Analysis and Coping Strategies of Entrepreneurial Pain Points in Universities Based on Data Mining

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Keywords: University entrepreneurship, Natural language processing, Data mining, Entrepreneurship management.

Abstract. After Premier Ke-qiang LI put forward the important national development plan of "mass entrepreneurship, mass innovation" in 2014, a series of entrepreneurial waves have been set off in China. As an important base for national personnel training and scientific research, colleges and universities have strong entrepreneurial vitality. However, as a whole, entrepreneurship in colleges and universities is generally characterized by low project quality and high failure rate. Based on the data analysis principle, this paper applies the Internet crawler technology and natural language processing technology to get the key factors that affect the failure of University entrepreneurship, analyzes the causes of failure and puts forward countermeasures to improve the management of university entrepreneurship to provide decision-making basis.

Introduction

General Secretary Jin-ping XI pointed out in his report on the work of the 19th National Congress that innovation is the first driving force for development and the strategic support for building a modern economic system. As early as September 2014, Premier Ke-qiang LI put forward the word "Zhongchuang" in his speech at the Summer Davos Forum, many innovative activities emerged in China. Create a variety of pioneering services, entrepreneurship nursery, incubator, Chuang coffee and other entrepreneurial services institutions and platforms. By September 2016, there were 3,155 Zhongchuang spaces in China, showing obvious regional characteristics, diversified operation subjects and diversified operation modes. However, as a new thing, mass creative space provides many conveniences for entrepreneurs to carry out entrepreneurial activities, but because of the characteristics of long duration and wide range of entrepreneurial activities, the probability of entrepreneurial success is low. This situation is even more serious in colleges and universities. Through the data mining of project description and project comment such as Entrepreneurship Forum and post bar, this paper summarizes the painful points of entrepreneurship in colleges and universities, analyzes the causes, and puts forward countermeasures and suggestions to provide decision-making basis for Entrepreneurship Management in colleges and universities.

Scholars mainly study entrepreneurship through ecological theory model method, questionnaire analysis, expert consultation and other methods. Duchesneau used questionnaires to investigate 26 companies with similar conditions but opposite entrepreneurial outcomes, and found that if the parents of entrepreneurs have never had entrepreneurial experience, their children's entrepreneurial failure rate may increase [1]. Beate and Lars suggest that the lack of entrepreneurial experience is the most important factor contributing to entrepreneurial failure [2]. Ya-ping XIE and others studied the organic combination of failure learning, entrepreneurial action and entrepreneurial ability by means of questionnaires, and put forward the theory of "failure learning-entrepreneurial action learning with double chain learning". They believe that entrepreneurial action learning is a bridge between failure learning and entrepreneurial ability [3]. Through ecosystem theory, Song LIN put forward three mechanisms of "resource convergence, value exchange and balance adjustment" for entrepreneurship services [4]

In the survey of entrepreneurship projects, we find that entrepreneurship-related information is often presented in the form of launch platforms and Entrepreneurship Forum reviews. For this type of
unstructured text data, the traditional empirical research and data analysis methods are often difficult to work, and because of the large amount of data, involving a wide range of manual methods can not become the main means of analysis. Therefore, with the help of computer tools, using natural language processing technology for text mining has become the best way to study this problem. Text mining is a technology that extracts effective information from text data mainly through computer tools. The main characteristic of text mining is that it mainly uses natural language processing technology to deal with unstructured data.

**Keyword Analysis of Entrepreneurial Projects**

**Innovation and Handling Technology of University Entrepreneurship Cases**

Compared with the previous qualitative research methods, this research is based on the framework of "theoretical research + semantic analysis + case-based reasoning". It integrates web crawler technology, natural language processing, word segmentation and theoretical text. Methods such as offering, probability analysis and so on, found the pain points in the process of entrepreneurship, and put forward countermeasures and suggestions.

**Keyword Acquisition Process**

As shown in Figure 1, a generic crawler is designed to crawl extensively on the Internet by linking tags in view of the scattered distribution of entrepreneurial project cases on the Internet. In addition, the crawler's orientation and crawling content are filtered twice. Through the HTML structure filtering algorithm for text structure design, the web pages with high research relevance are finally obtained. At the same time, using two main analysis methods of Chinese word segmentation and lexical similarity analysis and calculation in NLP technology based on machine learning, and combining with artificial assistant analysis, we get the entrepreneurship project keyword table (Table 1).

