INSTITUTO
UNIVERSITÁRIO
DE LISBOA

Core Competitiveness Analysis of Chinese Private Colleges: A Dynamic Capability Approach

SHEN Xiaoyu

Doctor of Management

Supervisors:
PHD Nelson Antonio, Professor,
ISCTE University Institute of Lisbon
PHD MA Jie, Professor,
University of Electronic Science and Technology of China

December, 2022

BUSINESS
SCHOOL

Marketing, Operations and General Management Department

Core Competitiveness Analysis of Chinese Private Colleges: A Dynamic Capability Approach

SHEN Xiaoyu

Doctor of Management

Supervisors:
PHD Nelson Antonio, Professor,
ISCTE University Institute of Lisbon
PHD MA Jie, Professor,
University of Electronic Science and Technology of China

December, 2022

BUSINESS
SCHOOL

Marketing, Operations and General Management Department

Core Competitiveness Analysis of Chinese Private Colleges: A Dynamic Capability Approach

SHEN Xiaoyu

Doctor of Management

Jury:

PhD Henrique José da Rocha O'Neill, Associate Professor with Habilitation,
ISCTE University Institute of Lisbon
PhD Carlos José de Oliveira e Silva Rodrigues, Associate Professor,
Universidade de Aveiro
PhD HE Zheng, Professor,
Electronic Science and Technology of China
PhD Carlos Miguel Correia Hernandez Jerónimo, Invited Assistant Professor,
ISCTE University Institute of Lisbon
PhD Nelson José dos Santos António, Retired Full Professor,
ISCTE University Institute of Lisbon

December, 2022

INSTITUTO UNIVERSITÁRIO DE LISBOA

Core Competitiveness Analysis of Chinese Private Colleges: A Dynamic Capability Approach

SHEN Xiaoyu

Declaration

I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed:  Date: 2022.12.29

Name: SHEN Xiaoyu

作者申明

本人郑重申明：除了论文致谢中明确说明并致以谢意的部分外，所呈交的论文不包含任何他人或作者本人已用于获得任何教育机构的学位和证书而使用过的材料。同时尽我所知，除了文中特别加以标注引用的内容外，本论文不包含任何其他个人或集体已经发表或撰写的成果作品。

作者签名：  日期：2022.12.29

姓名(拼音)：SHEN Xiaoyu

[This page is deliberately left blank.]

Abstract

The Chinese government policies encourage social forces to invest in higher education, this is a good development opportunity for the Private Higher Education Institutions (PHEI) in China. Chinese PHEI constitute an effective supplement of public Universities and play a fundamental role in the massification of Chinese higher education. Due to its special operation model and the quantity of Chinese PHEI, this thesis studies their core competitiveness and performance.

College X represents the cooperative education established between a private enterprise and a public University. It has a typical engineering background, and its establishment mainly depends on the faculty and reputation of University of Electronic Science and Technology of China and the capital investment of Chengdu Guoteng Group. Since its establishment, X College has gradually developed independently and competed in the field of Chinese private higher education. To study the core competitiveness of Chinese PHEI, this thesis reviews the literature related with competitiveness theory, resource-based view, dynamic capability view, and the application of these theories to higher education. It also identifies the core elements that affect the competitiveness of private colleges in the development process. Moreover, this study reviews the developmental stages of Chinese PHEI, and the history of college X. Based on the literature review and the situation of college X, we proposed a model of core competitiveness from the capability angle and analyzes the resources and capabilities performance of college X, by using quantitative and qualitative methods.

According to the results of our study there are four important factors that contribute to the core competitiveness of college X: organizational resource and capability; entrepreneurial capability; university functional capability and human resources. The research results indicate that college X has a moderate performance in human resources, entrepreneurial capability, and organizational capability. The results also shows that the founder of college X should invest more on the renewal of teaching and experimental facilities.

Keywords: core competitiveness; resource-based view; dynamic capability view; Chinese private college

JEL: M1, I23

[This page is deliberately left blank.]

Resumo

O incentivo das políticas governamentais chinesas para as forças sociais investirem no ensino superior criaram uma janela de oportunidade para o desenvolvimento das Instituições de Ensino Superior Privado (IESP). As IESP chinesas suplementam o ensino público e desempenham um papel importante na massificação do ensino superior na China. Devido ao seu número e ao facto de terem um modelo operacional diferente esta tese pretende estudar a competitividade e desempenho das IESP chinesas.

Para estudarmos a competência chave das IESP chinesas, esta tese adopta o método de estudo de caso e assume como objeto de estudo o colégio X (um caso de cooperação entre uma empresa privada e uma universidade pública). Esta tese começa por fazer uma revisão da literatura sobre teoria da competitividade, escola baseada nos recursos e capacidades dinâmicas e a aplicação destas teorias à gestão do ensino superior. Este estudo descreve também os diferentes estados de desenvolvimento do ensino superior privado na China assim como a história e evolução do colégio X. Com base na teoria e na situação do colégio X, construímos um modelo das competências chave sob o ângulo dos recursos e capacidades e adoptamos um modelo de investigação misto, quantitativo e qualitativo.

De acordo com os resultados do estudo, existem quatro fatores fundamentais nas competências chave do Colégio X: a capacidade organizacional do colégio; a capacidade empresarial; a capacidade funcional e os recursos humanos. Os resultados indicam também que o colégio X tem um desempenho moderadamente bom nos recursos humanos, na capacidade empresarial e na capacidade organizacional. Os resultados indicam também que o fundador do Colégio X deve investir mais nos edifícios e materiais de ensino.

Palavras-chave: competências chave; escola baseada nos recursos; capacidades dinâmicas; Universidades Privadas; China

JEL: M1, I23

[This page is deliberately left blank.]

摘要

在政府鼓励社会力量以多种方式组织高等教育的政策下，中国民办高校（PHEI）获得了良好的发展机遇。中国民办高校是对公立大学的有效补充,在中国高等教育的普及化过程中起到了重要的作用。由于中国民办高校特殊的办学模式以及在中国高校中的数量，本文试图研究中国民办高校的核心竞争力和绩效。

X 学院是企业与公立大学合作办学的代表，它具有典型的工科背景，它的创立主要依托于电子科技大学的师资和声誉以及成都国腾集团的资金投入。X 学院从创办以来逐步独立发展壮大，在民办高校领域参与竞争。X 学院的成长过程同时也代表了中国民办高等教育的发展过程。为了研究中国民办高校的核心竞争力，本文采用了单案例研究方法，以 X 学院为案例研究对象。本文首先回顾了竞争力理论、资源基础观和动态能力论等相关文献，以及这些理论在中国高等教育领域的应用，并且识别了在民办高校发展过程中影响其竞争力的核心要素。此外，本文还系统地回顾了中国民办高等教育的各个发展阶段以及 X 学院的发展历程。基于文献综述以及 X 学院的实际情况，本文从资源和能力的角度提出了 X 学院的核心竞争力构成要素模型并且通过定性和定量的方法研究了 X 学院的核心竞争力表现。

根据我们的研究结果，X 学院的核心竞争力有四个重要因素，按照对竞争力的重要性排序依次是：组织资源和能力；企业家能力；大学职能能力和人力资源。研究结果表明，X 学院在人力资源、企业家能力和组织学习能力方面表现相对较好。研究结果还表明，X 学院的创办者应加大资金投入，更新教学和实验设施，将资金更多的用于学校的科研活动和创新活动中，不断提高学院的创新能力和科学研究能力，以提升 X 学院在中国民办高校中的核心竞争力。

关键词：核心竞争力；资源基础观；动态能力观；中国民办高校

JEL: M1, I23

[This page is deliberately left blank.]

Acknowledgements

First of all, I would like to express my greatest gratitude to my Portuguese supervisor Professor Nelson Antonio and Chinese supervisor, Professor Ma Jie, who gave me sincere and instructive guidance to finish the thesis. Professor Nelson and Professor Ma Jie are dedicated and passionate about one's career, and also supervisors to influence student's work and lives. Here I would like to thank my Portuguese supervisor, Professor Nelson Antonio, for his guidance and assistance to the greatest extent in subject selection, opening defense and thesis guidance. It was under the careful guidance of Professor Nelson that I gained a lot in management, especially in the field of strategic management. Especially since 2020, when the global COVID-19 has been rampant, Professor Nelson, at the risk of being infected by the virus, still travels between China and Portugal to give lectures and guide my thesis patiently. I am very moved and unforgettable by all this and will always remember it.

I would like to thank my Chinese supervisor, Professor Ma Jie, who patiently and meticulously answered my questions during the writing process. Her work attitude of striving for perfection impressed me deeply. No matter the subject selection, or every detail in the thesis implementation process, Professor Ma is very patient to guide me, so that I can successfully complete the paper. I would also like to thank Professor Xiao Wen. Professor Xiao is humorous and optimistic. She gave me a lot of encouragement during my doctoral dissertation. It was professor Xiao's encouragement and support that enabled me to persevere in completing my doctoral dissertation.

Secondly, I would like to thank to those people who are working for DoM projects in China and Portugal. Thanks for your contribution to DoM project, and the suitable arrangement of each step of my thesis work. Without your fully support, I cannot finish my thesis in time.

Thirdly, I would like to thank to my family members. It is your full support behind me, and you have undertaken more family responsibilities and work, that I can spent time to complete my doctoral thesis.

Finally, I would like to thank those teachers, leaders and friends who help me in the process of my research. Again, I sincerely thank all the people who give me help when I am pursuing PHD.

[This page is deliberately left blank.]

致谢

首先，我要感谢我的葡萄牙导师Nelson教授和中国导师马捷教授，他们为我完成论文提供了真诚而有意义的指导。Nelson教授和马捷教授是导师中的典范，他们对自己的职业充满热情，同时也是影响学生工作和生活的导师。在此我要特别感谢我的葡萄牙导师Nelson Antonio教授，感谢他在选题，开题答辩，中期检查以及论文撰写等各个方面给予我最大程度的指导和帮助。正是在Nelson教授的悉心指导下，我在管理学尤其是战略管理领域收获颇多。特别是在2020年以来，全球新冠病毒肆虐的情况下，Nelson教授冒着被病毒感染的风险，仍然往返于中葡两地进行授课，亲自耐心的对我的论文进行指导，这一切让我非常感动和难忘，也将永远铭记心中。

我要感谢我的中方导师马捷教授，耐心细致的给我解答论文撰写过程中的种种疑惑。马老师严谨治学和精益求精的工作态度让我感受颇深。无论是论文的选题，还是论文实施过程中的每一个细节，马老师都非常耐心的指点，这样我才能顺利的完成论文。

我还要感谢DoM项目组的肖文教授。肖老师为人风趣幽默，乐观向上，在读博的过程中给了我非常多的鼓励，正是肖老师的鼓励与支持让我能够坚持完成博士论文。

其次，感谢那些在中国和葡萄牙为DoM项目工作的人。感谢你们对DoM项目的付出和对我论文工作每一步的合理安排。没有你的全力支持，我无法及时完成我的论文。

第三，我要感谢我的家人。正是你们在我背后的全力支持，你们承担了更多的家庭责任和工作，我才能花时间完成我的博士论文。无数个日日夜夜，当我坐在书桌前冥思苦想奋笔疾书的时候，是你们为我分担了生活的压力和家庭的责任，让我有时间专注于论文写作，在此表示衷心感谢！

最后，我要感谢在我的论文研究过程中帮助我的老师、领导和朋友。我再一次衷心感谢所有在我攻读博士学位时给予我帮助的人。

[This page is deliberately left blank.]

