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Short Research Paper

# The Configuration Structure of Entrepreneurial Team and Innovation Model for the Success of High Growth Unicorn Companies

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**Abstract:** Emerging digital technologies brought a transformative impact on the development of unicorn companies. The entrepreneurial mechanism behind the high growth rate and high valuation of unicorn companies plays a significant role in understanding the growth of entrepreneurial companies. Grounded in the upper echelon theory, this paper constructs a joint effect model of entrepreneurial teams and innovation models jointly affecting the high growth of unicorn companies. Then, four configurations were obtained using the fuzzy-set qualitative comparative analysis method (fsQCA) to explain the success of unicorn companies. This research expands the applicable boundary of upper echelon theory in the research setting of unicorn companies. It provides entrepreneurial strategy maps for start-ups seeking continuous high growth in the era of the digital economy.

Keywords: Unicorn companies, Entrepreneurial team characteristics, Innovation models, fsQCA, digital economy

## 1. INTRODUCTION

The digital economy is the "accelerator" to promote the change in the quality, efficiency, and driving force of economic development. With the acceleration of digital transformation, unicorns, as emerging enterprises, have become a special economic phenomenon in the digital economy era with a high outbreak and growth<sup>[1]</sup>. They lead the growth of emerging industries with disruptive innovation and cross-border integration. In the context of the digital economy, start-ups cannot apply their past rules and experience in transformation and development. Instead, they should learn the road to the unicorn companies, have the courage to innovate, take the initiative to change, and carry out technological empowerment. So, whether there is some internal logic of the entrepreneurial behavior of Unicorn companies has been widely concerned.

Most of China's unicorn companies are strongly related to the digital economy. These companies obtain different competitiveness mainly through technological innovation and business model innovation to achieve sustainable development. For example, Didi has broken the traditional taxi market pattern through business model innovation and became a leading enterprise in the industry. DJI has developed the drone industry with technological innovation, valuing its company at \$22 billion. At the same time, as start-ups, unicorns' survival and development largely depend on the characteristics of the entrepreneurial team<sup>[2]</sup>. Venture investors also often take the ability of entrepreneurial teams as an essential reference for their investment. However, regarding how the characteristics of entrepreneurial teams and innovation models affect the development of enterprises, the existing research has not yet formed a unified conclusion<sup>[3]</sup>.

Although the conclusions of existing studies are divergent, the reason may be that the growth drivers are not isolated but interrelated. We need to consider the asymmetric and complex relationship between the team composition characteristics and the selection of innovation mode affecting the high growth of the enterprise from the overall perspective.

Therefore, based on the configuration perspective, this paper builds an integrated analysis framework to solve the complex relationship between variables. And the fuzzy-set qualitative comparative analysis method

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(fsQCA) is used, trying to answer how the combination of entrepreneurial team characteristics and innovation models leads to the high growth of Unicorn companies? Finally, four different antecedent configurations affecting the high growth of Unicorn companies are obtained. From the digital economy era perspective, this complete analysis and description of unicorns' innovative thinking and methods have provided valuable development guidance for enterprises.

## **2. LITERATURE REVIEW AND MODEL CONSTRUCTION**

### **2.1 Unicorn enterprise characteristics and growth drivers**

The "unicorn" concept was first proposed in 2013 by an investor in Cowboy Venture to describe an emerging start-up with a valuation of more than \$1 billion, obtained private equity financing, and rapid growth<sup>[4]</sup>. The existing research on unicorns mainly focuses on characteristic analysis and growth drivers.

In characteristic analysis, Massis<sup>[4]</sup> pointed out in the Harvard Business Review that unicorns have the distinctive characteristics of "small company size, led or founded by serial entrepreneurs, financing through venture capital, and small business scope." Based on this, the characteristics of Unicorn companies are further summarized into the three typical features of industrial crossover, technology subversion, and business model self-growth, which are widely accepted by the academic circle<sup>[5]</sup>.

In terms of growth drivers, it mainly focuses on the entrepreneurial team and innovation models. For example, at the level of the entrepreneurial team, the education level and social network can improve their corporate image and positively promote the survival and development of unicorns<sup>[2]</sup>. In terms of innovation mode, technological innovation can bring core competitiveness and achieve breakthrough growth. Business model innovation can help unicorns adapt to a highly uncertain market environment and obtain differentiated competitive advantages.

