual growth rates in recent years ( $\rho = 0.482$ ,  $p < 0.001$ ) and the log of this average over three years ( $\rho = 0.427$ ,  $p < 0.001$ ).

### 3.4 Fuzzy-set Qualitative Comparative Analysis

#### 3.4.1 Criteria for an Important Sufficient Configuration

As with QCA, fuzzy set QCA analysis enables the researcher to draw conclusions about logical relationships, without having to reduce all the data to crisp binary sets (Chang, Tseng, & Woodside, 2013). Specifically, it shows sufficient configurations for the same outcome. Logically, sufficient configurations are conditions that always lead to the same outcome. Cases as configurations of conditions that satisfy the sufficient conditions will exhibit the same outcome. In social science, it is rare to find a perfect sufficient configuration. Therefore, fsQCA provides two measures to evaluate a configuration: *Consistency* and *Coverage*. *Consistency* assesses the degree to which the cases (that satisfy a causal combination) are agreed upon in the outcome (Woodside & Zhang, 2012). In set-theoretic science, a sufficient score above 0.80 indicates that the causal combination is “almost always” sufficient for obtaining the outcome; and a score below 0.75 is regarded as inconsistent (Ragin, 2006). *Coverage* assesses the degree to which configurations account for the proportion of the outcome, and measures the empirical relevance or importance of the particular configuration (Woodside, Hsu, & Marshall, 2011).

Furthermore, complex set-theoretic arguments (i.e. many causes) are able to achieve remarkable consistency but with low coverage; it is important to calculate coverage only after establishing that a set relation is consistent (Ragin, 2006). Since the variables we consider in this study involve complex arguments, we set the consistency threshold at 0.90 (i.e. which is the same as Cheng, Chang & Li, 2013). Finally, *Solution Consistency* and *Solution Coverage* measure the overall levels of consistency and coverage of these configurations.

#### 3.4.2 Calibration of the Dataset

We used fs/QCA 2.0 software to conduct the analysis. As mentioned above, fsQCA requires the use of set-theoretic variables. Accordingly, we translated the original variables into fuzzy-set scores. Using the calibrating function in fs/QCA, a fuzzy score can be produced by identifying three important anchors: full membership, non-membership and a cross-over point (Ragin, 2000). The three anchors are qualitative anchors that map the link between specific scores on continuous variables and fuzzy-set membership (Rihoux & Ragin, 2009). The researcher could develop a rationale for each breakpoint in specifying these qualitative anchors (Ragin, 2009). The original values of the 90<sup>th</sup>, 50<sup>th</sup> and 10<sup>th</sup> percentile in the entrepreneur and environmental variables were set to full membership, cross-over and full non-membership point. For example, the three anchors for business performance are 6.286 (90<sup>th</sup> percentile), 4.857 (50<sup>th</sup> percentile) and 3.429 (10<sup>th</sup> percentile).

Next, the analysis constructed a truth table listing all of the logically possible combinations of causal conditions. Each configuration's empirical outcome was analyzed using Boolean algebra (Ragin, 2008). Finally, the QCA analysis generated three possible solutions: parsimonious solutions, complex solutions and intermediate solutions. Ragin favors the intermediate solutions for two reasons: (1) they will not allow removal of necessary conditions (Rihoux & Ragin, 2009), and (2) they strike a balance between parsimony and complexity (Ragin, 2008). Therefore, the intermediate solution is adopted in this study.

#### 3.4.3 Model of fsQCA

The data were analyzed by fsQCA techniques. The model was specified as follows:

High performance condition = f (IMO, FS, CS, ET, CI, GPP, API, RD, SC and EA) (1)

IMO	Internal Market openness;
FS	Financial Support
CS	Cultural and Social Norms of Entrepreneurship;
ET	Education and Training of Entrepreneurship;
CI	Commercial and Services Infrastructure;
GPP	Government Policies and Programs;
API	Access to Physical Infrastructure;
RD	R&D Transfer;
SC	Social Capital;
EA	Entrepreneurial Alertness.

## 4. Findings

### 4.1 Results of fsQCA Analysis

Table 4 summarizes the results obtained from the fsQCA analysis. The solutions suggest that there are four different paths to follow in order to achieve high performance. In columns (a) to (d), the filled-in black circles indicate the presence of causal conditions, while the white circles represent an absence or negation of causal conditions. The blank

cells represent “don’t care” conditions. For instance, Solution (a) means that one sufficient condition for high performance is when *Internal Market Openness* is low, and *Financial Support, Cultural and Social Norms, Education and Training, Government Policies and Programs, R&D Transfer, Social Capital* and *Entrepreneurial Alertness* are high. The rest of the variables in the blank cells can be taken to be any condition, since it is a “don’t care” condition. Solution (a) has a consistency level of 0.904, which means that 90.4% of firms that satisfy the solution conditions of (a) exhibit high performance.

