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An Empirical Study on the Quality of Entrepreneurship Education based on Performance Excellence Management

Yonghui Cao

Henan University of Economics and Law, CHINA
Henan Institute of Science and Technology, CHINA
China Institute for Reform and Development, CHINA

He Jiang

Zhejiang University, CHINA

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ABSTRACT

The performance excellence model provides a framework for the implementation of total quality management in Colleges and universities, based on the practice of entrepreneurship education in China's colleges and universities, this paper uses the excellent performance management model to conduct an empirical analysis of the quality of entrepreneurship education, and gets the following conclusions: First, the driving wheel of entrepreneurship education consists of three dimensions: the leadership support of entrepreneurship education, entrepreneurship education strategy and market orientation, the driven wheel of entrepreneurship education includes entrepreneurship education resource allocation, the process of entrepreneurship education, the measurement and improvement of entrepreneurship education. Second, in the driving wheel, the leadership support of entrepreneurship education, entrepreneurship education market orientation have a positive effect on soft quality and hard quality of entrepreneurship education; the entrepreneurship education strategy only has a positive effect on the soft quality of entrepreneurship education, but on the hard quality is not verified. Third, in the driven wheel, entrepreneurship education resource allocation and the process have a positive effect on soft quality and hard quality of entrepreneurship education; the measurement and improvement of entrepreneurship education has positive effect on the hard quality of entrepreneurship education, but to the soft quality has not been verified.

Keywords: performance excellence management, entrepreneurship education, education quality

INTRODUCTION

With the continuous increase in China economic transition period, more entrepreneurs are needed devote themselves to the entrepreneurship and create the classic of "Mak-er" era. Entrepreneurship is not only an important means to ease the employment pressure of university/college graduate and promote employment of university/college graduate, but also plays an important role in promoting economic innovation and development (Peterman, N. E., & Kennedy, J., 2003). With the coming of knowledge economy era based on knowledge,

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Correspondence: He Jiang & Yonghui Cao, *Doctor, School of Management, Zhejiang University, Hangzhou, 310058, China & Doctor, School of E-commerce and Logistics Management, Henan University of Economics and Law, Zhengzhou, 450046, China; School of Economics & Management, Henan Institute of Science and Technology, Xinxiang, 453003, China; China Institute for Reform and Development, Haikou; 570312, China*

✉ lurky2000@126.com & caoyonghui2000@126.com

State of the literature

- With the government's vigorous support and the positive promotion of colleges and universities, entrepreneurship education in Colleges and universities has achieved rapid development, but in general, it has not yet achieved the desired results, and it is in an awkward position in the higher education system.
- In theoretical research, the training mechanism, management model and quality guarantee of entrepreneurship education should be further explored. In practice, the entrepreneurship education in Colleges and universities is still in a low level. It is far from meeting the needs of actual development.
- The domestic and foreign research on entrepreneurship education in colleges and universities mainly focus on the concept, mode, problems and Countermeasures of entrepreneurship education. There is relatively little research on the quality of entrepreneurship education in colleges and Universities. The research on the entrepreneurship education quality based on the performance excellent management is missing

Contribution of this paper to the literature

- The performance excellence model provides a framework for the implementation of a total quality management system for colleges and universities. Based on the practice of entrepreneurship education in Colleges and universities in China, this paper uses the performance excellent management model to analyze the entrepreneurship education quality, and clarifies the internal mechanism of the entrepreneurship education quality.
- Colleges and universities can explore the performance excellence model as the starting point of quality construction and find an effective management model. Through the application of the model, the management model and evaluation model have achieved some practical results.
- Universities continue to pursue the remarkable development of entrepreneurship education and fulfill the social responsibility of the organization, to meet the teachers, students, parents and stakeholders demands. Colleges and universities achieve win-win cooperation and common development within and outside the organization, and seek improvement strategies in the process and the future direction in the results

information and technology, and the continuous development of entrepreneurial economy, it has become a global consensus to promote entrepreneurship education in university/college (Kuratko, D. F., 2005).