Contents

[This page is deliberately left blank.]

List of Table

[This page is deliberately left blank.]

List of Figure

[This page is deliberately left blank.]

Chapter 1: Introduction

This chapter gives a general introduction of the thesis. It introduces background of the research; defines the research problem - how does the private college provide differentiated quality education service to survive in China higher education sector. Also, this chapter demonstrate the research purpose and contribution of the thesis. Finally, this chapter presents the structure of the thesis.

1.1 Research background

1.1.1 China's economy booming and demand for education

China's economy has experienced a rapid growth since the end of 20th century. From 1990 to 2019, under the guidance of economic construction as center policy, the national Gross Domestic Product (GDP) increased from 1.88 trillion RMB yuan to 99 trillion RMB yuan. With the rapid growth of China's GDP, per capita disposable income has also increased significantly. Since 1990 to 2018, the per capita disposable of urban residents increased from 1932 RMB yuan to 55574 RMB yuan while the rural residents increased from 1099 RMB yuan to 27302 RMB yuan (National Bureau of Statistics [NBOS], 2019). People want to enrich their spiritual pursuit while improving material life. So the demand for education has become increasingly strong.

With the further deepening of economy globalization and China's accession to World Trade Organization (WTO), the global talents competition become more important. Since China's reform and opening up, the market economy developed rapidly and the industrial structure has adjusted. With the development of the tertiary industry in China, a large number of private enterprises appear, and the demand for practical talents is increasing.

Throughout the world, education is an important way that support the development of a country's economy, and China was not an exception. As former Chinese leader Deng xiaoping said, science and technology are primary productive force of a country. Attention should be paid to education, science and technology. After serveral decades rapid development, China's economic construction should base on knowledge economy, take high-tech industry as the core, promote education development, train excellent human resources, and then enhance the

comprehensive national strength. In 21st century, the talents competition will be the core competition throughout the world. Education is the essential way to enhance the quality of workers, improve production efficiency, reduce transaction costs, and then promote the sustainable development of economy.

1.1.2 The development of China's higher education system

Because of the importance of education, a country should pay more attention to develop its education system. Like other countries over the world, China has the similar academic education system: pre-school education system, primary education system, secondary education system and tertiary education system (L. M. Luo, 2015).

The tertiary education system means higher education or education at university or college level. In China, the tertiary education includes regular higher education, adult higher education, self-study exam education and network education. Regular higher education is divided into full time universities, independent colleges, junior colleges and vocational colleges that implement higher academic education. Because the higher education system can directly cultivate the talents needed by society, it plays an important role in China modernization construction process.

Due to lack of investment in education before 1980s, China's higher education has lagged behind the western developed countries for a long time. As a large population country, China has 180 million illiterate population (people aged 15 and over who are illiterate or have little literacy) until 1990 (NBOS, 2001). This situation has affected the quality of labor force, the development of China's economy and further the international competitiveness. In order to change this situation, Chinese government issued a lot of policy to promote the development of education, especially in the higher education sector.

In February 1993, the State Council promulgated the Outline of China's Education Reform and Development, which clearly pointed out that education must be placed in the strategic position of priority development, and efforts should be made to improve scientific and culture level of the whole nation, which is the fundamental plan for fostering China's modernization process (The State Council [TSC], 1993). In May 1995, the State Council first proposed the strategy of rejuvenating the country through science and education in Decision on Accelerating the Progress of Science and Technology (TSC, 1995).

Stepping into 21st century, the global competition is more about the quantity and quality of talents. In order to transform China's population burden into human resource advantages, cultivating more professional talents, higher education must change its way from elite to

popular. In this context, the Chinese government has decided to expand the enrollment scale of universities and colleges in 1999. In order to further expand the scale of higher education and providing various forms of higher education, the Ministry of Education put forward the target of popularization of higher education at the National Education Work Conference in 1999, which will make the gross enrollment rate of higher education reach 15% by 2010 (Ministry of Education [MOE], 1999). Guided by the spirit of this conference, the higher education popularization policy has been pushed forward and more people can accept higher education.

From 1999 to 2001, the number of enrolled students has been increased rapidly. Take 2001 as an example, the number of graduate students enrolled nationwide was 165200, an increase of 36700 over the previous year. A total of 4.64 million undergraduate and higher vocational students were enrolled in higher education, an increase of 874500 or 23.21% over the previous year (MOE, 2001).

After a rapid growth from 1999 to 2001, the scale of higher education continues to increase steadily. In 2010, the State Council promulgated the National Medium and Long-term Education Reform and Development Plan Outline (2010-2020), China's education entered a new stage. The total scale of all kinds of higher education in China has reached 31.05 million, and the gross enrollment rate of higher education has reached 26.5% (TSC, 2010). By 2015, the total scale of higher education in China was 36.47 million, and the gross enrollment rate of higher education has reached 40% (MOE, 2015). Focusing on the strategy of improving the quality of education, promote education fairness, China's higher education step into a new era. In 2019, following the instruction of China's Education Modernization 2035 issued by the Chinese State Council, significantly promote competitiveness of higher education becomes the national guideline (TSC, 2019). The number of new enrolled undergraduate students nationwide exceeds 9 million (as shown in Table 1.1). We are on the right track of promoting the process of education modernization and building an educational power worldwide.

Table 1.1 Development of China's higher education, 1998-2021

Year	Number of Higher Education Institutions	Number of New enrolled Students (unit:10000 people)	Number of Increased students over last year (unit: 10000 people)	Number of Faculty (unit:10000 people)	Number of Increased faculty over last year (unit:10000 people)
1998	1991	108.36	8.32	102.96	-0.19
1999	1942	159.68	51.32	106.51	3.55
2000	1813	220.61	60.93	111.28	4.77

2001	1911	268.28	47.67	121.44	10.16
2002	2003	320.5	52.22	130.36	8.92
2003	2110	382.17	61.67	145.26	14.9
2004	2236	447.34	65.17	161.07	15.81
2005	2273	504.46	57.12	174.21	13.14
2006	2311	546.05	41.59	187.26	13.05
2007	2321	565.92	19.87	197.45	10.19
2008	2663	607.66	41.74	205.1	7.65
2009	2689	639.49	31.83	211.15	6.05
2010	2723	661.76	22.27	215.66	4.51
2011	2762	681.5	19.75	220.48	4.82
2012	2790	688.83	7.33	225.44	4.96
2013	2788	699.83	11	229.63	4.19
2014	2824	721.4	21.57	233.57	3.95
2015	2852	737.85	16.45	236.93	3.36
2016	2880	748.61	10.76	240.48	4.55
2017	2631*	761.49	12.88	244.3	3.82
2018	2663*	790.99	29.5	248.75	4.45
2019	2668*	914.9	123.91	256.67	7.92
2020	2738	967.45	52.55	266.87	10.2
2021	3012	1001.32	33.87	272.09	5.22

Notes: The number of institutions does not include institutions of adult education from 2017. The number of new enrolled students only include undergraduate students enrolled of that year, number of faculty only include faculty of regular universities and colleges.

Source: tidied by author from Statistical Bulletin of National Education Development, Ministry of Education of People's Republic of China (MOE, 2022)

With the rapid expansion of China's higher education after 2000, higher education system is becoming more complete and a large number of professionals have been trained for the society. The core issue we need to resolve is shifted to improve the quality of talents to meet the rapid economy growth of the country.

1.1.3 The development of Chinese private college

In accordance with the provisions of the Higher Education Law of the People's Republic of China and the Law of Private Education Promotion, Chinese private colleges are referring to the higher educational institutions established by enterprises, social organizations and individual citizens rather than state-owned organizations, having the status of an independent legal person, using non-state financial funds to implement general undergraduate academic education (Y. Duan, 2015). In China, private higher education mainly includes private colleges implement regular undergraduate and junior academic education and higher vocational colleges implement junior academic education.

In China, private colleges mainly include two types: regular private colleges and independent colleges. Regular private colleges are those colleges established by enterprises or individuals, using non-state financial funds and having no support from public universities. Independent college is a special form of private college in China. Independent college is an

unique product of fast development of Chinese higher education at the end of 20th century. With the help of public university (parent university) by using its good reputation and high-quality faculties, approved by the government, independent college was held and invested by social enterprises or individuals, implement regular undergraduate and junior academic education independently to the society. In these years, the attitude of the government towards independent colleges is tend to be strict and standardized. The Chinese Ministry of Education has begun to separate independent colleges from their parent university, implement academic education independently, and finally transform these colleges into regular private colleges.

Private colleges and universities originated in China at the end of 20th century. The Social University of China, founded in Beijing in 1982, is generally regarded as the first private university of New China, marking the new beginning of China's private higher education after China's reform and opening up (L. M. Luo, 2015). It was a sign that the private higher education recovered in new China. Since then, private higher education has experienced a prosperous stage.

With the continuously expansion and development of Chinese higher education, public colleges and universities have no more resources to provide to the society. As a fundamental supplement of public higher education, private colleges can provide more resources to meet the study demand of people. Also, private colleges and universities can make higher education diversification, provide an equal chance for those who want to accept higher education and make contribution to economy development.

The development of private education in China shows that government policy is an important factor that affect the development of private education. The Chinese government issued a series of policies and laws to promote the healthy development of private education. In September 2003, the Law of Private Education Promotion was officially implemented. It is the first law on promoting private education development and fill in blank of private education sector. In 2010, the National Medium and Long-term Education Reform and Development Plan Outline (2010-2020) make it clear that we should develop private education vigorously.

From 2003 to 2009, Chinese private colleges were growing explosively, the number of private colleges increased from 173 or 8.1% of China's higher education institutions (HEI) to 658 or 24.4% of Chinese HEIs (MOE, 2020). In 2009, there were 4.46 million students in private colleges across the country while the number was 0.81 million nationwide in 2003. Since 2009 to 2018, the number of China's private colleges continuous to increase steadily,

from 658 to 750 (MOE, 2020). After nearly 20 years rapid development, the rough growth of Chinese private college has come to an end, the government began to pay more attention to the development of quality of private colleges. Figure 1.1 shows the rapid development of China's private higher education.

