Management Innovation of College Graduates' Innovation and Entrepreneurship Based on Computer Platform Construction of Three Spiral Structure

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ABSTRACT: The number of college graduates is increasing year by year in recent years and most of them failed because of the lack of access to information and communication. The entrepreneur, the government and the industry can be linked together effectively to improve the ability of innovation by using the three spiral innovation theory. Develop and build a computer platform for information exchange to achieve the entrepreneurial enterprise data upload, scoring, information access, communication and other functions as well as the administrator of the enterprise audit and system management and maintenance based on this using the TDD model. This platform was based on a certain area such as incubator and science parks. Centralized management and distributed backup in storage design, and browser design was used. The whole application software system adopted the hierarchical design, which fully considers the expansibility and maintainability of the system. It is set up to a business incubator in the internal network in order to test the whole system. Alpha, Beta and load capacity test were carried out respectively. It can be seen from the test that the whole system runs normally, and all the functions can be realized. The construction of computer information platform based on the three spiral innovation theory had a positive effect on the similar enterprise management platform.

INTRODUCTION

With the continuous improvement of the quality of education in our country in recent years, the number of college graduates has increased year by year, which directly led to the pressure of employment. Many college graduates find it difficult to find a suitable job. On the other hand, with the continuous development of social economy, college graduates also want to start their own business to meet their own value. However, independent business was difficult due to the lack of sufficient business management experience and the necessary capital investment and the majority of entrepreneurs in three years ended in failure [1]. Further analysis shows that an important reason for the failure of entrepreneurs, which was because of the lack of access to information. It was difficult to timely understanding of government policies and market changes, and the lack of other business communication channels.

This made them in the process of exploring the way forward and did not fully enjoy the preferential policies of the government to support the development of products is difficult to get a better market, and ultimately led to the failure of enterprises. How to make full use of the government, industry, and venture enterprises to link together effectively, to give full play to the role of each other, become the most important problem to be solved in the innovation and Entrepreneurship of College graduates.

The three helix innovation theory is the organic combination of University, government and industry to form an interaction cycle. Interact with each other in this cycle, coordinate with each other and give full play to the ability of innovation. Entrepreneurs need a greater demand for information in the process of innovation and entrepreneurship. Whether it is government policy or the industry market demand, it is conducive to the entrepreneurs in a timely manner to carry out their own management measures to improve the survival ability [2]. Construction of computer platform for college graduates' innovation and Entrepreneurship based on three spiral structure can realize the information of the enterprise to log in.
Use this platform to carry on the information exchange and carry on the score to the enterprise. We can realize the centralized management of all enterprise information in a region by using this platform. The entrepreneurial companies can get information from government policy, investment demand, market changes and so on, which is the transformation of entrepreneurial management. It can improve the success of entrepreneurs, strengthen the communication between entrepreneurs and avoid the waste of resources, and has a positive significance for the innovation and Entrepreneurship of college graduates through this platform.

2 College graduates innovation and entrepreneurship and three spiral innovation theory

2.1 Innovation and Entrepreneurship of college graduates

Entrepreneurship is a process of creating value. It needs to pay great efforts to contribute to the creation of the necessary time in the creation of the process. Entrepreneurs can get the profit and the realization of self-value through the process of entrepreneurship [3]. Entrepreneurs need to assume a certain financial, social, technical and other aspects of the risk for entrepreneurs, which also makes the process of entrepreneurship is often full of unknown and challenges, and even often fails. Even so, the number of college graduates start a business more and more our country in recent years. This is mainly due to two reasons: on the one hand, the number of college graduates in China is increasing year by year. On the other hand, due to the pressure of job competition [4]. Take 2006 -2015 10 years as an example, the number of college graduates was 7 million 490 thousand in 2015. Compare to 4 million 130 thousand in 2006, which increases of 81.4%. The number of graduates each year is shown in figure 1. It can be seen from Figure 1 that the number of college graduates in China showed an increasing trend, which is the most direct cause of the increase in the number of college graduates in China.