However, most of the existing studies on unicorns are fact analysis and case introduction; a few studies use relatively simple statistical methods (such as regression or principal component analysis). Therefore, there is still a lack of multi-factor analysis of the high-performance growth of unicorns based on large samples.

### **2.2 Entrepreneurial teams and high growth of unicorn companies**

The upper echelon theory points out that the top management team affects the formation of strategic decisions according to its existing cognitive foundation, values, experience and then affects the performance level of the enterprise<sup>[6]</sup>. Entrepreneurial teams are generally regarded as top management teams of entrepreneurs, and their research mainly relies on upper echelon theory. The composition characteristics of entrepreneurial teams were mainly measured by two dimensions: team heterogeneity and team experience level. Team heterogeneity is the degree of characteristic difference between team members<sup>[7]</sup>, primarily functional experience heterogeneity and professional background heterogeneity. The team experience reflects the entrepreneurial team members' cognitive foundation and organizational ability<sup>[7]</sup>, divided into entrepreneurial experience and industry experience.

However, whether the characteristics of an entrepreneurial team will necessarily promote the high growth of corporate valuations has not yet formed a unified conclusion. On the one hand, previous studies generally believe that the diversity of knowledge and experience among team members is conducive to enterprises making innovative decisions<sup>[8]</sup>. On the other hand, some scholars have shown that team members are prone to conflicts due to cognitive differences and good interests, which weakens team cohesion and hinders the development of the enterprise<sup>[9]</sup>. In addition, the asymmetrical and complex relationship between team heterogeneity and enterprise performance has also been demonstrated<sup>[10]</sup>.

Although the conclusions between team composition characteristics and firm performance are relatively complex<sup>[11]</sup>, only a small number of research have shown that founders' degree of education and entrepreneurial

experience impact the development of unicorn companies based on case studies<sup>[2]</sup>. And multipath research on unicorn entrepreneurial teams has not yet been carried out.

### 2.3 Innovation model and high growth of unicorns

In the face of the complex internal and external environment, choosing suitable innovation models will help start-ups obtain competitiveness to enhance the probability of survival. According to the different management models, the innovation model of Unicorn companies can be divided into business model innovation and technological innovation<sup>[5]</sup>.

Business model innovation provides customers with a new value proposition through new resource integration methods and business processes to enhance the differentiated competitiveness of enterprises<sup>[12]</sup>. Technological innovation transforms knowledge into productivity through existing science and technology, creating more competitive products to enhance the core competitiveness of enterprises<sup>[5]</sup>. The above two innovation models are the primary engines driving the rapid development of China's Unicorn companies. Moreover, technological innovation and business model innovation interdependently affect the development of enterprises. However, there is relatively little empirical research on how they affect the high growth of unicorn companies.

### 2.4 The configuration model

For the causal complexity problem with multiple factors, it is necessary to conduct configuration analysis based on the overall perspective<sup>[13]</sup>. However, the composition characteristics<sup>[1]</sup> of the entrepreneurial team and the choice of innovation model will affect the survival and development of unicorn companies, and there is a complex causal relationship. Therefore, based on the configuration perspective, this paper uses the fsQCA method to establish the configuration model from the two aspects of entrepreneurial team composition characteristics and innovation models. And explore how to configure various factors to effectively promote unicorn companies' high growth.