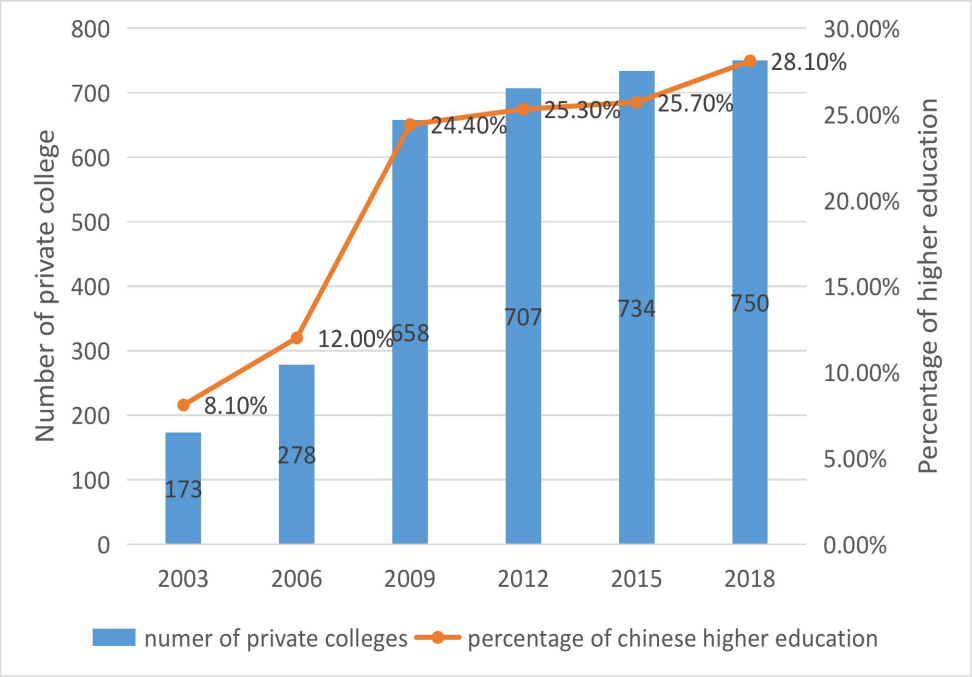

Figure 1.1 Chinese private college rapid expansion

Source: self-produced by author

As an effective supplement to Chinese higher education, private colleges have greatly alleviated the insufficient supply of higher education resources, trained several application-oriented talents for the society, and made positive contributions to the popularization and development of Chinese higher education.

Though private colleges and universities plays a fundamental role in China's higher education, there are several problems both internal and external in its development process.

(1) The unreasonable distribution of property right

According to the Law of Private Education Promotion, the founder can get appropriate return on investment while ensuring the public welfare attribute of private colleges. This statement was not clear enough and can not protect investor's interest. So, it was against the principle of equal rights and obligations. It is difficult to mobilize the enthusiasm of the founder.

(2) The low quality and unstable of teaching staff

A high quality and stable teaching staff are the basis for the development of universities. However, limited to its financing strength and reputation, private colleges are difficult to

recruit high-quality teachers relative to public universities. In China, teachers and scholars with high academic level and rich experience are more willing to choose public universities to work. As a result, private colleges can only recruit teachers outside these groups. In fact, the majority of teachers of private colleges are young teachers and part of them are even part-time teachers. Their academic qualification level, teaching experience and sense of responsibility limits the improvement of their teaching ability. Moreover, teachers of private colleges will choose to go to public colleges and universities when they have the opportunity to do so. This has also led to the instability of the whole group of teachers in private colleges.

(3) The single source of funds

Different from the private universities can acquire social funding in western countries, private colleges in China mostly rely on the investment of the founder. The financial capability of the founder of private colleges plays a vital role in the long-term development of private colleges. Without diversity of funding source, it is difficult for Chinese private colleges to improve their running conditions and teaching quality.

(4) Relative poor quality of student

Compared with public universities, the quality of students in private colleges is relatively poor. Compared with the students in the public universities, the entrance score of students of private colleges have a large gap, which also leads to the quality of talent training in private colleges.

(5) Specialty setting unreasonable

In order to obtain students, many private colleges blindly pursue social hot spots nowadays in specialty setting, and even choose some majors with low investment cost. This leads to the similarity of specialty setting in private colleges and it is hard to cultivate professionals that the society needs.

(6) Facing competition from both public and private universities

Compared to the public universities, private colleges have a lot of disadvantages in quality, reputation, funding and teaching staff. Even among private colleges and universities, the competition is fierce. Specialty setting, teachers' income and enrollment publicity are the main competitions among private colleges.

(7) Facing buyer market

Along with China's higher education popularization process deepening and the number of private colleges booming, the buyer's market is emerging. In the context of students choose universities instead of universities choose students, especially in private higher education sector, the private college has no competitive advantage compared to public universities.

1.1.4 Background of X College

This thesis chooses Chengdu College of University of Electronic Science and Technology of China (hereinafter X College) as the case college. X College was established in 2001 as an application-oriented technology-dominant independent college at Chengdu. The college is approved by the Ministry of Education of the People's Republic of China, held by the University of Electronic Science and Technology (hereinafter UESTC), and invested by Chengdu Guoteng Industrial Group Co., Ltd., (hereinafter Guoteng Group). UESTC is a top 10 university in technology, information and communication area of China. Guoteng Group is a private group company based in Chengdu. It developed and manufactured electronic devices, integrated circuit, electronic systems, computer hardware and software. Guoteng company is also a national key high-tech enterprise and a national key new product project enterprise which covers southwest area of China.

By July 2022, the campus of X College covers an area of 933380 square meters, has more than 17000 enrolled students on campus from all over the country and has a number of 849 employees. The college has 7 schools, covers 68 majors including technology, management, mathematics, aviation, physical education and art. The college has 8 experimental centers, 3 provincial experimental demonstration centers, and 124 laboratories of 57 categories, with a total area of 13387 square meters.

The objectives of X College is to develop undergraduate academic education, moderately develop specialized education and create conditions for graduate education. The obligation of X College was to cultivate practical personnel in communication, information and technology area, to meet the requirements of society and make contribution to the development of the economy of Chengdu city and Sichuan province.

According to Some Opinions on Standardizing and Strengthening the Management of Independent Colleges with New Mechanism and Mode issued by the Ministry of Education of the PRC in 2003 and Establishment and Management of Independent Colleges issued by Ministry of Education of the PRC in 2008, the government tries to standardize the development of independent colleges gradually. The independent college can separate from its parent university and run independently. In this context, the board of X College has decided to transform from independent college to regular private college in 2017. Since then, X College suffered from the dilemma of how to develop independently and sustainably without the help of its parent university.

1.2 Research problem and questions

1.2.1 Research problem

Compared with private higher education of developed country over the world, China's private higher education has its own characteristics. Firstly, in order to promote the education level of the whole nation, Chinese government has decided to expand the enrollment scale of higher education institutes. Since then, Chinese higher education changes its way from elite to popular and private higher education has obtained opportunity to develop. However, China's private higher education started late, the system does not mature and complete. The overall quality of private colleges and universities are not good enough to compare with public universities. Secondly, as a unique form of private colleges, independent college is a transitional product that emerged at a special stage of Chinese higher education development. Independent college is jointly founded by enterprise and public university. Along with the policy towards independent colleges to be strict, the government try to separate independent colleges from their parent university. Under this circumstance, the independent colleges suffered from the dilemma of how to run independently and stably without the help of its parent university. Thirdly, along with the intensification of the competition among private colleges, the buyer market has emerged. Students select university rather than university select students in certain degree. Every single private college must try their best to recruit more students. In view of these three points, the Chinese private college must find a way to improve its competitiveness in order to win the competition with other private colleges and universities in a long run.

Based on the above descriptions, the research problem in this thesis is about strategic development of Chinese private college. Under the policy guidance of government, the board of X College decided to implement transformation to further develop in a long period of time. Since then, X College suffered from the dilemma that how to provide differentiated quality to develop sustainably in Chinese private higher education sector.

1.2.2 Research questions

As we mentioned above, the main research problem in this thesis is the strategic development problem of Chinese private college. Under the circumstance of strong competition among other private colleges and public universities, it is quite important for Chinese private colleges

to promote core competitiveness in order to provide good education quality, produce more applied talents to society. Based on it, this thesis sets X college as an example and research:

Research question 1: What is the core competitiveness of X College?

In this thesis, we have sorted out the relevant literature on core competitiveness of private college, understood the connotation and extension of core competitiveness, and further subdivided research question 1 into the following three specific questions:

(1) What is the core competitiveness of Chinese private colleges?

(2) Which elements constitute the core competitiveness of X College?

(3) How does the constituent element of core competitiveness of X College perform?

Research question 2: How to improve the core competitiveness of X College for its sustainable development?

Based on research question 2, we propose the targeted solutions and suggestions for each dimension of the core competitiveness of X College respectively. We summarize the strategies to enhance the core competitiveness of X College for its sustainable development.

1.3 Research purpose

This research aims to study the strategic development issue of Chinese private colleges and universities by analyzing the case of X College. This work solves the dilemma of how to acquire and improve the core competitiveness of X College in a long run under the circumstance of strict regulation of the government towards to private colleges.

Research purpose includes :

Firstly, according to in-depth interview of the management and relevant experts of private colleges and questionnaire of employees of X College, what is the core competitiveness and what are the components of core competitiveness for X College are found.

Secondly, based on resource-based view and dynamic capability view and the characteristics of Chinese private colleges, this thesis builds the constituent element model of core competitiveness of X College and make it clear the contribution of resources and capabilities towards the core competitiveness of X College.

Finally, by analyzing the performance of the resource and capability element owned by X College, we attempt to make suggestions for X College to improve the core competitiveness in a long run.

1.4 Expected contribution

This thesis is about the research of Chinese private college's strategic development, and has certain learning value and contributions for the sustainable development of X College as well as other Chinese private colleges.

It raises concerns and discussion for the core competitiveness of Chinese private colleges and universities. Firstly, although the competitiveness theory is relatively mature in the field of enterprise management, it is still relatively less studied in the field of education, especially in private higher education area. It is innovative to introduce the competitiveness theory into the field of private higher education and study the sustainable development of private colleges and universities. Secondly, this thesis studies the constituent elements of core competitiveness of X College from resource and capability perspective, and it solves the management problem of how to improve the core competitiveness of X College to survive and further development under the transformation situation of Chinese private colleges. At last, it has certain value for the board to make suitable strategy for the development of X College.

1.5 Thesis framework

This thesis researches the strategic development problem of Chinese private colleges by analyzing the case of X College. The thesis contains five chapters, and the content is as follows:

Chapter One: Introduction. This chapter introduces the background of Chinese higher education and private colleges and universities, which includes the research problem and research questions, research purpose, research contribution and the framework of the thesis.

Chapter Two: Literature review. This chapter reviews the relevant research in China and abroad to build up the theoretical foundation of the thesis, which includes the competitiveness theory, resource-based view, capability-based view, and dynamic capability view.

Chapter Three: Research method and design. This chapter mainly demonstrate the selection of research method, the questionnaire survey and in-depth interview design. This chapter also introduces the way of data collection and process.

Chapter Four: Case study. This chapter introduces the founding of X College, its development, current situation and the process of transformation. This chapter also systematically analyzes the performance of core competitiveness of X College through

resources and capabilities perspectives.

Chapter Five: Conclusion and recommendations. This chapter presents the conclusion, recommendations, limitations and future work of the thesis.