China's entrepreneurship education started late in university/college, China has not begun to focus on the theory of entrepreneurship education until the early 1990s. At present, with the strong support of the government and the positive promotion of colleges and universities, entrepreneurship Education in Colleges and universities has achieved rapid development, but in general, which has not yet achieved the desired results, and still in an awkward position in the higher education system. In theoretical research, the training mechanism, management model and quality assurance of entrepreneurship education should be further explored (Bae, T. J., Qian, S., Miao, C., & Fiet, J. O., 2014). In practice, the entrepreneurship education in Colleges and universities is still in a low level, far from meeting the needs of the actual development. How to promote the quality of entrepreneurship education in Colleges and universities, and make entrepreneurship education realize its function and value truly, becomes a subject which is worth discussing and researching by the researchers (Martin, B. C., McNally, J. J., & Kay, M. J., 2013).

To sum up, at present, the research on entrepreneurship education in Colleges and universities focuses on the concept, model, problems and countermeasures of entrepreneurship education (Piperopoulos, P., & Dimov, D., 2015), there is relatively little research on the quality of entrepreneurship education in Colleges and universities (Rideout, E. C., & Gray, D. O., 2013; Fayolle, A., & Gailly, B., 2015), and the research on the quality of entrepreneurship education based on performance excellence is a gap. Therefore, this paper will use the latest management theory, that is, excellent performance management model to study the related problems of entrepreneurship education management in Colleges and universities, so as to provide reference for the theory and practice of entrepreneurship education in Colleges and universities.

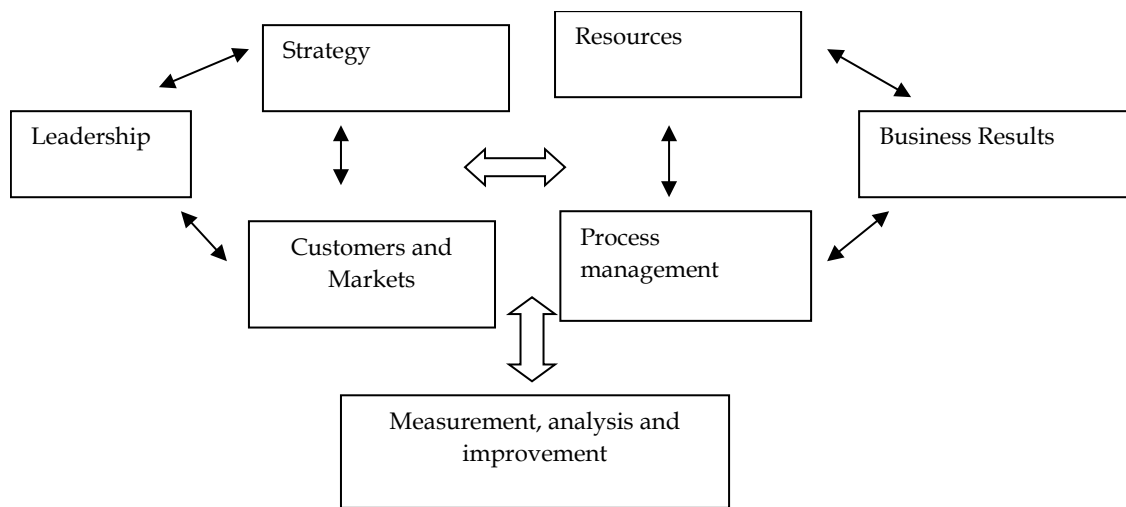


Figure 1. The evaluation framework of Performance Excellence Model

LITERATURES REVIEWING

Performance Excellence Management

Performance Excellence Model (PEM) is a widely accepted international organization for composite performance management standards, which is derived from the Malcolm Baldrige National Quality Award (Boulter, L., Bendell, T., & Dahlgaard, J., 2013). The management mode of benchmarking and method → expansion → learn → integration which can promote the communication and sharing between different organizations, continuously improve management maturity and operation performance, and effectively enhance the core competitiveness of the organization (Tomažević, N., Tekavčić, M., & Peljhan, D., 2017).

The Performance Excellence Model is an implementation framework of total quality management (Pantouvakis, A., & Karakasnaki, M., 2017), which is standardized, organized and concrete in total quality management practice, and abandons the view that only pays attention to the final product quality, according to the logic of “quality of operation → quality of work → quality of process → quality of products”, the focus of quality management will be on the quality of the business. Performance Excellence has become the abbreviation for quality standards, excellence performance standards and performance excellence models, that is a kind of “comprehensive performance management method, make the organization and individual progress and development, improve the organization’s overall performance and the ability to create value for customers and other interested parties, and make the organization success”. It is shown in **Figure 1**. Then, the United States gradually extended the prize from the enterprise to the medical, health and education fields, and put forward the “Education Criteria for Performance Excellence (ECPE)” for the education field.