![Figure 1. Keyword processing flow.](image)

**Table 1. Keyword table of entrepreneurial services.**

<table>
<thead>
<tr>
<th>Keyword table of entrepreneurial services</th>
<th>entrepreneurship policy</th>
<th>financing team</th>
<th>entrepreneurial environment</th>
<th>opportunity innovation</th>
<th>education strategy</th>
<th>entrepreneurship counseling</th>
<th>technology capital</th>
<th>project</th>
</tr>
</thead>
</table>

**Keyword Processing Results**

The key cases are vectorized by data vectorization method according to keyword table and corresponding weight, and table 2 is obtained.
Table 2. Case studies of entrepreneurial projects.

<table>
<thead>
<tr>
<th></th>
<th>entrepreneurship policy</th>
<th>entrepreneurial environment</th>
<th>education</th>
<th>technology</th>
<th>financing</th>
<th>...</th>
<th>capital</th>
<th>team</th>
<th>innovatio n</th>
<th>strategy</th>
<th>project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.745586</td>
<td>0.248529</td>
<td>0</td>
<td>0.596469</td>
<td>0</td>
<td>...</td>
<td>0.049706</td>
<td>0</td>
<td>0.049706</td>
<td>0.024853</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0.175131</td>
<td>0.072971</td>
<td>0</td>
<td>0.977816</td>
<td>0.029189</td>
<td>...</td>
<td>0</td>
<td>0</td>
<td>0.014594</td>
<td>0.058377</td>
<td>0.058377</td>
</tr>
<tr>
<td>3</td>
<td>0.472848</td>
<td>0.524942</td>
<td>0.02805</td>
<td>0.735319</td>
<td>0.180324</td>
<td>...</td>
<td>0.110197</td>
<td>0.016029</td>
<td>0.098176</td>
<td>0.080143</td>
<td>0.090162</td>
</tr>
<tr>
<td>4</td>
<td>0.436468</td>
<td>0.436468</td>
<td>0.053996</td>
<td>0.663701</td>
<td>0.033748</td>
<td>...</td>
<td>0.065245</td>
<td>0.00225</td>
<td>0.41397</td>
<td>0.116992</td>
<td>0.296978</td>
</tr>
<tr>
<td>5</td>
<td>0.822226</td>
<td>0.342594</td>
<td>0</td>
<td>0.179632</td>
<td>0</td>
<td>...</td>
<td>0</td>
<td>0</td>
<td>0.068519</td>
<td>0.068519</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>0.197546</td>
<td>0.444478</td>
<td>0</td>
<td>0.691411</td>
<td>0.403865</td>
<td>...</td>
<td>0</td>
<td>0</td>
<td>0.197546</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>0.464926</td>
<td>0.366871</td>
<td>0</td>
<td>0.733741</td>
<td>0.433575</td>
<td>...</td>
<td>0</td>
<td>0</td>
<td>0.033352</td>
<td>0.066704</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>0.873719</td>
<td>0.391503</td>
<td>0</td>
<td>0.262593</td>
<td>0.047744</td>
<td>...</td>
<td>0.114586</td>
<td>0.019098</td>
<td>0.014323</td>
<td>0.04297</td>
<td>0.009549</td>
</tr>
<tr>
<td>9</td>
<td>0.2133</td>
<td>0.274243</td>
<td>0</td>
<td>0.944613</td>
<td>0.030471</td>
<td>...</td>
<td>0</td>
<td>0</td>
<td>0.103695</td>
<td>0.051848</td>
<td>0.311086</td>
</tr>
<tr>
<td>10</td>
<td>0.622171</td>
<td>0.259738</td>
<td>0</td>
<td>0.777714</td>
<td>0.155543</td>
<td>...</td>
<td>0</td>
<td>0</td>
<td>0.060943</td>
<td>0.121886</td>
<td>0</td>
</tr>
</tbody>
</table>

The key words of the entrepreneurship project are expressed horizontally in the table, and the proportion of the key words in the corresponding cases is small.