The thesis framework is shown as Figure 1.2 below:

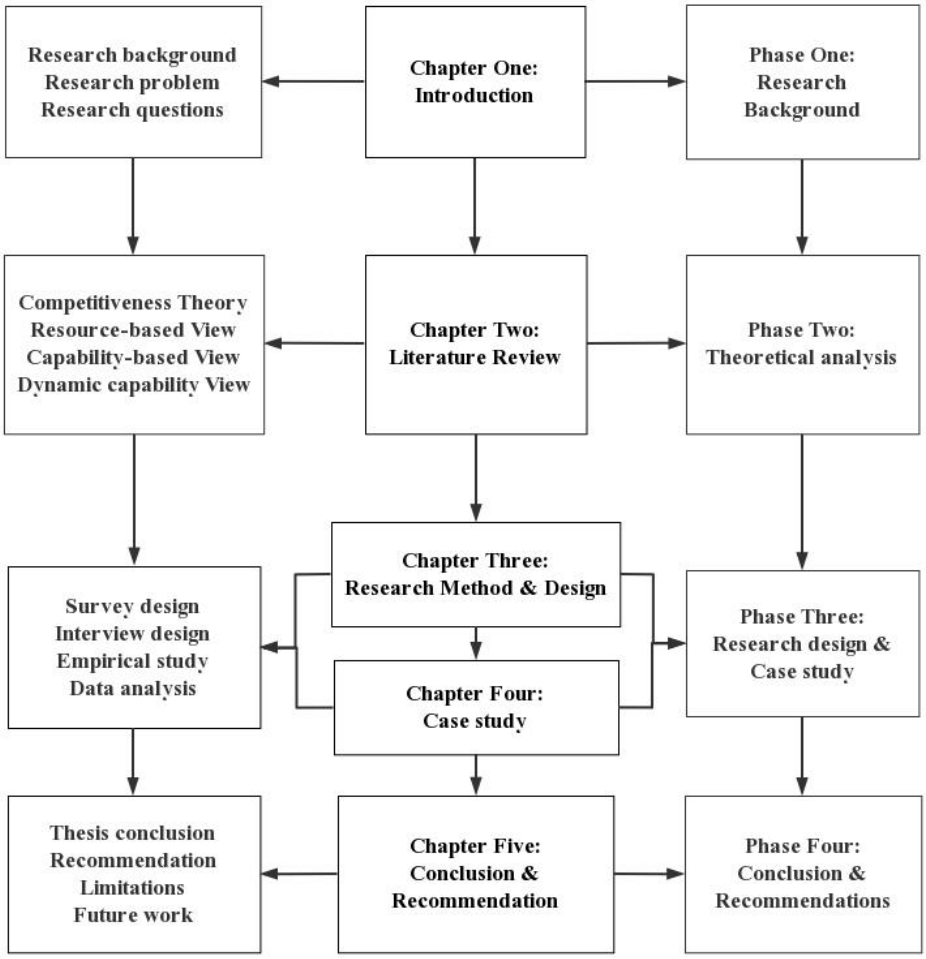

Figure 1.2 The thesis framework

Chapter 2: Literature Review

This chapter reviews the study of competitiveness theory, Resource-Based View (RBV) and Dynamic Capability View (DCV), which will be used to research and analyze the case of X College.

2.1 Competitiveness theory

2.1.1 Competitiveness and competitive advantage

Core competitiveness research belongs to the category of competitiveness research, while the research on competitiveness can be divided into three levels (Nelson, 1992): national competitiveness, industrial competitiveness and enterprise competitiveness. At the level of national competitiveness research, David Ricardo proposed comparative advantage theory. He believed that one country has comparative advantage if the opportunity cost of producing a product in one country (measured by other products) is lower than that in other countries (Y. D. Duan & Che, 2014). In the research of industrial competitiveness, the most famous one is Porter's competitive advantage theory (Porter, 1985), especially his "Five Forces Model" which interprets the essence of industrial competitiveness; at the enterprise level of competitiveness research, Kaplan and Norton (1996) use Balanced Scorecard (BSC) index system to measure the performance of companies from the perspectives of financial, customers, internal business process and learning and growth. The BSC system is a multi-performance evaluation system focusing on corporate strategy, which transforms the tasks and decisions of the enterprise and its internal departments into diverse and interrelated goals, and then decomposes these goals into multiple indicators. It runs through four complete and interrelated aspects: finance, customers, internal operation, and learning and growth.

The main purpose of this thesis is to explore the competitiveness at the enterprise level, that is, enterprise competitiveness. The economic industry has basically agreed that the competitiveness of enterprise is decisive to its survival and development. The study of enterprise competitiveness originates from the study of enterprise, then applied to other different fields of the society. The concept of competitiveness derives from the division of labor, which makes enterprises have more capability and productivity than those enterprises

without division of labor running in specific area (Smith, 2012). Theoretically, the research on enterprise competitiveness is a branch of modern enterprise strategic management. The fundamental purpose of enterprise strategy is to improve the advantageous position of enterprises in the current and future competition.

Enterprise core competitiveness is a relatively abstract concept. According to the literature documentation, the definition of enterprise competitiveness by researchers are not completely consistent, and there is no unified and mature theoretical system of enterprise core competitiveness. In recent years, the research field of core competitiveness theory mainly focuses on the following aspects: the research on the concepts and characteristics of core competitiveness; the research on the source of core competitiveness; the research on the constituent elements of core competitiveness and the research on the identification and evaluation of core competitiveness. Scholars have different views of the competitiveness concept from different perspectives.

(1) Integrated view

In 1990, Prahalad and Hammer published the article "The core competence of the corporation" in Harvard Business Review and formally put forward the concept of core competitiveness (Prahalad & Hamel, 1990). From their article, they described core competence as "the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies". They believed the core competence is the result of the coordination and integration of technology and skills according to enterprise management. Prahalad and Hamel argued that three tests can be applied to identify core competences in a company: first, a core competence provides potential access to a wide variety of markets; second, a core competence should make a significant contribution to the perceived customer benefits of the end product; finally, a core competence should be difficult for competitors to imitate. Enterprises with the above three characteristics should have the core competitiveness. However, in their article, it does not clearly define the core competitiveness, but only gives a descriptive concept.

Consistent with Prahalad and Hammer's point of view, Coombs (1996) believes that the core competitiveness of an enterprise is the integration of various competitive capabilities, resources and systems of the enterprise. The core competitiveness is a unique competitiveness that other enterprises cannot imitate. Coombs also points out that enterprise core competitiveness is the accumulation of specific experiences of enterprises that enable enterprises, markets and technologies to interact. This view focus on the integration and systematization of various capabilities of an enterprise.

In China, Jin (2001) is one of the earliest scholars to study enterprise competitiveness. He believes that "enterprise competitiveness is the comprehensive quality that an enterprise has in the competitive market, which can continuously and effectively provide products or services to the market (consumers, including productive consumers) and obtain profits and self-development than other enterprises".

He also believes that enterprise competitiveness includes five basic meanings: first, the industry involved in enterprise competitiveness is a competitive and open market, not a monopoly and closed market. Second, the essence of enterprise competitiveness is the productivity (or work efficiency) of an enterprise compared with other enterprises. Third, enterprise competitiveness is reflected through two aspects: consumer value (market share and consumer satisfaction) and enterprise self-interest (profit and development). Fourth, the competitiveness of enterprises determines the long-term existence of enterprises. The short-term and accidental factors affecting the business status of enterprises may not be directly related to the competitiveness of enterprises. Fifth, the competitiveness of enterprises is the comprehensive nature of enterprises. Many factors of enterprises determine and affect the competitiveness of enterprises.

(2) Knowledge-based view

Dorothy Leonard-Barton was the first person to define the core competitiveness of enterprises from knowledge perspective. Leonard-Barton (1992) believes that core competitiveness refers to the specific knowledge and unique information to enterprises, which is not easy to trade and brings competitive advantage to enterprises. She defines core capability as the knowledge set owned by enterprises that distinguishes and provides competitive advantage. This knowledge set includes four dimensions: first, the enterprise's specific skills and employee learning ability; second, the enterprise's technical system, that is, the systematic synthesis of knowledge of organization members; third, enterprise management system; fourth, the enterprise value system, that is, the values and behaviors shared by employees. This view especially emphasizes the role of management system and value system in enterprise core competitiveness.

Similar to Leonard-Barton's understanding, Coyne et al. (1997) give a definition of core competitiveness as "a combination of complementary skills and knowledge bases embedded in a group or team that results in the ability to execute one or more critical processes to a world-class standard". This view emphasizes the importance of complementary technology and knowledge for the formation of enterprise capability, and also expresses the core competitiveness comes from the capability of execution of critical processes.

Zollo and Winter (2002) further discussed the learning mechanism of organizational knowledge from the perspective of organizational knowledge evolution. They regard enterprise capability as the company's empirical knowledge, which is accumulated in the process of managing the enterprise business in a systematic and predictable way. They argued that enterprise capability comes from the accumulation of tacit experience, the clarification of explicit knowledge and the evolution of knowledge coding activities. The evolution of these three mechanisms is the basis for the formation of enterprise capability. The evolution process of enterprise capability is regarded as a dynamic process of continuous generation and correction of company operation routines.

Z. J. Xu (2010) believed that an enterprise is a collection of knowledge. In his viewpoint, the core competitiveness of an enterprise refers to a knowledge system that can bring sustainable competitive advantage to an enterprise and has enterprise characteristics. In the enterprise knowledge system, knowledge is the basic factor for enterprises to obtain competitive advantage and is also the basis of core competitiveness. The core competitiveness accumulates over time and is not easy to be imitated by other enterprises. Learning is an important way to accumulate and improve the core competitiveness. He also argued that the manifestation of core competitiveness can be formatted book knowledge, information, technology, management ability and enterprise values, and its carrier is people and the object of knowledge used by people - operation tools. In this way, the core competitiveness becomes a relatively real thing, which is more operable and conducive to the identification and cultivation of the core competitiveness of enterprises.

(3) Cultural view

Raffa and Zollo believe that the core competitiveness of enterprises exists not only in the business operation subsystem of enterprises, but also in the cultural system of enterprises. It is rooted in the complex relationship between people and the environment, and the accumulation of core competitiveness is contained in the corporate culture. This view emphasizes that while accepting the technical characteristics of core competitiveness, we should not ignore the role of corporate culture and people in the formation of core competitiveness (L. Tan, 2010; X. L. Wang, 2006).

Kotter and Heskett (1992) pointed out in their book Corporate Culture and Performance that corporate culture plays a significant role in long-term economic performance of an enterprise. In their study of 10 firms in different United State industries, it was found that firms with culture emphasizing critical managerial constituencies and leadership from managers outperformed the firms did not have those cultural traits. They also believe that

organizational culture will be the more important factor in deciding the success or failure of an enterprise.

F. Y. Yu (2006) believes that corporate culture is the result of long-term accumulation of an enterprise and also an important constituent factor of enterprise core competitiveness. He also believes that the key for enterprises to cultivate core competitiveness and obtain sustainable competitive advantage is to cultivate collective learning ability and create a learning enterprise culture.

From Leonard-Barton's (1992) understanding of the four dimensions of the core competitiveness, the enterprise value system, which is the value and behaviors shared by enterprise members, also belongs to enterprise culture that constitute core competitiveness.