![Fig.1 Statistics on the number of college graduates in China (2006 - 2015)](image1)

We can see to further analyze the statistics of the number of Chinese college students in recent years that the number of college graduates in our country rises from the initial 73 thousand to 478 thousand people in 2009 -2014 and the number of graduates in the proportion rose from 1.2% to 6.6% [5]. The number and proportion of Chinese college graduates starting from 2009 to 2014 are shown in table 1. We can see from the trend chart in Figure 2 that the number of college graduates increased year by year. The upward trend is obvious after 2011 and there is a trend in the future for some time to continue to rise.

<table>
<thead>
<tr>
<th>Time (year)</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of entrepreneurs (10 thousand people)</td>
<td>7.3</td>
<td>9.5</td>
<td>10.6</td>
<td>19.7</td>
<td>35.9</td>
<td>47.8</td>
</tr>
<tr>
<td>Proportion (%)</td>
<td>1.2%</td>
<td>1.5%</td>
<td>1.6%</td>
<td>2.9%</td>
<td>5.1%</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

![Table.1 The number and proportion of Chinese college graduates starting from 2009 to 2014](image2)

The university graduates start a business and use their existing knowledge, resources, ability, etc., in the existing economic environment to grasp the entrepreneurial opportunities to achieve their own ability and resource control ability, and ultimately create a certain social and economic value in order to be able to better realize the need of self-development [6]. Although the number of college students in our country is increasing year by year, the number is relatively small and it is still the university graduates starts the business as the main. Entrepreneurship can be divided into opportunity and survival type entrepreneurship from different purposes. The means and purpose of the two are different. One is to make a living means and the other is because of their preferences and the environment caused [7]. Most of the graduates of the university graduates in China belong to the transfer of human resources. Relative to the technology transfer and direct investment, college graduates in the beginning of the venture is often the...
lack of sufficient technical innovation and venture capital, which is difficult to venture. And the university graduates start a business including the government, industry and the three main bodies of the support and mutual influence. So we can use the three spiral structure to conduct in-depth study in the analysis [8].

Although it is very difficult for college graduates to start a business, it also has a very positive significance. The university graduates start a business not only effectively solve their own employment problems, and can establish a new employment channels to provide employment channels for more college graduates in today's increasingly severe social and economic situation [9]. Whether it attracts college graduates or other members of the community, it can solve the problem of employment to a certain extent. Compared with the ordinary entrepreneurs, college graduates have some basic knowledge and professional skills and can more easily enter the high-tech industries and creative industries, which is conducive to strengthening the social service function to meet the needs of the society [10]. However, there are also some deficiencies for college graduates. Most graduates faced with failure in the first half of the graduates, because more is a kind of impulse enthusiasm in the beginning with the lack of a certain self-starting business and funding sources. So it still very few continue to start after graduation three years. College graduates lack of sufficient experience in production management with no psychological preparation for the difficulties encountered in the entrepreneurial process and dilemma because just graduated from college. So they were afraid to take risks and frustration that will become deserted and despondent led directly to a variety of reasons with the low success rate of college graduates [11]. At the beginning of the venture, college graduates lack of capital and network resources and can’t be through financial institutions to finance the loan. This made the entrepreneurial path difficult and difficult to maintain. If the short time did not create the use and market products and get a certain income, then the entrepreneurial path was over only [12].

2.2 Three Helix Innovation Theories

Three spiral innovation theories were proposed as a new paradigm of innovation theory, which covers the three aspects of University, industry and government cooperation and interaction in the process of innovation in mid 1990s [13]. There are three common patterns of innovation, see figure 3. (a), (b), (c) respectively were state intervention mode, laissez-faire mode and three spiral patterns. Among them, the government has a dominant role in the market, industry, universities and so on, which is difficult to fully carry out innovation activities under the mode of state intervention [14]. There is a very clear boundary between the various subjects under the free economic system. Although their own independent decision-making had a considerable authority, the government is difficult to play its own role in guiding the development of innovation which was difficult to quickly develop. Three spiral structure points out the interaction between University, government and enterprises, and enriches the system of innovation theory in diagram (C) [15].