In *set-theoretical* logic, logical AND (\*) refers to the intersection of sets, and logical OR (+) to the union of sets. Moreover, ~ indicates the absence of a condition. In fuzzy-set notation, the result of the above analysis can also be shown in the following formula. The abbreviations correspond to the solutions shown in columns (a)-(d) in Table 4:

$$\sim\text{IMO}*\text{FS}*\text{CS}*\text{ET}*\text{GPP}*\text{RD}*\text{SC}*\text{EA} + \text{IMO}*\text{CS}*\text{ET}*\text{CI}*\text{API}*\text{RD}*\text{SC}*\text{EA} \\ + \text{IMO}*\text{CS}*\text{CI}*\text{GPP}*\text{API}*\text{RD}*\text{SC}*\text{EA} + \text{IMO}*\text{FS}*\text{ET}*\text{CI}*\text{GPP}*\text{API}*\text{RD}*\text{SC}*\text{EA}$$

(Consistency: 0.945, coverage: 0.552)

The measure of overall solution consistency is 0.945, exceeding Ragin’s suggestion (2008). The overall solution coverage is 0.552 indicating that these configurations explain a large proportion of the high performance condition. Each configuration has a consistency level above 0.9. Furthermore, solutions (b)-(d) have more coverage than solution (a), and should be considered as empirically more important than solution (a).

Table 4. Configurations for Achieving High Performance<sup>a</sup>

Variables	Solutions				Conclusion	
	(a)	(b)	(c)	(d)	Low IMO	High IMO
Internal Market Openness (IMO)	○	●	●	●		
Financial Support	●			●	●	∅
Cultural and Social Norms	●	●	●		●	∅
Education and Training	●	●		●	●	∅
Commercial and Services Infrastructure		●	●	●		●
Government Policies and Programs	●		●	●	●	∅
Access to Physical Infrastructure		●	●	●		●
R&D Transfer	●	●	●	●	●	●
Social Capital	●	●	●	●	●	●
Entrepreneurial Alertness	●	●	●	●	●	●
Consistency	0.904	0.949	0.951	0.949		
Coverage :						
Raw coverage	0.193	0.485	0.494	0.477		
Unique coverage	0.035	0.005	0.014	0.018		
Solution consistency	0.945					
Solution coverage	0.552					

Note. Black ● (white○) circles indicate the presence (absence) of causal conditions. The blank cells represent “don’t care” conditions. Large black● (large white ○) circles indicate a core-necessary condition of presence (absence). “∅” indicates a peripheral (not necessary) condition. The frequency cut-off = 1, consistency cut-off = 0.88.

The above findings obtained from these four sufficient configurations support Proposition 1. There are multiple routes to business performance. Disparate configurations of entrepreneurial environment and entrepreneurial condition are equifinal in leading to business performance.

We further separate these sufficient conditions according to *Internal Market Openness*. The first group (i.e. solution a) represents the low *Internal Market Openness* condition, and the second group (solution b, c, d) represents the high *Internal Market Openness* condition. The notation used in the ‘Conclusion’ column in Table 5 is consistent with the notation used by Skarmeas, Leonidou, & Saridakis (2014), and Fiss (2011). Large black (white) circles indicate a core-necessary condition of presence (absence), and “∅” indicates a peripheral (not necessary) condition. A necessary condition is ‘a condition that must be present for the outcome to occur, but its presence does not guarantee that occurrence’ (Rihoux & Ragin, 2009). We now use these findings to examine our second proposition regarding internal market openness. Is the fit between *Internal Market Openness* and other environmental conditions critical for business performance?

Since all four solution configurations require *Social Capital* and *Entrepreneurial Alertness* to be present as necessary conditions, our discussion of internal market openness will focus on entrepreneurial environment conditions. The solution shows that when *Internal Market Openness* is low (*Low IMO*), *Financial Support, Cultural and Social Norms, Education and Training, Government Policies and Programs* and *R&D Transfer* are core-necessary conditions of presence. On the other hand, when *Internal Market Openness* is high (*high IMO*), *Commercial and Services*