We sort out relevant literature of the main viewpoints of scholars on core competitiveness in Table 2.1 as below:

Table 2.1 Main viewpoints on core competitiveness

Scholar	Main viewpoints
Prahalad and Hamel (1990)	The core competence is the result of the coordination and integration of technology and skills.
Dorothy Leonard-Barton (1992)	Core competitiveness is the specific knowledge and unique information to enterprises.
Synder and Ebeiling (1992)	The real core competitiveness is value-added activities, which can be carried out at a lower cost than competitors. It is these unique and continuous activities that constitute the real core competitiveness of the enterprise.
Foss (1996)	Core competence is both organizational capital and social capital, which makes the coordination and organic combination of enterprise organizations possible.
Jin (2001)	Enterprise competitiveness is the comprehensive quality that an enterprise has in the competitive market.
Miao (2010)	In essence, the core competitiveness of an enterprise is the enterprise culture that can bring great value to the enterprise and is scarce, irreplaceable, extensible and difficult to imitate
Z. J. Xu (2010)	Core competitiveness refers to a knowledge system that can bring sustainable competitive advantage to an enterprise and has enterprise characteristics.

Source: tidied by author

When we discuss the core competitiveness of enterprise, the concepts of competitive advantage (CA) and sustainable competitive advantage (SCA) should be explained clearly. The concept of competitive advantage was first proposed by the British economist E. Chamberlin in 1939, and then introduced into the field of strategic management by Hofer and Schendel (1978). It was not until the mid-1980s that Porter began to make a systematic and in-depth study on competitive advantage.

So far, there is no unified and clear definition of the concept of competitive advantage, and different scholars have different understandings. Hofer and Schendel (1978) believe that

competitive advantage is “an organization’s unique market position relative to its competitors through the allocation of its resources”. Porter (1985) argues that competitive advantage means that an enterprise can provide customers with more use value than its competitors in the product market. Porter also believes that the basic premise of enterprise competitive advantage is that the value created by enterprises using various methods exceeds the cost of creating these values. In Porter’s research, he believes that the acquisition of competitive advantage depends on the choice of enterprise competitive strategy, which depends on the analysis of the industrial environment and the value chain of enterprise productive activities.

According to Porter’s viewpoint, the competitive advantage of an enterprise mainly depends on two aspects: one is the long-term profit potential of the industry in which the enterprise is located, and the other is the market position of the enterprise in the industry. Porter pointed out that the fundamental factor determining the profitability of enterprises is the attraction of the industry, that is, the profitability potential of the industry, and the attraction of the industry depends on the competitive situation of the industry, which mainly depends on the analysis of the five basic competitive forces (five forces model) in the industry and the implementation of the three basic strategies. The three basic strategies are cost leadership strategy, differentiation strategy and focus strategy (Porter, 1980).

Besides Porter (1985), Barney (1991) depicted explicitly the concept competitive advantage and sustained competitive advantage in his article Firm resource and sustained competitive advantage. In his opinion, a firm is said to have a competitive advantage when it is implementing a value creation strategy not being simultaneously implemented by any current or potential competitors. Although some scholar suggested sustainable competitive advantage is simply a competitive advantage that sustain for a long period of calendar time (Porter, 1985), Barney (1991) believed the sustainable competitive advantage of a firm only exist after the effort of competitive advantage duplication from competitors and the SCA can be derived from resources and capabilities which have attributes of valuable, inimitable, rare and non-substitutable (VRIN).

Although the view that enterprise core competitiveness is the source of sustainable competitive advantage has been widely spread and accepted, it is still necessary to distinguish these two concepts. It was often confused by some people for understanding the relationship between competitive advantage and core competitiveness. In the relevant literature of enterprise strategic management, the concepts of competitiveness and competitive advantage are generally considered to be synonymous, and they are often used alternately to express the same connotation. For enterprise competitiveness and competitive advantage, both reflect a

certain strength of the enterprise relative to its rivals in the competition, which is a more favorable comparative advantage than its competitors. We can say that if an enterprise has higher competitiveness compared with other enterprises, it has a competitive advantage relative to other enterprises. This competitive advantage can be derived from external environmental factors, such as government support policies, superior natural geographical location and industrial market potential; it may also originate from the internal factors of the enterprise, such as rich resources and strong capability to allocate and use resources, or even the comprehensive result of the above factors.

Though competitiveness and competitive advantage were considered as synonymous concepts, there are still differences between them. We believe that (1) competitive advantage is often expressed in the advantageous position of an enterprise's resources, capabilities, product or service in some aspects of the industry. These kind of resources and capabilities with advantages over competitors are only one aspect of core competitiveness, not all of core competitiveness. (2) Core competitiveness is a comprehensive capability of integrating all kinds of productive factors within the enterprise. The core competitiveness is the result of the comprehensive action of competitive advantage and competitive disadvantage. (3) Enterprise can improve its core competitiveness by strengthening and acquiring competitive advantage. So, we summarize the differences between the two concepts in Table 2.2:

Table 2.2 Comparison between competitive advantage and core competitiveness

	Competitive advantage	Core competitiveness
Range	Refer to a certain advantage in specific aspect (resource, capability, product, service)	Overall advantages of the enterprise
Time	Static (a certain time period in past or present)	Dynamic (focus on future)
Comparison object	Comparison for certain aspect of enterprise	Comparison of comprehensive strength

Source: from H. C. Wang (2005)

It was understood by scholars that competitiveness is a complicated indicator and it was no commonly accepted definition nor a single methodology for its analysis. After analyzing the relevant definitions of competitive advantage and core competitiveness, we believe that the definition of enterprise core competitiveness in this thesis can be concluded as: in a certain competitive environment, enterprise core competitiveness is the comprehensive capability that a firm can integrate its strategy, technology, marketing, manufacturing and management resources to better satisfy customer needs in products and services than its competitors, so as to create social value and make profits for the enterprise, and finally acquire sustained competitive advantage for its sustainable development.

2.1.2 The characteristic of competitiveness

According to the understanding of competitiveness, we summarize the characteristics of enterprise competitiveness as follows:

(1) Valuable

Core competitiveness can create value because it can bring value to customers and enterprises, and this value is often strategic. The core products produced by enterprises through their core competence can enable customers to enjoy the value by the products at a lower price, or enjoy more value at the same price. By providing differentiated products and services, enterprises can obtain excess profits that exceed the average level of the industry (Barney, 1991; Prahalad & Hamel, 1990; Snyder & Ebeling, 1992).

(2) Rareness

Rareness means that the resources and capabilities that constitute the core competitiveness of enterprises are differentiated, scarce and not universal in the industry. The CEO and development paths of enterprises have historical characteristics and cannot be imitated. The unique resources and capabilities formed in the development process of enterprises are valuable and scarce for enterprises, and the core competitiveness of enterprise also reflects the characteristics of rareness (Barney, 1991; Wernerfelt, 1984).

(3) Comprehensiveness

Competitiveness is the comprehensive strength of an organization. It does not only provide the competitive advantage compared with its competitors in existing products or business units, but also reflects the sustainable development of enterprises. The competitiveness also means integration and usage of existing resources and capabilities, seek future resources, optimize resource distribution and capability distribution, and achieve the best match between resource, capability and environment, so as to establish and maintain sustainable competitive advantage (Prahalad & Hamel, 1990; Q. Zhou, 2009).

(4) Inimitable

The core competitiveness of enterprise is difficult to imitate. Enterprises have different growth paths in their own development process, and can continuously accumulate specific resources and capabilities that reflecting their unique history. These resources and capabilities are critical factors that constitute the core competitiveness of enterprises, and it is difficult for competitors to imitate (Barney, 1991).

(5) Dynamic

As the external environment of the enterprise is changing, technology and products of

enterprise have a life cycle, and so does the core competitiveness. Enterprises usually go through the non-competitiveness stage (initial stage) and general competitiveness stage, primary core competitiveness stage, mature core competitiveness stage, core competitiveness weakening stage and core competitiveness newborn stage (Gui & Xie, 2002). Enterprises with core competitiveness will not leading its competitors forever. The leading edge of enterprise may be replaced by its rivals. If enterprises want to maintain the leading edge of core competitiveness, they must continuously innovate, develop and cultivate core competitiveness, maintain and expand the leading distance with its competitors. Otherwise, with the passage of time and the strengthening of competitors' competitiveness, the leading edge of core competitiveness will gradually lose (Q. Zhou, 2009).

2.1.3 The source of core competitiveness

Another research hot spot of core competitiveness is the source of core competitiveness, namely, how does core competitiveness or competitive advantage of an enterprise generate? Different understanding of the core competitiveness concept leads to different views of the source of core competitiveness. According to the literature of competitiveness theory, there are two main perspectives among scholars: first, the exogenous view of the source of enterprise core competitiveness (Porter's strategy theory), which believes the competitive advantage originate from the external of the enterprise; second, the endogenous view of the source of enterprise core competitiveness (Resource-based View, Capability-based View and Dynamic capability view), which believes the competitive advantage comes from the internal of the enterprise.

(1) Exogenous view

Michael Porter, the representative of industrial structure theory, puts forward that there are five conditions that can affect enterprise competitive advantage from the industrial perspective. Porter's five forces model focuses on the impact of industrial structure and market segmentation on enterprise competitive advantage and enterprise strategy formulation (Porter, 1980, Porter, 1985). According to this view, whether enterprise competitive advantage can be built and whether competitive advantage can be sustained are determined by external market forces and industrial structure. Porter believes that the competitive advantage of an enterprise comes from the external environment, not the internal of the enterprise. The competitive advantage completely depends on the matching extent of the strategy of enterprise and external environment. Obviously, this perspective ignores the impact of internal resources and capabilities on competitive advantage of an enterprise.

(2) Endogenous view

Along with the proposal of exogenous view of competitive advantage, it drives scholars and entrepreneurs to think about the following issues: what impact does the enterprise owned resources and capabilities have on the sustainability of the enterprise's competitive advantage? Can the enterprise cultivate its own competitive advantage? These problems have aroused the research interest of many scholars. They are committed to the research of enterprise competitive advantage, and have achieved a lot of research results.

Penrose (1959), Prahalad and Hamel (1990), Barney (1991) and Teece et al. (1997) have conducted in-depth research on the endogenous problem of enterprise competitive advantage from the angle of resource-based view (RBV), capability based view (CBV) and dynamic capability view (DCV) respectively. They believe that the competitive advantage built by enterprises is relying on their own resources and capabilities, which can make enterprises effectively respond to the dynamic changes of the environment and improve enterprise performance.

2.1.3.1 Resource-based view

Resource-based view is an enterprise competitiveness theory that emphasizes the importance of resource factors of an enterprise. This theory regards the enterprise as a collection of resources, and focuses on analyzing the competitive advantage of the enterprise from the resource's perspective.

The earliest scholar who paid attention to the relationship between resources and competitive advantage was Penrose. Penrose was also the founder of the resource-based view. According to Penrose's point of view, the decisive factor of enterprise growth exists within the enterprise (Penrose, 1959). The driving force of enterprise growth depends on the "productive service capability" which formed by enterprise resources. The full development and utilization of these capabilities is the most important factor to promote enterprise growth. According to the firm growth theory of Penrose, the source of enterprise growth is the enterprise's capability, and this capability comes from the leverage of enterprise resources. The most revolutionary contribution of Penrose is to distinguish resources from capabilities, and clearly defines capabilities as the source of enterprise growth and competitive advantage.