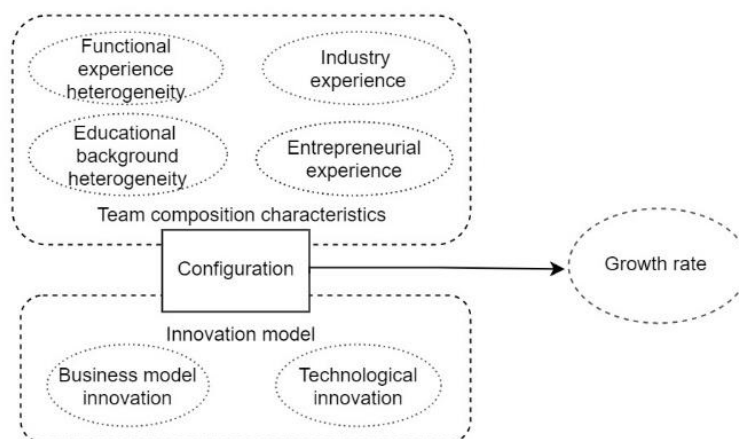


Fig.1. Configuration model

## 3. RESEARCH DESIGN

### 3.1 Research method

The Fuzzy Qualitative Comparative Analysis Method (fsQCA) is a set analysis method based on the Boolean algebra principle to identify the causal configuration of cases through a configuration perspective. This method combines the advantages of qualitative and quantitative research methods considering various factors' interdependence. It treats the research case as a configuration formed by different antecedent variables from a holistic view. It conducts cross-case studies to solve the problem of multiple concurrent causality complexity.

The fsQCA method was chosen for this study in that: 1) The data in this study contains multiple types of

variables, and fsQCA can solve both dichotomous variables and variable degree and partial membership. 2) fsQCA has the advantage of truth table analysis for processing qualitative data, finite diversity, and simplified configuration.

### 3.2 Sample selection and Feature analysis

IT Juzi is an early consulting company that paid attention to unicorns in China. It has a relatively complete database of startups in the TMT field (technology, media, telecommunications). This paper selects unicorn companies from 2015 to 2020 in IT Juzi and uses the company's official website and industry reports to supplement the data. Finally, 90 companies were selected as data samples. These companies are consistent with the overall characteristics of Chinese unicorn companies, but there is a certain degree of heterogeneity among them.

### 3.3 Variable measurement and Calibration

The measurement of entrepreneurial team characteristics follows the criteria established in Upper Echelons. The variable on entrepreneurial experience was measured by the proportion of members with entrepreneurial experience. Entrepreneurial team members' average industry working years to measure team industry experience. The functional experience was divided into five categories of general management, marketing, financial finance, manufacturing, and technology development. Background education was classified into five categories: Science, engineering, commercial economics, literary art, medicine, and others. Heterogeneity is measured by the *Blau* coefficient, which is  $T = 1 - \sum_{i=1}^n P_i^2$ ,  $n$  is the number of categories, and  $P_i$  represents the proportion of members of different categories. The larger the  $T$ , the higher the heterogeneity of the team. Business model innovation and technological innovation were categorized as dummy variables, depending on whether or not the company uses this innovative model. The growth rate of enterprises is measured through the average annual valuation growth of unicorn companies.

Calibration constitutes a fundamental stage of fsQCA and refers to transforming construct measures, or variables, into fuzzy-set membership scores. Due to the large deviation in the growth rate of unicorns, based on existing studies<sup>[13]</sup>, the upper quartile, lower quartile, and their mean are used for calibration to better distinguish cases. Business model innovation and technological innovation belong to virtual variables that do not need calibration. Other variables need to be calibrated using the data's upper quartile, mean and lower quartile to set the anchor points<sup>[14]</sup>.

## 4. RESULTS ANALYSIS

### 4.1 Necessity analysis

Necessary causal conditions have a consistency score above 0.90<sup>[13]</sup>. Our results indicated that among all our causal conditions (and their absence), technological innovation had the highest consistency score of 0.812 (Table 1). However, none of our conditions was found to be necessary for high growth because consistency scores did not exceed the recommended 0.90 threshold.

### 4.2 Configuration analysis

Due to the small total sample size, this paper sets the case frequency to 1 and the consistency threshold to 0.8, to retain at least 75% of the sample cases to distinguish the relevant configuration and the logical remainders. And according to the gap presented by the consistency score in the truth table, set the Proportional Reduction in Inconsistency (PRI) to 0.7, conduct a standardized analysis to obtain simple solutions, intermediate solutions, and complex solutions.

Complex solutions only analyze configurations with actual observed cases, intermediate solutions contain logical remainders supported by theoretical or practical knowledge, and simple solutions contain all logical remainders. At the same time, the condition that appears in the simple solution and the intermediate solution is

the core condition, and the condition that only appears in the intermediate solution is the auxiliary condition. According to the intermediate solution, the different precursor configurations promoting the high growth of unicorns are shown in Table 2. The consistency of the overall solution was more significant than 0.85. It shows that the four different configurations are sufficient conditions for the high growth of unicorns. The coverage of the overall solution is 0.509, indicating that the conditional configuration obtained is powerfully explanatory for the high growth of unicorns.