The Quality of Entrepreneurship Education based on Performance Excellence Model

The Performance Excellence Model is the effective management mode that leads the enterprise to pursue excellence and cultivate the international competitive ability and sustainable management ability, which reflects the advanced concepts and methods of modern management in the world today and is the experience summary of many successful enterprises. In the near future, higher education is a critical period for consolidating achievements, deepening reform, improving quality and sustainable development. It is an urgent problem for higher education to implement quality engineering and establish quality assurance system. How to carry out quality construction, what system to guarantee the quality, and how to carry out the quality evaluation is the core of the implementation of quality engineering, and it is a realistic problem in front of higher education. Colleges and universities can explore the effective performance model as the starting point of quality construction and find an effective

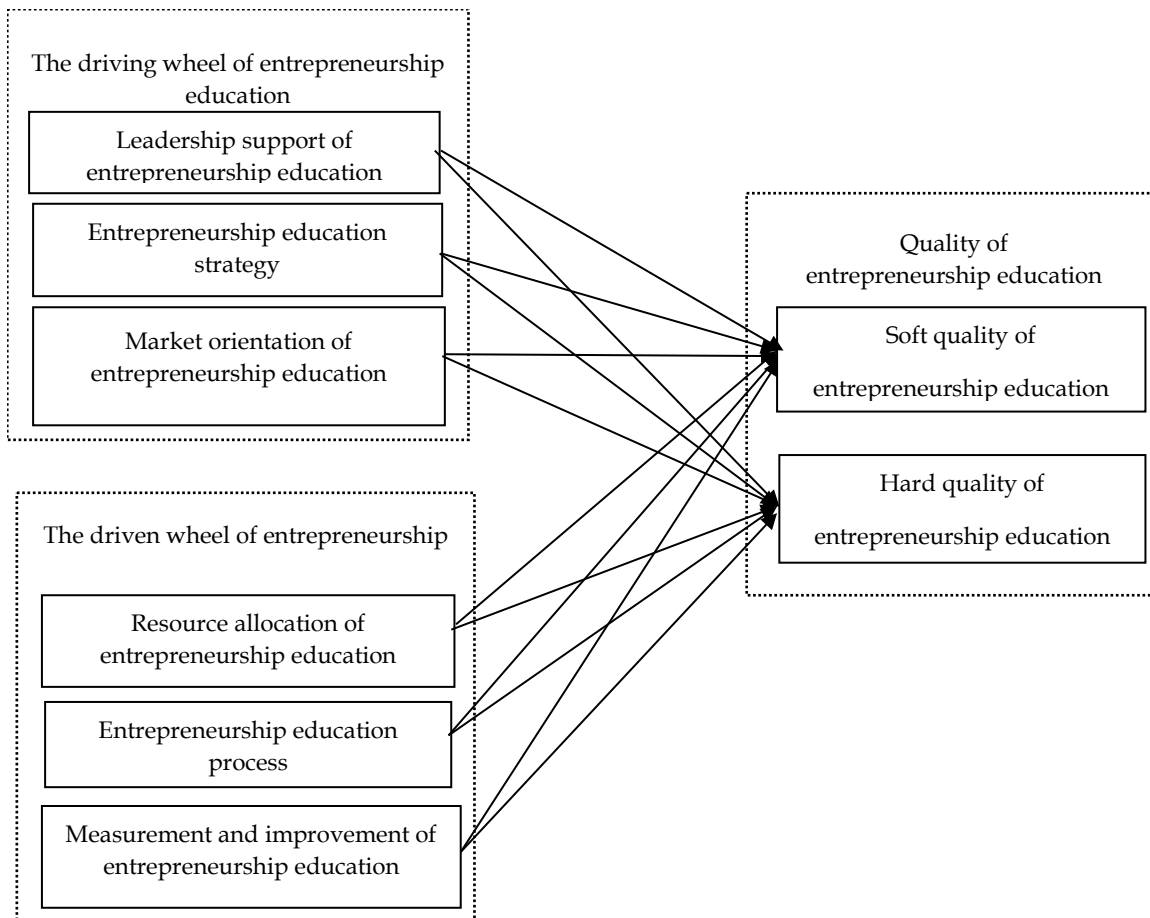


Figure 2. Research Framework

management model. Through the application of the model, the management model and evaluation model have achieved some practical results (Wong, W. P., Tseng, M. L., & Tan, K. H., 2014).