Before the rise of resource-based view, the dominant strategic management theory was the strategic positioning theory proposed by Porter (1980). Based on the organizational theory, it implied two basic assumptions when analyzing the competitive advantage of enterprises: (1) enterprises in the industry are homogeneous; (2) even if there is heterogeneity within an

industry, this heterogeneity will last for a very short time because those resources enterprises use to implement their strategies are highly mobile. Therefore, the competitive advantage of the enterprise should be attributed to the industrial or market structure. Therefore, the target market positioning is the basic strategy for enterprises. However, this theory cannot explain the reasons for the performance differentiation of different enterprises in the same industry. This shows that the performance differentiation of enterprises has not only external factors, but also internal factors. Therefore, scholars like Wernerfelt and Barney began to pay attention to the impact of internal factors on enterprise performance and competitive advantage.

Based on Penrose's research, Barney (1991) elaborated more deeply on the relationship between resources and competitive advantage. Barney regards enterprises as the combinations of heterogeneous resources and these resources cannot be easily imitable or imperfectly mobile, and he believes that valuable, rare, inimitable and non-substitutable (VRIN) resources can bring competitive advantages to enterprises. He believes that firm resources include all assets, capabilities, organizational processes, firm attributes, information, and knowledge. These resources enable the firm to implement strategy to improve its efficiency and effectiveness. In a specific industry, the resources that are rare, difficult to imitate, difficult to replace and able to create value are called "strategic resources" (Chi, 1994). According to heterogeneous hypothesis of the firm, RBV theory holds that as long as the company has resources with VRIN characteristics, the enterprise can obtain sustainable competitive advantage through personalized strategic planning, because these resources are difficult to be imitated by competitors.

Different from Porter's strategic positioning assumption, Barney believes that firms within an industry may be heterogeneous with respect to the strategic resources they control and these resources may not be perfectly mobile, thus the heterogeneity can be lasting over time (Stalk et al., 1992). These assumptions can explain the long-term existence of different performance among enterprises.

Barney also believes the significance of the valuable and rare resources owned by enterprises to the competitive advantage depend on the difficulty of their imitation. The reason why rare resources of enterprises are difficult to be imitated is that, some resources, especially intangible resources (such as corporate culture and knowledge) are accumulated by enterprises for a long time in the process of their development, which has strong historical path dependence and social complexity. History can neither be reproduced nor copied, and various complex causal relationships in the process of resource formation are usually difficult for competitors to understand.

In Barney's view, the VRIN resources owned by enterprises determine which market enterprises should choose to enter, what kind of competitive advantage they can finally obtain and how long this competitive advantage can last, and capability is only a unique resource of enterprises. The resources and capabilities that can be used to build competitive advantage are strategic resources of enterprises, which play an extremely important role in the effective implementation of enterprise strategy.

Finally, Barney presents the relationship between heterogeneous resources and sustainable competitive advantage in Figure 2.1 below.

Figure 2.1 The relationship between resources and sustainable competitive advantage

Source: reproduced by author from Barney (1991)

Before Barney (1991), Wernerfelt (1984) analyzes the firms from the resources side rather than products side in his article "A resource-based view of the firm". Resources could be thought of strengths or weakness of a given firm, and it can be classified as tangible resources and intangible resources. For example, resources of a firm can be brand names, employment of skilled personnel, in-house knowledge of technology, machinery, efficient procedure and capital. In his article, in analogy to entry barrier, the resource position barrier has been proposed. Wernerfelt defines those attractive resources as those resources that help enterprises to establish resource position barriers, and this resource position barrier can make it difficult for other enterprises to catch up. The resource position barrier can only be self-reproduced by enterprises itself, such as machine capacity, customer loyalty, production experience and technological leads. Because resources have the same effect on enterprise performance as product market competitive advantage, enterprises should strengthen the dynamic management of resources.

Peteraf (1993) believes that an enterprise must meet four conditions at the same time in order to maintain its sustainable competitive advantage. First, the resources owned by the enterprise must be heterogeneous, which is the guarantee of the source of Ricardian rents; second, the ex-post limits to competition. The ex-post limits to competition can make the rent sustainable, which is mainly formed by two factors, imperfect imitation and imperfect substitution. Third, imperfect resource mobility allows the rent generated by resources to

remain within the enterprise. Fourth, the ex-ante limits to competition ensure that the rent generated is not offset by the cost expense. Therefore, this resource characteristic will not cause competitors to imitate. Obviously, this view is extending the view of VRIN resource-based view.

Contrasting with VRIN resources contribute to the firm's competitive advantage, Peteraf and Barney (2003) believes competitive advantage obtained by an enterprise when it creates more economic value than its marginal competitors. They suggest that competitive advantage results from the existence of critical resources that are used in a superior way. This view emphasizes the higher use of VRIN resources more than focus on the VRIN resource itself. The VRIO (value, rare, inimitable and organization) of resource-based view considers that it is through the firm's internal organization (the "O" of VRIO) that resources are transformed into competitive advantage (Cardeal & Antonio, 2012). They also argue that the resource-based view is a complementary theory instead of substitutable theory for Porter's five forces model theory and other strategic theories.

At the end of 1990s, with the adjustment of global industrial structure and the intensification of competition, the resource-based view was questioned because it ignored the impact of dynamic changes of market on enterprise growth. Some scholars (Eisenhardt & Martin, 2000; Priem & Butler, 2001) believe that resources alone cannot maintain sustainable competitive advantage. Enterprises must constantly improve their capabilities and make good use of resources in order to maintain competitive advantage. Since then, the focal point of enterprise competitive advantage research has shifted from resource-based factors of the enterprise to capability-based factors of the enterprise.

2.1.3.2 Capability-based view

Similar to the resource-based view, the capability based view also emphasizes the source of enterprise core competitiveness from the internal of an enterprise. However, the enterprise capability theory emphasizes the influence of capability instead of heterogeneous and inimitable resources of the enterprise-on-enterprise core competitiveness. Capability-based view regards the enterprise as a capability system, and focuses on understanding the enterprise competitiveness from the perspective of the dynamic link between resources, and emphasizes the significance of the combination and integration of resources to the enterprise competitive advantage. From capability-based view, we believe that resources are the input factors of the production process, and resources themselves have almost no production capability. Resources are combined, coordinated and leveraged to form capability through the

process of enterprise production activities.

Until the 1990s, Prahalad and Hamel successfully published their famous article “The core competence of the corporate” in Harvard Business Review, the capability-based view began to develop in an all-round way and became the new mainstream in the field of enterprise strategy research. Prahalad and Hamel regard “enterprise capability” as the “core competence”, and they believe that core competence is “the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies” (Prahalad & Hamel, 1990).

At present, there are many views of enterprise capability theory, and the most representative three are technology and skill-based core competence theory, organizational capability theory, and process-based enterprise capability theory.

(1) Core competence theory

The core competence theory was proposed by Prahalad and Hamel in their article “the core competence of the corporate” (Prahalad & Hamel, 1990). The main point of view of this article is regarding core competence as “the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies”.

Facing the new round of global competition, we must rethink what is an enterprise. Entrepreneur should consider problems from the perspective of core competence instead of end products. As Prahalad and Hamel wrote in their article, “the corporation, like a tree, grows from its roots. Core products are nourished by competencies and engender business units, whose fruits are core products”. They used a large tree in analogy to enterprise, the trunk and major limbs of the tree are core products, the smaller branches are business units. The leaves, flowers and fruits are end products, which can be nourished by the root system. The root system, which is analogy to core competence, is the most important factor of enterprise competitiveness. In the short run, a company’s competitiveness derives from the price or performance attributes of current products. However, in the long run, the competitiveness derives from an ability to build, at lower cost or more speedily than its competitors.

Prahalad and Hamel also believes that the real sources of advantage are to be found in management’s ability to consolidate corporate-wide technologies and production skills into competencies that empower individual businesses to adapt quickly to the rapid changing opportunities. This view also reflects the dynamic nature of capability.

Core competence theory break through the limitations of competitive strategy theory in understanding of competitiveness, and begins to involve the dynamic attribute of

competitiveness, making the content of enterprise competitiveness theory more complete.

Similar to the enterprise resource-based view, although the core competence theory makes up for the defects of the Porter's five forces model that only pay attention to the external analysis of enterprises, it still has some inherent defects. First, it pays too much attention to the internal analysis of the enterprise and neglects the external analysis of the enterprise, resulting in the imbalance of internal and external analysis. Second, the core competence theory does not give a feasible method to identify the core competence, nor does it put forward an effective and operable method to effectively manage and use core competence.

(2) Organizational capability theory

Alfred D. Chandler is a representative of the theory of enterprise organizational capability. Chandler convinced the unit of analysis must be the firm, rather than the transaction by the firm when we study the rules of enterprise growth (Chandler, 1992). In his view, a firm is a legal entity, an administrative entity, a pool of physical facilities, learned skills and liquid capital, and is a primary instrument for the production and distribution of current goods and for planning and allocation of future production and distribution.

Chandler emphasizes the analysis of enterprise growth should be done from the inside of the firm, and he believes the organizational capability was the guarantee for enterprise's long-term development and maintaining its competitive advantages.

Through the study of multinational enterprises in the United States, Britain and Germany, it is considered that there is only one factor determining the success of enterprises: managers have created the capability of scale economy and scope economy through human, material and financial investment, which is called organizational capability.

Chandler (1992) believes the organizational capability can provide the dynamic not only for the continuing growth of the company but also for the industry, and the organizational capability was created during the knowledge-acquiring process when commercialized a new product in national or international market. The transfer of organizational capability was difficult from company to company, or even from one industry to another, precisely because they had been learned in a specific organization context. He emphasizes that only if the enterprise-specific capability continued to be enhanced by constant learning, those capital-intensive industries can maintain competitive and profitable.

In Chandler's opinion, enterprise competitive advantages based on organizational ability can be maintained for a long time, first because the first movers have consolidated their position in the industrial field because they take the lead in achieving scale economies; moreover, the first movers have learning advantages and company-specific capabilities over

the followers in production, distribution, research and development, and labor relations; furthermore, the entry cost of the challengers is very high, because they have to face the uncertainty of competitors' counterattack.

(3) Process-based capability theory

According to the case analysis of Wal-Mart, Stalk et al. (1992) believe that the key to the success of an enterprise lies not only in its core competence, but also in its organizational activities and business processes, and the primary strategic goal of an enterprise is to improve these activities and processes. They believe that a capability is a set of business processes strategically understood. Although each department may have its own core competence, it is important for the manager to manage these processes and transform them to enterprise competitiveness.

It was also considered by Stalk et al. (1992) that the corporate strategy should be more dynamic to anticipate the market trend, to quickly respond to the customer needs and even to move quickly in entire businesses. This view also reflects the dynamic factor of capability-based competition in this more dynamic business environment.