Three the innovation model is mainly to strengthen the cooperation between universities, industries and governments to give full play to the role of mutual knowledge and innovation in the role of social organization system in the core foundation. There are various problems of structure and mechanism because of different countries or regions. So the key of innovation is how to make up the gap in the mechanism of the three spiral structure and realize the dynamic balance (see Figure 4) [16]. The effect of any one subject to other subject can’t be too strong or too weak under this structure so as to give full play to the interaction between the three. Take the role of government as an example, too strong will cause too much intervention and too weak will make the other subjects too laissez faire [17]. There are great differences in economic development, political system, and cultural tradition and so on in different countries of the world in different regions of the development stage. So this kind of government - University - industry three spiral structure and the degree of network of the difference is very big, which needs to face the greater difficulties. At present, it is true that more and more developed countries are applied in the three spiral model, and the establishment of social form is conducive to the three helix interaction. High and new technology is more dependent on the introduction from abroad or to make a copy of it because the independent innovation ability is relatively weak in developing countries. This leads to the three main obstacles in the three spiral structure directly, which is a big obstacle and increases the difficulty of innovation [18].
The three factors of the innovation system of University, industry and the dynamic balance of the government is not separated from each other, which can give full play to the role of innovation in the system from a macro level point of view. The three helix innovation structure can be used to realize innovation, knowledge production, application and industrialization and commercialization, which is the common result of the interaction of the three. As the most important knowledge space, it is able to gather the advantages of knowledge innovation in the country or region so as to avoid duplication of investment and construction in some areas. Only a variety of innovative forces of mutual coordination and mutual lack of power can solve the existing problems effectively, and make different organizations and innovative activities organized together in the face of more and more complex social problems [19]. It is also the case that universities play a role in the regional innovation drive. The role of the government is to stimulate the role of innovation. Each enterprise, industry and so on in the field of industry is the cooperation of regional innovation. As a developing country, China has experienced the rapid development of national economy after the reform and opening up, but the innovation ability and the sense of innovation and the developed countries still have a big gap. How to give full play to the government, University and industry innovation ability and mutual cooperation has become the main problem that needs to be solved. The government promotes technological innovation vigorously. Universities are cultivating innovative talents and technological innovation actively, industrial development into the high-tech industry, and improve the ability to innovate constantly [20]. The three spiral innovation structure can fully play out and make the three different roles of organic integration in this case. As college graduates start their business, they can’t be separated from the government's guidance, policy support, but also needs the interaction between industry and school teaching. Improve the entrepreneurial ability and skills of college graduates through the corresponding professional knowledge of the school to teach and entrepreneurship professional training, which is more likely to succeed and to face difficulties.

3 College graduates start business management based on computer platform

3.1 Needs analysis

University graduates start their own business has become a trend. A person or a team gather together to choose a business to many college graduates after graduation because of the pressure to look for work and their own love of entrepreneurship. But most entrepreneurs finally chose to retreat after the initial enthusiasm and some difficulties in the face of setbacks and failures. So we need to give full play to the main role of the University and the government. They should guide and support the entrepreneurship of College graduates. As the information age, the biggest impact of the business is the exchange of information and communication and use platform to get information and to use. The management of the three spiral structure of college graduates based on computer platform helps to exchange information with each other in order to be able to carry out the management of innovation and Entrepreneurship of college graduates. Improve management efficiency through this information platform and the entrepreneur's decision-making and management has a very important role. As college graduates, it is more important to get the information to get the opportunity to develop, get profit, and finally get the success of the venture. It shows the process of enterprise starting with the time in figure 5 and making full use of the information exchange can increase the opportunity of the enterprise.
Entrepreneurs can use the network to understand the relevant information and access to online business services based on the computer platform, and the traditional management model has a different change. This platform is associated with business incubators, overall release of relevant information to achieve the sharing of information. At the same time, provide the service flow of venture project creation, application and approval, which can make the necessary online communication. The administrator can manage and maintain the system data through the login platform. In particular, the platform mainly has the following several functional requirements: (1) enterprise entrepreneurs conduct enterprise registration through the platform and submit the application materials. It can be modified when the approval is not approved and then complete the submission. (2) Government departments can log on to the platform to publish relevant policies and regulations to provide the necessary policy guidance. Registered successful enterprises update their business status continuously. The enterprise carries out the necessary grading and conducts grade classification according to the score. (4) Entrepreneurs understand the country's policies and laws through the platform and can carry on the exchange between the entrepreneur enterprise, and the financial institution to carry on the communication. (5) Platform management carries out the daily management and maintenance of the platform by logging on the platform. (6) Other large enterprises or investors can understand the situation of entrepreneurial enterprises and conduct a certain financial support.