However, there has not yet been the implementation of Performance Excellence Model in higher education institutions in China, and only some schools have implemented ISO9001 quality management system. With the development of higher education especially the development of the entrepreneurship education, entrepreneurial quality become vitality, also need to evaluate the school entrepreneurship education quality from the leadership, strategy, customers and markets, resources, process management, measurement analysis and improvement etc.. Entrepreneurship education is a complex system, and improving the quality of entrepreneurship education is a complex matter. Then, there must be a systematic thinking about the quality of entrepreneurship education in Colleges and universities. The performance excellence model for colleges and universities provide a framework for implementation of a comprehensive quality management system, and a framework of requirements, and not prescriptive, universities can be adjusted according to the specific situation and then innovation. According to the frame chart of the performance excellent model, the relevant parts of the university can be referenced and implemented to ensure the excellent management results, that is to say, the quality of management is the basic source of the quality of products or services.

Based on the above analysis, this paper takes the performance excellent management as the theoretical basis, in-depth study of entrepreneurship education quality and related issues, In order to clarify the mechanism of action and promote the related theoretical development of entrepreneurship education, the specific research framework is shown in **Figure 2**.

Research Hypothesis

How to introduce the excellent performance model into the field of entrepreneurship education in Colleges and universities? First of all, the leaders need to support the entrepreneurship education, including hardware support and software support, as well as a good atmosphere for entrepreneurship created by leaders (Beard, D. F., & Humphrey, R. L., 2014; Fry, L. W., Latham, J. R., Clinebell, S. K., & Krahnke, K., 2017)). In addition, customers in the field of entrepreneurship education refer to college students, while the standard of evaluation of entrepreneurship education quality is only to serve each university student growth and entrepreneurship development. This kind quality view based on customer requires us to pay attention to the growth of each student and teacher in the field of entrepreneurship education, to create a good internal and external entrepreneurial environment for the students, to achieve effective entrepreneurial activities. In the process of achieving excellence performance management, the top leaders need to think about the current situation of organizational and the future development of entrepreneurship education, and actively planning to achieve the planning objectives, organizations need to complete the task of entrepreneurship education (Suarez, E., Calvo-Mora, A., & Roldán, J. L., 2016). Leaders should correctly grasp the current situation of the development of the school and the future direction of development, think about exploring the appropriate path of entrepreneurship education development, and implement relevant strategies, and constantly push forward the organization development. As middle school administrators, teachers, service personnel and so on, they all need to provide entrepreneurial services for the common vision of the school. They serve the development and growth of the students by serving the students' Entrepreneurship and growth, and realize their personal value. Finally, they promote the value of the organization (Zhang, Y., Duysters, G., & Cloudt, M., 2014).

In the process of organizational development, through measurement, analysis and knowledge management, to correct the direction for the realization of entrepreneurial goals, and escort the development of the organization to the successful completion of the planning objectives. Through the continuous pursuit of the excellent development of entrepreneurship education in Colleges and universities, which can fulfill the social responsibility of organizations, and to meet the demands of teachers, students, parents and stakeholders, achieve win-win cooperation and common development within and outside the organization, seek improvement strategies in the process, and seek the future direction in the results. By strengthening the awareness of organizational risk prevention, the organization's agile response is achieved. Through the system of vision, and constantly enhance the organization, entrepreneurship, development and quality of entrepreneurship (Huber, L. R., Sloof, R., & Van Praag, M., 2014).

Therefore, based on the above analysis, the following hypotheses are proposed:

- Hypothesis 1a:** in the driving wheel of entrepreneurship education, the leadership support has a positive influence on the soft quality of entrepreneurship education.
- Hypothesis 1b:** in the driving wheel of entrepreneurship education, the leadership support has a positive influence on the hard quality of entrepreneurship education.
- Hypothesis 2a:** in the driving wheel of entrepreneurship education, the entrepreneurship education strategy has a positive influence on the soft quality of entrepreneurship education.
- Hypothesis 2b:** in the driving wheel of entrepreneurship education, the entrepreneurship education strategy has a positive influence on the hard quality of entrepreneurship education.
- Hypothesis 3a:** in the driving wheel of entrepreneurship education, the market orientation of entrepreneurship education has a positive influence on the soft quality of entrepreneurship education.
- Hypothesis 3b:** in the driving wheel of entrepreneurship education, the market orientation of entrepreneurship education has a positive influence on the hard quality of entrepreneurship education.