**Table 1. Necessity analysis**

Antecedent variable	Consistency	Coverage	Antecedent variable	Consistency	Coverage
Entrepreneurial experience	0.666	0.554	Industry experience	0.508	0.501
~ Entrepreneurial experience	0.460	0.445	~ Industry experience	0.592	0.486
Functional experience heterogeneity	0.701	0.467	Educational background heterogeneity	0.618	0.519
~ Functional experience heterogeneity	0.383	0.522	~ Educational background heterogeneity	0.469	0.449
Business model innovation	0.769	0.469	Technological innovation	0.812	0.504
Business model innovation	0.231	0.388	~ Technological innovation	0.188	0.302

**Table 2. Antecedent configuration of high growth of Unicorn companies**

Antecedent variable	Configuration A	Configuration B	Configuration C	Configuration D
Entrepreneurial experience	●	●	●	●
Industry experience	⊗	⊗	●	
Functional experience heterogeneity	⊗	●	●	
Educational background heterogeneity	⊗	●		●
Business model innovation	●		●	●
Technological innovation		●	●	●
Raw coverage	0.131	0.206	0.204	0.294
Unique coverage	0.101	0.059	0.054	0.053
Consistency	0.878	0.867	0.874	0.872
Overall solution coverage	0.509			
Overall solution consistency	0.873			

Note: ● = core conditions exist; ⊗ = lack of core conditions; ● = auxiliary condition exists; ⊗ = auxiliary condition missing; blank indicates that the condition can or cannot appear

### 4.3 Results analysis

Among four configurations of high growth of unicorns, all include entrepreneurial experience. The team's entrepreneurial experience provides legitimacy in a competitive market environment, which has promoted the company's resources and organizational operation. Therefore, in the analysis of the four configurations in Table 3, this article defaults that all configurations include entrepreneurial experience.

**Table 3. Results analysis**

	Entrepreneurial Team	Innovation Model
Configuration A	Acquaintances network	Business model innovation
Configuration B	Brainstorm	Technological innovation
Configuration C	Sophisticated	Business model innovation and Technological innovation
Configuration D	Special skills	Business model innovation and Technological innovation

#### **4.3.1 Configuration A: Acquaintance network team for business disruption**

In the context of lack of industry experience, entrepreneurial teams with high functional experience and professional background similarity can choose business model innovation to promote the high growth of unicorns verified by Configuration A. Business model innovation mainly improves enterprises' differentiated competitiveness through new enterprises resource integration methods or business process restructuring. The resource integration methods of entrepreneurial enterprises and business restructure are primarily based on the entrepreneurial team's management experience and professional background. The cognitive differences between entrepreneurial team members with high professional backgrounds and functional experience are slight. Given the lack of industry experience, they are more willing to communicate and share their experience. Most of these teams are composed of classmates and friends with high intimate relationships. After comprehensively analyzing competitors' information, they put forward differentiated competition strategies to carry out business model innovation to promote the high growth of enterprises. Configuration A presents the advantages of business innovation of acquaintances network.

#### **4.3.2 Configuration B: Brainstorm entrepreneurs team for technological breakthrough**

When the level of industry experience is low, entrepreneurial teams with high heterogeneity of functional experience and professional background can be shown in Configuration B through technological innovation to promote the high-performance growth of unicorns. Unlike Configuration A, entrepreneurial teams in Configuration B have diverse functional experience and professional backgrounds. This means that such entrepreneurial teams master rich market information and have extensive external social networks. It is more conducive to obtaining external financing to support the transformation of internal diversified professional knowledge and skills and promoting the high growth of unicorns with the help of technological innovation. Therefore, the entrepreneurial team members with diversified experience backgrounds actively seek technological innovation, with the primary goal of improving core competitiveness to seize the blue ocean market. Configuration B reflects the entrepreneurial idea of brainstorming to promote technological innovation.