Therefore, each individual function module should be decomposed to be completed and displayed separately in the process of platform construction and system development because of a result of more functional modules and involving a wide range, which prevents the re design of the system due to the deviation of the customer's requirement.

3.2 Platform system architecture design

Use TDD model for development and conduct the modular according to the functional requirements. Use the relatively mature information management system model in the process of development with reference to the existing module can reduce the workload greatly. On the whole, the system architecture design is mainly the management of the enterprise management and platform management personnel of these two aspects. Enterprise management module achieves the registration and cancellation of enterprises mainly and includes the visitors and other registered personnel in addition to entrepreneurs. Take the new enterprise registration as an example, the entrepreneurial enterprises responsible person unified registration account, and in which you want to fill in their own school of graduation, profession, age and other basic information, complete personal information to fill in the information after the beginning of the relevant information in the enterprise. All the information is completed to submit applications pending for approval system can get a notice, so it became one of the members of the service platform and can participate in the communication of information and communication with other enterprises. If the information is not approved by the audit, you need to change their own business entrepreneurs in accordance with the views of the application to modify the information and complete the amendments to re submit the application.
The administrator can view the contents of the enterprise application information through the management of the enterprise after entering the system according to their own rights. Understand the enterprise and the entrepreneur's own information through a detailed view of enterprise information. The information content to meet all the requirements and the authenticity of its application can be unified after checking the contents of the information. If the content of the review does not meet the requirements of the audit, it is required to reject its application and explain the reasons for the refusal. It is shown in figure 8.

When entrepreneurs fail and difficult to continue, companies need to be canceled and the cancellation of the enterprise needs to be removed from the existing enterprise. However, the enterprise data also need to be stored in order to view when needed. But other people are not allowed to view without permission.

3.3 System implementation

Because the platform is based on a certain region of college graduates innovation and entrepreneurship management, such as in the incubator or a science and Technology Park, which belongs a small project, centralized management and decentralized backup storage design, which not only to avoid the complexity of the development of the system, but also to protect data security. On the other hand, so ensure adequate redundancy structure in the choice of hardware to in order to ensure that the whole day running and service. The server chooses to take the database and the Web server to separate the deployment. The stored documents have HTML script, JavaScript images and other data in addition to the program files because the browser design method. Each static file access will be initialized with a TCP according to the HTTP protocol. It needs to consider the association with the original Web server when the storage architecture, which can reduce capital investment on this basis greatly and data backup at the same time to prevent the Web server attack and lost data. Install the necessary firewall software on the Web server and the database and the allocation of a certain access strategy to increase safety when the system is threatened by the first time in order to ensure the safety of the system. When the server is attacked, be able to alert the management staff at the first time so that it can be processed in a timely manner. The whole application software system is divided into four layers according to the presentation layer, the control layer, the business logic layer and the persistence layer, which takes into account the expansibility and maintainability of the system.

Carry out the enterprise's score management through the integration function in order to facilitate the management of the enterprise as well as other enterprises or investors to have a more clear understanding of the enterprise. These integration management contains the same stage of the enterprise marketing report and the development trend, whether the case of illegal or illegal, or make outstanding achievements, etc. Score is a comprehensive process and evaluate the development, efficiency, credit, potential and a series of indicators from an objective point of view through the evaluation. Use the integral to sort and arranged in order according to the score level. The more easily seen and browse information before the more, which is conducive to the enterprise to get more funding and technical inputs. As a very important part of the whole system design, it is an objective assessment of the whole operation of the
enterprise, so it is more objective and can be completed by the scoring system directly. Take the overall quality of the entrepreneurial team, core technology competitiveness and market prospects as an example and the index layer is detailed in table 2.