- Hypothesis 4a:** in the driven wheel of entrepreneurship education, the resource allocation of entrepreneurship education has a positive influence on the soft quality of entrepreneurship education.
- Hypothesis 4b:** in the driven wheel of entrepreneurship education, the resource allocation of entrepreneurship education has a positive influence on the hard quality of entrepreneurship education.
- Hypothesis 5a:** in the driven wheel of entrepreneurship education, the entrepreneurship education process has a positive influence on the soft quality of entrepreneurship education.
- Hypothesis 5b:** in the driven wheel of entrepreneurship education, the entrepreneurship education process has a positive influence on the hard quality of entrepreneurship education.
- Hypothesis 6a:** in the driven wheel of entrepreneurship education, the measurement and improvement of entrepreneurship education has a positive influence on the soft quality of entrepreneurship education.
- Hypothesis 6b:** in the driven wheel of entrepreneurship education, the measurement and improvement of entrepreneurship education has a positive influence on the hard quality of entrepreneurship education.

EVALUATED MEASUREMENTS

Methods

We designed a preliminary questionnaire based on literature research and small-scale interviews with college students who want to entrepreneurship. In order to check whether the item is accurate, meaning clear wording, a small range of sample test, according to test results of the questionnaire have been revised many times, and ultimately determine the questionnaire items, and then design variables and the corresponding questionnaire items based on the definition and correlation of structural variables in structural models,

In order to verify the conceptual model and hypothesis proposed in this paper, we conducted a survey through questionnaire survey, e-mail etc., and the subjects of the questionnaires are mainly college/university students who started the entrepreneurship education. The questionnaire with 5 subscales, asked respondents to choose according to their own feelings to the digital table for questions 1-5 statements to agree or disagree. 1 means completely disagree; 2 means disagreement; 3 means neutrality; 4 means agreement; 5 means complete agreement. A total of 300 questionnaires are sent to 80 universities and 226 are collected. The rate of recovery is 75.33%, among which 199 were valid, and the effective rate was 88.05%.

Data Analysis and Results

Factor analysis

According to the questionnaire and the model given above, the questionnaire questions are divided into three dimensions: the driving wheel of entrepreneurship education, the driven wheel of entrepreneurship education, the quality of entrepreneurship education. The factor analysis is carried out from three dimensions, and the factors are extracted from the variables of the questionnaire.

- ① Factor extraction and analysis of the driving wheel of entrepreneurship education

First, the KMO and Bartlett sphere tests are performed in [Table 1](#).

Table 1. Results of KMO measure and Bartlett sphere test

KMO measure		0.816
Bartlett Bartlett sphere test	Approx.Chi-Square	3112.37
	Sig	0.000

The KMO measure is used to test the adequacy of the sampling. The KMO statistic is between 0 and 1, and the greater the value is, the better the factor analysis. $KMO=0.816$, which shows the factor analysis is good results. The Bartlett sphere test is used to test the suitability of the correlation matrix, and the Bartlett sphere test of the investigated data is very small and $P=0.001$, so the survey data is well suited for factor analysis.

Secondly, the principal component method is adopted to extract the factors.

The method of factor extraction uses principal component analysis method, and the data of the driving wheel of entrepreneurship education is decomposed by the total variance in factor analysis. There are three factors with eigenvalues greater than 1 which are extracted, and the cumulative contribution rate to the total variance is 81.8%, which means the 3 factors can include most of the total amount of the problem variable information. These three factors are named leadership support of entrepreneurship education, entrepreneurship education strategy and the market orientation of entrepreneurship education.

② Factor extraction and analysis of the driven wheel of entrepreneurship education

Similarly, the KMO and Bartlett sphere tests are carried out for the data relating to the driven wheel of the entrepreneurship education, and $KMO=0.822$ shows that the factor analysis is good. At the same time, the Bartlett sphere test has very small, $P=0.000$, so the survey data is well suited for factor analysis. And through the principal component method for factor extraction, "the driven wheel of entrepreneurship education" dimension of the data through factor analysis of the total variance decomposition. The three factors whose eigenvalues are greater than 1 are extracted, and the cumulative contribution to the total variance is 82.5%, that is, the three factors can include most of the total amount of information about the variable. The three factors are named the resource allocation of entrepreneurship education, entrepreneurship education process and the measurement and improvement of entrepreneurship education.