#### **4.3.3 Configuration C: Sophisticated strategic team seize entrepreneurial opportunities**

When the industry experience and the functional experience heterogeneity of the entrepreneurial team are high, the model of promoting the high growth of unicorns through the innovation model of technology and business model is reflected in Configuration C. Entrepreneurial teams with high heterogeneous functional experience can build a vast network of relationships with external stakeholders, while a high industry experience escorts relationship maintenance. Such entrepreneurial teams can help companies obtain external financing, create more influential core competitive products through effective resource allocation, optimize technological innovation, and establish marketing channels. In other words, the entrepreneurial team has relevant experience in multiple functional tasks, which guarantees the effective implementation of the innovation model of mutual linkage between technology and business model. It shows the sophisticated and practical entrepreneurship-driven model.

#### **4.3.4 Configuration D: Special skills team through innovation linkage to meet market demand**

Entrepreneurial teams with high heterogeneity of professional backgrounds can achieve the high growth of Unicorn companies through collaborative innovation of business models and technology. Unlike Configuration C, Configuration D focuses on the diversification of professional backgrounds. Such entrepreneurial teams generally have professional knowledge reserves to meet the diverse needs of the external market. Meanwhile, the team can access resource channels through cross-linking relationships to bring products to market and innovate business models. However, with the acceleration of market iteration, enterprises take advantage of the talent advantages of entrepreneurial teams to realize the transformation of professional knowledge and skills. On this basis, technological innovation can support the change of enterprise business model and obtain sustainable

competitiveness for enterprises. Therefore, Configuration D refers to the entrepreneurial team's entrepreneurial path to achieve organizational goals by giving full play to their strengths and combining business model and technology with collaborative innovation.

#### **4.4 Robustness test**

In order to verify the reliability of the results, this paper performs robustness tests by adjusting the consistency threshold. Based on existing research<sup>[15]</sup>, this paper raises the consistency threshold from 0.80 to 0.85. The results show that the consistency of the overall solution of the configuration increased to 0.88, and the overall coverage of 0.46. The conditional configuration did not change in essence, thus the robustness of the conclusions of this study was verified.

## **5. CONTRIBUTION AND CONCLUSION**

### **5.1 Main findings and contributions**

Grounded in the upper echelon theory, using fsQCA, this paper identifies four configuration configurations that affect the high growth of unicorn enterprises. They are respectively acquaintance network team for business disruption, brainstorm entrepreneurs team for technological breakthrough, sophisticated strategic team seize entrepreneurial opportunities, special skills team through innovation linkage to meet market demand. This provides reference ideas for start-ups seeking sustainable development in the era of the digital economy.

This study has the following theoretical contributions. First, this paper has expanded the applicable boundary of the upper echelon theory and supplemented the relevant theoretical research on the high growth of unicorn companies. Enterprises must choose adaptive innovation strategies according to their characteristics to obtain competitive advantages and promote enterprise development<sup>[2]</sup>. By exploring the combined effect of team composition characteristics and innovation mode, this study expands the research perspective of the high-performance growth of unicorns. It enriches the research content of the high-level echelon theory. Secondly, the fsQCA method was used to clarify the complex relationship between the composition characteristics of entrepreneurial teams and innovation models that drove the high-performance growth of unicorns. Based on the configuration perspective, this paper studied the interaction effect rather than univariate, which can better explain the inconsistency of existing research conclusions and provide an explanation for high-growth complex situations for unicorns.

Practically, this paper provides a reference for unicorns to build and optimize entrepreneurial teams and choose matching innovation models. Four configurations obtained from this study would help unicorns continuously optimize the innovation model according to the development status of their industry and the characteristics of team composition. And they provide guidance for start-ups to seek high-growth entrepreneurial paths. Secondly, the importance of entrepreneurial experience in the unicorn entrepreneurial team was emphasized. However, it is not enough for an entrepreneurial team to only have entrepreneurial experience, and it also needs to have other team characteristics to cope with the complex external environment. This paper provides a guide on optimizing the entrepreneurial team structure and making up for the lack of team capabilities through the capital markets.

### **5.2 Research limitations**

The limitations of this paper are manifested in the following two aspects: First, first-hand data for unicorns can be obtained through interviews and questionnaires to conduct more detailed research and analysis in the future. Secondly, this study considers the internal impact of enterprises, and future research can introduce the external environment to comprehensively assess the complex antecedent configurations that affect the high growth of unicorns.



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