<table>
<thead>
<tr>
<th>Factor layer</th>
<th>Index layer</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>The comprehensive quality of the entrepreneurial team (x1)</td>
<td>Graduates' leadership skills</td>
<td>x11</td>
</tr>
<tr>
<td></td>
<td>Integrity of entrepreneurs</td>
<td>x12</td>
</tr>
<tr>
<td></td>
<td>Team member's cohesion</td>
<td>x13</td>
</tr>
<tr>
<td></td>
<td>Entrepreneurial knowledge and industry experience of graduates</td>
<td>x14</td>
</tr>
<tr>
<td></td>
<td>Professional knowledge and experience of team members</td>
<td>x15</td>
</tr>
<tr>
<td></td>
<td>Team members' sense of innovation and ability</td>
<td>x16</td>
</tr>
<tr>
<td></td>
<td>Technical gold content</td>
<td>x21</td>
</tr>
<tr>
<td>Core technology competence (x2)</td>
<td>Non replaceable Technology</td>
<td>x22</td>
</tr>
<tr>
<td></td>
<td>Technology research and development cycle</td>
<td>x23</td>
</tr>
<tr>
<td></td>
<td>Technology maturity</td>
<td>x24</td>
</tr>
<tr>
<td></td>
<td>Technology availability</td>
<td>x25</td>
</tr>
<tr>
<td></td>
<td>Market size and consumption forecast</td>
<td>x31</td>
</tr>
<tr>
<td>Market outlook (x3)</td>
<td>Existing market competition situation</td>
<td>x32</td>
</tr>
<tr>
<td></td>
<td>Market entry barriers</td>
<td>x33</td>
</tr>
<tr>
<td></td>
<td>The stage of development of the industry</td>
<td>x34</td>
</tr>
<tr>
<td></td>
<td>Policy guidance to the industry</td>
<td>x35</td>
</tr>
</tbody>
</table>

4. Application Testing

Set up to a business incubator internal network through the actual application of the deployment in order to test the whole system. The Web server and the database server are used to separate and deploy the system in order to improve the load capacity of the whole system. The test plan uses the software to test and carry on the contrast analysis through the actual output and the expected output. Software testing can ensure the stability and reliability of the software. Thus use software testing to achieve a better effect because this takes the TDD development model. The software is tested by Alpha and Beta before the whole system is deployed and put into use. Test the account which was called test account through the number of entrepreneurs to test. Login the system platform respectively with the administrator status and enterprise identity. The platform is detailed in Figure 9 and figure 10. Continue to the system performance and stress testing after the Beta test is completed. Continue to carry out load capacity test in order to further consider the possible emergence of the unexpected situation.

Test chart is shown in Figure 11 after the test is completed. It can be seen from Figure 11 that when the number of concurrent connections is more than 100, the whole system will be increased significantly, but still in the range. It can be seen in the current situation that even if the system is in a busy stage, the number of concurrent connections will not exceed 200. Therefore, the existing load capacity
can meet the normal access requirements. The rest of the unit test is also successfully completed and the entire system is working properly, which can be put into normal use.

5. Conclusions

Three the innovation theory of spiral structure is helpful to link the entrepreneur, the government and the industry together. Realize enterprise innovation and entrepreneurship through the interaction. Establish efficient and innovative enterprise information platform on the basis of this. The platform used TDD mode, the system architecture design in two aspects of business and management personnel, and meet the functions of enterprise information upload, access, exchange and management audit and management system respectively. Platform adopted database and Web server to separate the deployment of the way as well as the browser's design to ensure that the data security and the normal operation of the system based on a regional internal network. The test results can be seen through the number of entrepreneurs to test the account that when the number of concurrent connections is more than 100, the whole system time increases, but it is still in the range of tolerance, which shows that the load capacity of the system can meet the normal access requirements, and other unit tests are completed successfully, and the whole system can be put into normal use. However, it also needs to be used and will be used and the existing problems to be modified and improved due to the platform system has not yet put into practical use.

6. REFERENCES