③ Factor extraction and analysis of the quality of entrepreneurship education

In the same way, the factor extraction of the quality of entrepreneurship education is carried out, and the data meets the requirements of factor extraction, so two factors are extracted which named the soft quality and hard quality of entrepreneurship education.

Prevention and test of common methods variation

Common method variance is artificial covariation between the predictor variables and the criterion variable caused by the same data source or respondents in the same measurement environment or project context, this man-made covariation will mislead the research results and research conclusions. This study mainly takes the following three measures to prevent the common method variance: First, try to avoid research purposes and variable names on the questionnaire; Second, in the research range of independent variables and dependent variables, the random arrangement of measure terms, avoid the respondents to the measurement items that balance and item order effect; Third, in the course of the questionnaire survey, the researcher stressed the academic meaning of the sample data and the confidentiality of personal information.

In this study, the Harman single factor test is used to determine whether there is a serious variation in the common method. The basic hypothesis of the test technique is that: if the common methods variation exist in large numbers, factor analysis will precipitate a single factor, or precipitate a common factor that can explain most of the variable variance. By testing, the common method variation does not have a great influence on the results of the study.

Table 2. Reliability and validity analysis

Construct	Variable	Cronbach's α	Normalized factor loading	T value
The driving wheel of entrepreneurship education	Leadership support of entrepreneurship education;	0.81	0.83	8.22
	Entrepreneurship education strategy;	0.78	0.81	8.51
	Market orientation of entrepreneurship education;	0.82	0.85	9.11
The driven wheel of entrepreneurship education	the resource allocation of entrepreneurship education;	0.79	0.80	8.02
	Entrepreneurship education process;	0.80	0.82	8.55
	Measurement and improvement of entrepreneurship education	0.77	0.79	8.64
The quality of entrepreneurship education	Soft quality of entrepreneurship education;	0.83	0.84	8.70
	Hard quality of entrepreneurship education	0.76	0.78	8.13

Table 3. The result of structural equation analysis (n=199)

Index	χ^2/df	GFI	AGFI	CFI	NFI	NNFI	RMSEA
Value	1.691	0.956	0.923	0.947	0.948	0.966	0.048
Fitting criterion	<2	>0.9	>0.9	>0.9	>0.9	>0.9	<0.1

Reliability and validity analysis

In this study, the internal consistency reliability of variables is tested by the Cronbach's coefficient. The results are shown in Table 2. The internal consistency of the measurement items is greater than 0.7, which shows that the variables in this study have good reliability.

The validity of the study is mainly based on content validity and construct validity. Since all the terms of measurement come from the relevant literature and have been extensively verified by previous studies, expert demonstrations and preliminary investigations have been carried out before the formal investigation. Therefore, the measurement terms of this study have better content validity.

Construction validity refers to the degree to which a measurement scale can measure concepts or characteristics of a theory. In this study, the construct validity of measurement is tested by factor analysis. The load of each factor is more than 0.70, and it has stronger statistical significance (T value is greater than 2), which fully shows that the measurement of this study has good construction validity.

Model fitting and result analysis

In this paper, the structural equation model analysis software AMOS17.0 is used to do the fitting verification. Table 3 shows the fitting results of the whole model. At the same time, this paper uses χ^2/df GEL, AGFI and other indicators to measure the effect of fitting, its specific data as shown in Table 3.

The data in Table 3 shows that the model and data fit better. At the same time, according to the statistical results, the standardized path coefficients are as follows in Table 4.

According to the standardized path coefficients in Table 4, we can find that most of the hypotheses have been verified, which is in line with some of the conclusions of some scholars. However, 2b did not pass the test. That is to say, the positive effect of entrepreneurship education strategy on the hard quality of entrepreneurship education is not significant. Analysis of its reasons, China's universities are in the initial and rapid development of

Table 4. Standardized path coefficient (n=199)