*Infrastructure, Access to Physical Infrastructure* and *R&D Transfer* are core-necessary conditions of presence, and the rest of the possible environmental conditions are peripheral (not necessary) conditions of presence. Both low and high IMO require the presence of easy access to desired technology, namely *R&D Transfer*. The major difference between the two market conditions lies in the requirements of the two kinds of business infrastructure. A high IMO condition requires the presence of both *Commercial and Services Infrastructure* and *Access to Physical Infrastructure*. The rest of the environmental conditions (i.e. *Financial Support, Cultural and Social Norms, Education and Training* and *Government Policies and Programs*) are peripheral (not necessary) conditions of presence. These findings echo those of GEM studies in their definition of entrepreneurship environmental factors. Moreover, the two different IMO conditions exhibit different patterns for some core-necessary conditions. Low IMO requires the presence of financial resources, cultural/social norms, education/training and government support, whereas high IMO requires the presence of commercial services and physical infrastructure as core-necessary conditions. These results shed some light for policies makers operating in different IMO regions.

The above findings support Proposition 2, a configuration of *Internal Market Openness* should fit some entrepreneurial environment. Low IMO requires *Financial Support, Cultural and Social Norms, Education and Training, Government Policies and Programs* and *R&D Transfer* as core-necessary conditions of presence; high IMO requires *Commercial and Services Infrastructure, Access to Physical Infrastructure* and *R&D Transfer* as core-necessary conditions of presence and *Financial Support, Cultural and Social Norms, Education and Training, Government Policies and Programs* as peripheral conditions of presence. In general, firms in high IMO conditions require more commercial services and physical infrastructure (in terms of environmental conditions) to support their business performance. These findings echo that *market infrastructure development* and *business capability development* are two critical activities when it comes to supporting commercial environments in emerging market countries (Dutt et al., 2015).

#### 4.2 Predictive Validity of FsQCA

We further collected another 20 samples for testing the validity of fsQCA. Using the QCA3 package in *R* (Huang, 2014), we calculated the consistency and coverage of this new sample. The results of predictive validity are shown in Table 5. The consistency of solutions ranges from 0.854 to 0.925. The solutions coverage ranges from 0.144 to 0.404. All of these measurements are at an acceptable level. The results show that the causal paths have predictive validity.

Table 5. Predictive Validity of Configurations for Excellence in Performance

		raw coverage	consistency
Solution (a)	~IMO*FS*CS*ET*GPP*RD*SC*EA	0.143980	0.854171
Solution (b)	IMO*CS*CI*GPP*API*RD*SC*EA	0.380597	0.922553
Solution (c)	MO*CS*ET*CI*API*RD*SC*EA	0.397150	0.925541
Solution (d)	IMO*FS*ET*CI*GPP*API*RD*SC*EA	0.404454	0.924795

Note: IMO = internal market openness, FS = financial support, CS = cultural and social norms, ET = education and training, CI = commercial and services infrastructure, GPP = government policies and programs, API = access to physical infrastructure, RD = R&D transfer, SC = social capital, EA = entrepreneurial alertness.

## 5. Discussion and Conclusion

This study was carried out to provide empirical data on the configurations of entrepreneur environment and internal conditions that lead to high business performance. The two propositions of this study were supported by the analysis: there are multiple routes to business performance. Sufficient conditions of entrepreneurial environment and entrepreneur condition are equifinal in leading to business performance (Proposition 1). The fit between *Internal Market Openness* and other environment conditions is critical for business performance (Proposition 2). These findings fill the gap in knowledge regarding the relationships among firm external and internal characteristics, thus enabling a more accurate assessment of the complexity of mutual dependent factors that lead to business performance. Four issues deserve more attention.

First, this study illustrates four configurations of external and internal firm resource conditions that sufficiently predict high performance outcomes. Each configuration presented in Table 4 is equifinal in leading to the desired high performance outcome. Each configuration provides an alternative path to the same outcome, allowing for flexibility in achieving high business performance by firms' focusing on their environmental conditions and resources so as to maximize the performance of their business.

Second, *Entrepreneurial Alertness* and *Social Capital* are critical and necessary antecedents of high performance. This implies that an entrepreneur possessing good social ties to information/resources and the cognitive ability to recognize opportunities is necessary but not sufficient to achieve high business performance. FsQCA provide strong evidence that *Entrepreneur Alertness* and *Social Capital* play critical roles in facilitating the success of entrepreneurs (e.g., Tang et al.,

2012; Hoang & Antoncic, 2003). Similar to other emerging markets, China has many unmet needs and limited resources. Therefore, *Entrepreneur Alertness* and *Social Capital* help firms to jointly bootstrap the necessary resources to exploit opportunities.