In their point of view, enterprises must consider the following four principles in order to cultivate this capability: (1) the building blocks of the corporate strategy are not products and markets but business processes; (2) competitive success depends on transforming the company's key processes into strategic capabilities that consistently provide superior value to customers; (3) companies creates these capabilities by making strategic investment in a support infrastructure that links together and transcend the traditional strategic business units (SBU) and functions. (4) because capabilities necessarily cross functions, the champion of a capabilities-based strategy is the CEO.

As we discussed above, capability-based view focus on the capability factor of an enterprise when seeking the source of competitive advantage, and it regards firms as a collection of capabilities. Prahalad and Hamel considered the integration of skills and technologies as the core competence of the enterprise, Chandler believes organizational capabilities are the guarantee for the enterprise's growth and maintain its competitive advantage, while Stalk et al. believes the competitiveness is rooted in the operating and managing of enterprise business process.

Capability-based view and resource-based view have certain extent in common, and both focus on seeking the source of competitive advantage from the internal factors of the enterprise. However, there are differences between two theories. The resource-based view emphasizes enterprise resources especially tangible assets are the source of enterprise

competitive advantage, while capability-based view focuses on intangible knowledge and capabilities, and puts more emphasis on organizational factors. However, these two views only analyze the source of competitive advantage from the internal angle of an enterprise. We need a new method to comprehensively analyze the source of competitive advantage from both the internal and the external factors of the enterprise. Then the dynamic capability view (DCV) is coming to its stage.

2.1.3.3 Dynamic capability view

According to our analysis of capability-based view, although it also reflects the dynamics of capability to a certain extent (Chandler, 1992; Prahalad & Hamel, 1990; Stalk et al., 1992), it does not systematically analyze the source of enterprise competitive advantage with consideration of the external environment. Along with the intensification of market competition and the rapid changing environment, the existing competitive advantage owned by an enterprise cannot maintain over time, and will be soon replaced by other more innovative competitors. In this competitive situation, how to obtain sustainable competitive advantage is an important issue of strategic management under the dynamic environment.

The resources proposed by the resource-based view are no longer the bottleneck of enterprise competition. The single and simple capability owned by the enterprise, whether it is the organizational capability or the core competence, is difficult to ensure that the enterprise can obtain a sustainable competitive advantage. Under this circumstance, the dynamic capability view has been proposed firstly by Teece et al. (1997) in order to explain the source of enterprise competitive advantage in a dynamic environment.

Teece et al. (1997) defined dynamic capability as “the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments”. The term “dynamic” refers to the capability to renew competences so as to achieve congruence with the changing business environment. The term “capabilities” emphasizes the key role of strategic management in appropriately adapting, integrating, and re-configuring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment.

They advance the argument that the competitive advantage of firms lies with its managerial and organizational processes, shaped by its specific asset position, and the paths available to it. In their point of view, the managerial and organizational process, asset position and paths (3P) formed a dynamic capability analysis framework that can explain the source of enterprise competitive advantage. They explain the dynamic capability framework in specific

below:

(1) Managerial and organizational processes. Organizational processes have three roles: First, coordination or integration; the way production is organized by management inside the firm is the source of differences in firms' competence in various domains. Capability is embedded in distinct ways of coordination and combination of enterprises, which can explain that seemingly minor technological changes can have a devastating impact on enterprise's ability to compete in the market. Second, learning; Learning is a process by which repetition and experimentation enable tasks to be performed better and quicker. It also enables new production opportunities to be identified. Learning involves organizational as well as individual skill. The organizational knowledge generated by such activity resides in routines, or a new logic of organization. Third, reconfiguration. In rapidly changing environments, there is obviously value in the ability to sense the need to reconfigure the firm's asset structure, and to accomplish the necessary internal and external transformation. This requires constant surveillance of markets and technologies and the willingness to adopt best practice.

(2) Assets positions. The strategic posture of a firm is determined by its specific assets. Specific assets include its difficult-to-trade knowledge assets and assets complementary to them, as well as its reputational and relational assets. For example, these assets include technological assets, complementary assets, financial assets, reputational assets, structural assets, institutional assets and market assets. Such assets determine its competitive advantage at any point in time.

(3) Path. The paths available to a firm include two meanings: path dependency and technological opportunities. The notion of path dependencies recognizes that history matters. Where a firm can go is a function of its current position and the paths ahead. Its current position is often shaped by the path it has traveled.

For analytic purposes, Teece (2007) further believes that dynamic capabilities can be disaggregated into the capability (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets. He also believes that while the long-run performance of the enterprise is determined in some measure by how the external business environment rewards its heritage, the development and exercise of internal dynamic capabilities lies at the core of enterprise success and failure.

Besides Teece, other scholars also put forward their understandings of the concept of dynamic capabilities. Similar to Teece and colleagues, Eisenhardt and Martin (2000) believe that dynamic capability consists of specific strategic and organizational processes like product

manufacturing, alliance, and strategic decision making that creates value for firms in dynamic market. Although dynamic capability is idiosyncratic in their details and path dependent in its emerging, they have significant commonalities across firms. This suggests they are more homogeneous, equifinal and substitutable than it assumes. Eisenhardt and Martin elaborate dynamic capability in different situation as well. In moderately dynamic markets, dynamic capability resembles traditional concept of routine, they are detailed, analytic, stable processes with predictable outcomes. In high velocity markets, dynamic capabilities are highly experimental and fragile processes with unpredictable outcomes. They also believe learning mechanism guide the evolution of dynamic capabilities. In moderately dynamic markets, evolutionary emphasis is on variation and in high velocity dynamic markets, evolutionary emphasis is on selection.

It is argued in theory dynamic capabilities exhibit commonalities across firms (Eisenhardt & Martin, 2000). However, such commonalities have not been systematically identified. C. L. Wang and Ahmed (2007) clarify the concept of dynamic capabilities in specific. They argue that dynamic capabilities are not simply processes, but embedded in processes. They classify firm resources and capabilities in a hierarchical order, with particular reference to a firm's competitive advantage. In their perspective, resources are the foundation of a firm and the basis for firm capabilities. Therefore, resources can be referred to as the zero-order element of the hierarchy. Capabilities are first-order element that is likely to result in improved enterprise performance. Core capabilities are second order element that are strategically important to its competitive advantage at a certain point. Dynamic capabilities can be regarded as the third-order element which emphasize a firm's constant pursuit of the renewal, reconfiguration and recreation of resources, capabilities and core capabilities to address the environmental change. They contend that dynamic capabilities are the ultimate organizational capabilities that are conducive to long-term performance, rather than simply a subset of the capabilities, as Teece et al. (1997) suggest.

C. L. Wang and Ahmed (2007) also identify three component factors, namely, adaptive capability, absorptive capability and innovative capability, which reflect the common features of dynamic capabilities across firms. Finally, they proposed a research model incorporating market dynamism as an antecedent to, and capability development and firm performance as consequences of, dynamic capabilities. They also explain the effects of dynamic capabilities on capability development and firm performance.

Barreto (2010) reviews the research of dynamic capability and suggests the definition of dynamic capability as the firm's potential to systematically solve problems, formed by its

propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base.

Cardeal and Antonio (2012) has the same understanding of dynamic capabilities as Teece and his colleagues. They believe dynamic capability (DC) represent the firm's behavioral orientation towards constant integration, reconfiguration, renewal and recreation of its resources and capabilities and continuous upgrading and reconstruction of its core capabilities in response to the changing environment and to remain competitive (C. L. Wang & Ahmed, 2007), focus on internal processes or routines. They reckon that the higher usage of resources to form capabilities is more important than resource itself owned by firms. The usage of resources is embedded in organizational processes and routines. They also believe dynamic capability can be seen as the "O" in VRIO according to the RBV. Being the VRIO's "O", to achieve competitive advantage, firms need to have VRI (valuable, rare and inimitable) capabilities. By implementing a case study of a medium sized Portuguese footwear manufacturer, they review the process of developing the capability, and test its inputs for VRIO and test the capability for VRI. They find that competitive advantage stems from the VRI capability.

In addition to Teece's understanding of dynamic capability, some scholars also study dynamic capability from knowledge and learning perspective. Dosi (1998) believes that dynamic capability is the ability to update enterprise capability. Its purpose is to study how enterprises identify market opportunities, reasonably allocate and reconstruct enterprise resources and capabilities, so as to enhance the market value of enterprises. Dynamic capability includes learning ability, problem-solving ability, and especially the ability to discover and solve new problems. It is the capability of the company to accumulate relevant new skills and knowledge.

Subba and Narasimha (2001) study from the basic principle of biology that the immune system has the ability to recognize a variety of antigen diversity and produce corresponding antibodies when needed, so as to enable the human body to deal with the biological environment. They proposed that dynamic capability is the knowledge characteristic of enterprise generating diversified business. They also believe that the dynamic capability helps the company have the first mover advantage and adapt to the dynamic environment in time.

Dong et al. (2004) reckon that capability can be regarded as a collection of enterprise knowledge, and technical knowledge is the capability to change enterprise ability. The process of enterprise changing its capability is the process of enterprise pursuing new knowledge. The result of changing capability is that enterprises have established a new set of knowledge

structure.

According to the dynamic capability literature, most of scholars have similar understanding of the concept and characteristics of dynamic capabilities. They believe the dynamic capability is the capability to build, reconfigure, and renew enterprise capabilities to adapt to the changing environment. In their perspectives, capability is a more important factor for enterprises to form competitive advantage than VRIN resources owned by enterprises (Cardeal & Antonio, 2012; C. L. Wang & Ahmed, 2007). In order to obtain sustainable competitive advantage, enterprises have to pursuit the continuous capability to renew its portfolios of capabilities to match the dynamic market environment. The concept of dynamic capability adapts to the changes of modern enterprise business environment. The renewal and cultivation of capability becomes a continuous dynamic process, which has positive significance for enterprises to establish sustainable competitive advantage. Although there still exists different understandings of dynamic capability, scholars reach a consensus on the knowledge characteristics of dynamic capability. They believe that knowledge is the core of dynamic capability, and the learning mechanism guides the evolution of capability.

In this thesis, we will adopt the definition of dynamic capability proposed by Teece et al. (1997) and regard dynamic capability as the firm's capability to integrate, build, and reconfigure internal and external capabilities to match the rapidly changing environments.

2.1.3.4 Environment, resources, capabilities and competitive advantage

Traditional strategic positioning theory emphasizes the industrial structure impact of enterprise in formulating competitive advantage, while resource-based view put more focus on the VRIN resources that enterprise owns to obtain competitive advantage, and capability-based view believes the leverage of resources can lead to competitive advantage. In order to make up the deficiencies of single bias (the bias emphasizing on single factor as environment, resource or capability) in traditional strategic positioning theory, resource-based theory and capability-based theory, Teece et al. (1997) put forward dynamic capability theory.