Analysis of Causes of Pain in University Entrepreneurship

The data of Table 2 are drawn vertically by Excel software and the figure 2 is obtained.

Through the analysis of Figure 2, we find that entrepreneurship policy, entrepreneurship environment and other key words are evenly distributed in each case and occupy a larger proportion. On the contrary, key words such as education, financing, opportunity, team, etc. are more scattered and less important in the case. Therefore, based on data analysis theory can be drawn, education, financing, opportunities, team is the pain of entrepreneurship in colleges and universities, need to be urgently addressed.

Based on the results of data mining combined with expert consultation and literature analysis, the reasons for the failure of entrepreneurship in colleges and universities are that the form of crowdsourcing space in many colleges and universities is larger than the connotation, most of them belong to administrative behavior rather than market behavior, and lack of experienced professionals to carry out the construction and operation of crowdsourcing platform in colleges and universities. Second, the number of venture projects is not large, the level of innovation is insufficient, the quality of venture is not high, most of the students only stop at the stage of roadshow, some of the implementation of the project also because of lack of funds and management experience and other reasons to end in failure, the real development of high-profit projects are few. Third, there is insufficient guidance and training for entrepreneurship. Teachers can give some guidance and help in the early stage of project construction of entrepreneurship team, such as the choice of project, the formulation of entrepreneurship plan, etc. But at the implementation stage of the entrepreneurial project, the continuous guidance ability in the establishment of startup companies, venture financing,
market development is weak. Fourth, the professional service level of mass creation in colleges and universities is low, and there is no special management organization and staff of mass creation space. Most of the daily management of mass creation space is done by full-time teachers, and even some schools are managed by students. Due to the lack of management experience, there are many problems in daily operation. It is difficult to provide support for entrepreneurial projects.

**Countermeasures and Suggestions**

(1) Establish a comprehensive training system for entrepreneurial teams.

Entrepreneurship education is a very important part of the entrepreneurship ecosystem. It directly affects the entrepreneurs themselves. College entrepreneurship education should pay attention to the improvement of students' theoretical and practical abilities, and pay attention to teaching students in accordance with their aptitude. According to the individual evaluation of students in the public basic courses on the basis of special targeted students on some quality development courses. Specific courses include: introduction to entrepreneurship, entrepreneurs' personal qualities, entrepreneurship plans, entrepreneurship financing, enterprise bidding, entrepreneurship management, entrepreneurship risk and so on.

At the same time, apart from the study of entrepreneurship theory, the cultivation of students should also include social practice. Xiao-ping DENG once said, "Practice is the only criterion for testing truth". Entrepreneurship is a social activity with high risk. Besides having a solid theoretical knowledge of entrepreneurship, it is also necessary to master social dynamics. Universities should communicate with successful entrepreneurs regularly, invite them to come to universities to share their experiences, so as to enhance students' entrepreneurial feelings and cultivate successful psychology.

(2) Building a value exchange system based on entrepreneurial ecosystem.

Within the natural ecosystem, producers and consumers are linked together through the food chain. The flow of substances and energy throughout the system ensures that all the components of the natural ecosystem can obtain the necessary nutrients from the ecosystem. This maintenance mechanism also ensures the sustainable existence of the natural ecosystem [6]. Therefore, combining with the ecosystem theory, the university entrepreneurship ecosystem should be constructed, and the main body of the system should be allocated and combined effectively. At the same time, the resources inside and outside the university should be docked accurately to form a unique value chain. Finally, the value network within the ecosystem is formed to maintain the operation of the entire university entrepreneurial ecosystem.

**Conclusion**

"Mass entrepreneurship, mass innovation" as a trend of social development, but the development and operation of entrepreneurial projects there are many pains to be solved. By means of text mining, we analyze and study the past cases and experiences, and construct a keyword list in the field of entrepreneurial activities. And through the case vectorization transformation combined with the form of chart analysis of college entrepreneurship pain points, put forward coping strategies, to optimize the university entrepreneurship system put forward valuable suggestions.

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References