Third, fsQCA suggests that *R&D Transfer* is the core-necessary environmental condition in both low and high internal market openness (IMO) conditions. It is well known that entrepreneurial activities are highly associated with innovation; an alert entrepreneur stresses innovation rather than reacting to the market (as the reaction may come too late). The results confirm Laursen & Salter's (2006) argument that firms are increasingly drawing on knowledge from external sources for their innovation.

Fourth, except for *R&D Transfer*, the rest of the environmental conditions are conditionally important, depending on both the market condition and the existence of other compensatory resources. This study finds that when *Internal Market Openness* is high, the rest of the environmental factors are either core-necessary or peripheral conditions. This result suggests that a location favoring entrepreneurship is a supporting environment, as new firms usually lack resources (Belso-Martinez et al., 2013).

The theoretical contribution of this study is threefold: first, it confirms equifinality (Fiss, 2011; Ordanini et al., 2013) by observing that high performance outcomes can be achieved by various sufficient configurations. Second, it confirms the contingency theory of "fit" of resources (Buttermann et al., 2008) to achieve high performance outcome. Third, it identifies the roles of different resources. The environmental elements might serve as core-necessary or compensatory resources depending on their market condition.

This study offers strong managerial implications. Based on our findings, we would advise potential entrepreneurs to establish strong social network ties; be alert to opportunities, occupy a position that allows them easy access to new knowledge and to transfer external R&D into their innovation process. Pay attention to finance, culture, education and government support resources when firms are located in less open markets. Pay more attention to the commercial, service and physical infrastructure when they are located in high open markets. All other conditions favoring entrepreneurship create a supporting environment for entrepreneurs. Moreover, many pro-entrepreneurial environmental conditions identified in this study can be influenced by governments at various levels. Given that government resources are usually limited, it also provides implications for policy makers. For example, when *Internal Market Openness* is high, *Access to Physical Infrastructure* and *Commercial and Services Infrastructure* should be made readily available for attaining high business performance. However, both of them are "don't care conditions" in the low *Internal Market Openness* condition. It should be noted that none of the core-necessary conditions found in fsQCA are sufficient for ensuring excellent performance. For policy makers, the goal is to cultivate a friendly entrepreneurship environment to grow new business.

Finally, we would like to indicate some limitations of the present article that suggest new lines of research: (1) the first limitation relates to the particular geographical context of China. A useful extension would be to conduct this study with economies of other nations; (2) the research relied mainly on eliciting user perceptions. There might be a potential problem in that the perceptions of those surveyed do not provide a completely accurate view of reality; (3) this research identified social capital and entrepreneurial alertness as two important entrepreneur-specific characteristics. There might be other potential antecedents to be surveyed; (4) this study has characterized high-performance businesses. An interesting extension would be to investigate the causal paths that result in businesses failing. Despite these limitations, this study made strong theoretical and practical contributions. The current findings provide practitioners with flexible sets of sufficient conditions regarding entrepreneur resources that lead to achieving high performance outcomes. We hope that this work will stimulate additional research.

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**Appendix A**

Table A1. Summary of Measures for Social Capital, Entrepreneurial Alertness, and Performance

Construct	Measures	
Social Capital CR=0.91, AVE=0.65	▪ We have built good connections with supplier firms.	0.72
	▪ We have built good connections with customer firms.	0.77
	▪ We have built good connections with other business partners	0.85
	▪ We have maintained good personal relationships with government.	0.83
	▪ We have developed good connections with officials in regulatory and organizations such as tax bureaus, state banks, and commercial administration bureaus.	0.85
	▪ Our relationship with regional government officials has been in good shape.	0.81
Entrepreneurial Alertness CR=0.90, AVE=0.53	▪ I always keep an eye out for new business ideas when looking for information.	0.70
	▪ I am always actively looking for new information.	0.73
	▪ I see links between seemingly unrelated pieces of information.	0.70
	▪ I often see connections between previously unconnected domains of information.	0.71
	▪ I often make novel connections and perceive emergent relationships between various pieces of information.	0.67
	▪ I can distinguish between profitable opportunities and not-so-profitable opportunities.	0.72
	▪ I have an extraordinary ability to sense profitable opportunities.	0.78
Business Performance CR=0.93, AVE=0.66	▪ Sales growth.	0.79
	▪ Profitability (ROI).	0.79
	▪ Employee Satisfaction.	0.83
	▪ Customer Satisfaction.	0.80
	▪ Success rate of new product/service launch.	0.81
	▪ Corporate reputation.	0.84
	▪ Overall business performance.	0.84

*Note.* Numbers in the last column are standardized factor loadings; all factor loadings are significant at  $p < 0.01$ .