Hypothesis	Relationship between variables	Normalized path coefficient	T value	Conclusion
Hypothesis 1a	Leadership support of entrepreneurship education to the soft quality of entrepreneurship education.	0.45	4.72	Support
Hypothesis 1b	Leadership support of entrepreneurship education to the hard quality of entrepreneurship education.	0.37	3.89	Support
Hypothesis 2a	Entrepreneurship education strategy to the soft quality of entrepreneurship education.	0.42	4.23	Support
Hypothesis 2b	Entrepreneurship education strategy to the hard quality of entrepreneurship education.	0.03	0.23	No Support
Hypothesis 3a	Market orientation of entrepreneurship education to the soft quality of entrepreneurship education.	0.46	5.33	Support
Hypothesis 3b	Market orientation of entrepreneurship education to the hard quality of entrepreneurship education.	0.43	4.32	Support
Hypothesis 4a	Resource allocation of entrepreneurship education to the soft quality of entrepreneurship education.	0.52	6.18	Support
Hypothesis 4b	Resource allocation of entrepreneurship education to the hard quality of entrepreneurship education.	0.49	6.13	Support
Hypothesis 5a	Entrepreneurship education process to the soft quality of entrepreneurship education.	0.39	4.00	Support
Hypothesis 5b	Entrepreneurship education process to the hard quality of entrepreneurship education.	0.44	4.96	Support
Hypothesis 6a	Measurement and improvement of entrepreneurship education to the soft quality of entrepreneurship education.	0.01	0.17	No Support
Hypothesis 6b	Measurement and improvement of entrepreneurship education to the hard quality of entrepreneurship education.	0.45	5.11	Support

entrepreneurship education. The strategy of entrepreneurship education in some universities is not clear, and the entrepreneurial plan is often equated with the strategy of entrepreneurship education. For this reason, the effect of entrepreneurship education strategy on the hard quality of entrepreneurship education is not obvious. In addition, the hypothesis testing of 6b is not verified, that is, the positive effect of measurement and improvement in Entrepreneurship Education on the soft quality of entrepreneurship education is not significant. Analysis of the reasons, we found that the problem oriented analysis and measurement improvement methods are relatively limited in the initial and rapid development of China's entrepreneurship education. As for the creation of entrepreneurial education atmosphere and the cultivation of entrepreneurial awareness, it does not show a positive role. This is also the place where we should pay attention to and take positive measures in future entrepreneurship education.

CONCLUSION AND RECOMMENDATION

Based on the theory of performance excellence management, this paper explores the relationship between the driving wheel of entrepreneurship education, the driven wheel of enterprise education and the quality of entrepreneurship education by using the empirical analysis method:

First, in the context of excellence performance management, the driving wheel of entrepreneurship education include leadership support of entrepreneurship education, entrepreneurship education strategy and market orientation of entrepreneurship education, the three dimensions are the driving wheel of entrepreneurship education. The driven wheel of entrepreneurship education includes entrepreneurship education resource allocation, the process of entrepreneurship education, the measurement and improvement of entrepreneurship education. The quality of entrepreneurship education includes two dimensions: entrepreneurship education, soft quality and hard quality of entrepreneurship education.

Second, in this study, based on the theory of excellence performance management, in the driving wheel, the leadership support of entrepreneurship education, entrepreneurship education market orientation have a positive effect on soft quality and hard quality of entrepreneurship education; the entrepreneurship education strategy only has a positive effect on the soft quality of entrepreneurship education, but on the hard quality is not verified. This also shows that there are still imperfections in the formulation and implementation of entrepreneurship education strategy in universities and colleges in our country. It is necessary to sort out and adjust the strategy of entrepreneurship education.

Third, based on the theory of performance excellence management, in the driven wheel, entrepreneurship education resource allocation and the process have a positive effect on soft quality and hard quality of entrepreneurship education; the measurement and improvement of entrepreneurship education has positive effect on the hard quality of entrepreneurship education, but to the soft quality has not been verified.

It also indicates that in the implementation process of entrepreneurship education in China's colleges and universities, the evaluation of entrepreneurship education, the measurement of education activities, which is not effective publicity and dissemination, the soft quality of entrepreneurship education will be affected by it. The management of this aspect needs to be strengthened in the future.

In a word, based on the performance excellence management, through the above empirical analysis, the impact of driving wheel and driven wheel of entrepreneurship education on the quality of entrepreneurship education is different. Therefore, according to the actual situation of entrepreneurship education in Colleges and universities, and through the theoretical guidance of performance excellence model, we should strengthen coordination and innovation between core activities of entrepreneurship education in Colleges and universities, so as to improve the quality of entrepreneurship education.

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