Dynamic capability view (DCV) emphasizes the capability to update the existing capabilities portfolio owned by enterprises to match the changing environment so as to obtain and maintain competitive advantage. This view summarizes the resources and capabilities into four layers hierarchy: (1) the VRIN resources can be regarded as the first layer factor and also the foundation of the competitive advantage of a firm; (2) capability can be regarded as the second layer factor and focuses on the usage of resources to attain a goal of the enterprise; (3) core competence can be seen as the third layer factor that include a bundle of resources and

capabilities that are strategically important to the firm at certain point. It emphasizes the integration of resources and capabilities but can lead to core competence rigidities in the dynamic context; (4) dynamic capability can be located on the fourth layer of the hierarchy, which is most important for the growth and development of the enterprise. It may be considered as the continuously pursuit to renewal, reconfiguration, recreation of the resources, capabilities, and core capabilities to address the dynamic changing environment.

In today's rapidly changing market environment, the enterprise's strategy should not only focus on industrial and macro-environmental analysis, but more on internal resources and capabilities of the enterprise. The enterprise can obtain the competitive advantage only through the identification of its own resources and core capabilities, the evaluation of its potential benefits, and fully aware of the importance of the basic and core capabilities of the enterprise, combined with the careful analysis of the external environment. Due to the dynamic characteristics of environment, resources and capabilities, the competitive advantage obtained by enterprise can only be a dynamic competitive advantage in short time. In order to achieve sustainable competitive advantage, enterprises need to continuously evaluate the environment and internal resources, analyze the resource and capability gap to meet the needs of sustainable growth of the enterprise, and then continuously supplement resources in the operation process, and accumulate the core competence of enterprises through the leverage of resources, so as to provide the next dynamic resource and capability.

2.2 University core competitiveness

Since Prahalad and Hamel proposed the concept of core competence in 1990, the study of core competence has become a research hotspot in management and economics. Although university is an organization that implements the functions of talent training, scientific research and social service, it also has the nature of "enterprise like", such as production, organization and competition. The talent training process of universities is the process of training and educating students to create value for students and the society, which is similar to the process of enterprises processing raw materials to produce products. Whether graduates can be recognized by employers depends on the graduates' knowledge, capability, and quality formed in university over time, which is similar as whether products are accepted by customers depends on the quality of the products. At the same time, universities, like enterprises, are also in a competitive environment. University competition mainly includes the competition of recruiting students and teachers, attracting investments, and satisfying

stakeholders. Therefore, it is feasible and necessary for us to apply the core competitiveness theory to analyze how universities can obtain sustainable competitive advantage in the long run.

2.2.1 University core competitiveness

The study of university core competitiveness originated from the end of 1990s. With the rapid development of science and technology and the rapid change of society, the relatively stable external environment of western universities has been impacted. Government and society proposed higher requirements for university graduates. The shortage of school-running funds, the decline of enrollment rate, the old disconnection of courses and the reduction of government funding have caused the development of western universities to fall into unprecedented difficulties. Since then, western scholars began to study the competitive advantage of universities and related problems.

Western scholars pay more attention to the practical problems brought by university competition and emphasize the ways to enhance competitive advantage from the perspective of strategic planning. Compared with their European counterparts, American universities feel the pressure of competition more strongly. In higher education filed, the United States lead the competition, and higher education field is also the most competitive field in the United States. Therefore, American scholars pay more attention to the study of university competitive advantage. The research of American scholars towards university competitive advantage started from the application of strategic planning to universities. The research purpose is to enable universities to adapt to the environment changes and manage the formulation, implementation, evaluation and control of strategies as a complete process to improve university competitive advantage (J. Sun, 2009).

Kotler and Murphy (1981) pointed out that the strategic planning of universities should consider the overall sustainable development of universities, and should be carried out hierarchically from top to bottom. Based on this view, they proposed a strategic planning process model, which has three stages and six part, as shown in the Figure 2.2. The three stages include analysis stage, formation stage and design stage. Each stage includes two modes. The analysis stage includes environmental analysis and resource analysis; the formation stage includes goal formation and strategy formation; the design stage includes organization design and system design. To formulate long term strategic plan, a university should firstly analyze the position it located in HEIs and sense the opportunities or threats from external environment changes, and evaluate the critical resources which can support its

development in a long run; secondly, the university should set organizational goal based on the resources and capabilities they own, and then formulate suitable developmental strategy according to the goal; thirdly, the management of university should break down the organizational goal into each department, and design a suitable way to achieve the goal.

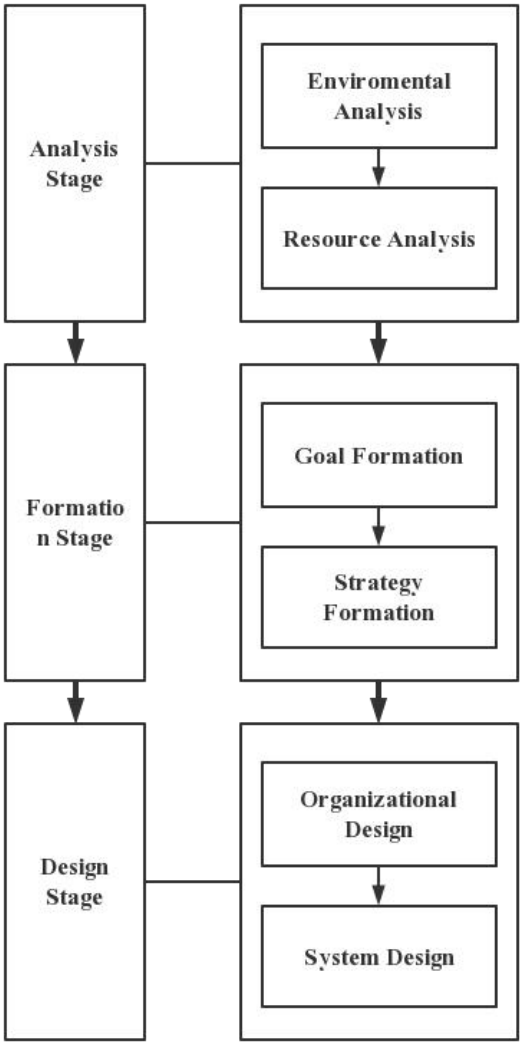

Figure 2.2 University strategic plan process

Source: reproduced by author from Kotler and Murphy (1981)

As Keller (1983) said, the key to making university strategic planning is to understand their position in the competition and make a decision, namely, to clarify their expecting position in the competition. Through a series of effective strategic decisions, the university management process is more in line with its long-term development, so as to enhance the competitive advantage. Contrasting with their colleagues, Chinese scholars would like to give a specific definition of university core competitiveness, and study how to cultivate university core competitiveness in order to obtain sustainable competitive advantage (Bie & Tian, 2004; Lai & Wu, 2002; M. Xu & Li, 2005; Zheng, 2004). Influenced by the upsurge of university strategic planning research, more scholars begin to study the competitive advantage of

universities. Generally, we can summarize their views as below:

(1) Resource based view

Dobni (1996) analyzed several business schools in Canada and pointed out that the weak business schools cannot meet the requirements of the market due to limited resources. They can only gain competitive advantage by practicing their internal skills, utilizing internal resources innovatively and developing new courses.

Jablecka (2001) takes a university in Poland as an example, analyzes its development history and successful experience, and argues that resources are the source for the university to maintain competitive advantage. These critical resources include teacher resources, financial resources, material resources, intangible resources and geographical location.

Jonathan (2003) of Nanyang Technological University in Singapore applied the theory of competitive resource advantage to university strategic management. Taking 15 junior colleges in Singapore as an example, he analyzed why famous colleges can achieve better performance than others. The author believes that it is mainly because famous colleges can more effectively identify, allocate and utilize resources, so that these colleges can have competitive advantages.

(2) Knowledge based view

Several scholars believe university core competitiveness derives from the knowledge they own. Davenport and Prusak (1998) argues that the only thing that can bring a competitive advantage to an organization is to know what, how to use the knowledge and how fast to acquire knowledge (Cheng, 2005a). Lin and Liu (2003) believes that the foundation of university core competitiveness lies in knowledge. The implementation of knowledge management is the process of creating, acquiring and using knowledge in order to enhance organizational performance. Knowledge management is an effective strategy to enhance university core competitiveness.

Ding et al. (2013) argue that the core competence has knowledge attribute, and university is an organization based on knowledge in essence. Therefore, understanding the internal competitive advantage of the university around knowledge can truly grasp the essence of university competition. In the process of pursuing its own social value, the unique knowledge production, dissemination and application system, organizational structure, procedures and operating mechanisms, as well as university culture and values formed by universities are deeply rooted in specific environmental systems and university knowledge production models, which are difficult to be imitated by other universities, thus forming the source of the core competitiveness of universities.

Starting from the knowledge characteristics of university core competitiveness, G. X. Zhu (2015) explores the interactive relationship between university knowledge management and core competitiveness, and advances strategies for strengthening knowledge management to enhance university core competitiveness. G. X. Zhu argues that university should continuously acquire internal and external knowledge through different ways, share and innovate knowledge within the organization, and form a continuous and effective learning organization in order to constantly enhance the organization's own competitive advantages, thus enhancing its core competitiveness.

(3) Capability based view

Jacobson (2005) of New York University, study the development of American community college in his paper "The new core competence of community college". He suggests countermeasures from both internal and external aspects. On the one hand, starting from the external environment, he pointed out that the community college should maintain a close relationship with other social organizations. On the other hand, within the college, he emphasizes reformed the curriculum and strengthened the training of operational skills, establish a learning network.

X. B. Liu (2019) believes that the university's core competitiveness is an unique capability to acquire, create and integrate resources based on the strategic resources of the university, which has been formed for a long time, can enable the university to maintain sustainable development in the competition. The core elements of university core competitiveness are the talent training ability and scientific research ability of the university.

(4) Cultural based view

Alfred (1999) analyzed the ways for universities to obtain competitive advantage. He believed that colleges with unique characteristics can create competitive advantage. For community colleges, in order to maintain unique characteristics, they must change traditional values and culture, take risks and break the rules.

Sporn (2001) proposed that it is necessary for universities to improve flexibility in order to adapt to changes in the external environment. He also pointed out that universities can improve their adaptability through entrepreneurial culture, changes in organizational structure and professional management, balance administrative power, and establish strong leadership.

(5) Stakeholder based view

Homels and Hooper (2000) believes that although the concept of core competence is applied to enterprise, it can be applied to the field of education. There are also core competencies in universities regard the university as a social organization and believe that

only by meeting the expectations of the stakeholders and recognizing by the society, the university can enhance its competitive advantage. The author also believes that to some extent, the capability to maintain good public relations is the core competence of universities. Good public relations expand the connection between the university and the society and government departments, so that the university can be recognized by all sectors of society, and obtain competitive advantages by constantly meeting the needs of society.

Ham and Hayduk (2003) studied how to improve the competitive advantage of universities from the perspective of student satisfaction. They point out that if the service quality provided by the university meets or exceeds students' expectations, it can improve students' satisfaction, which will help to enhance the competitive advantage of the university. University should improve the hardware facilities, purchase modern teaching equipment, and enhance faculty quality to enhance its competitive advantage.

Richardson III (2006) studied how weak business schools can obtain competitive advantage. The author believes that the external environment directly affects the development of university, and strategy is very important for the development of university, and the market situation directly affects the future of the university. He argues that business schools should meet the requirements of the external environment and pay special attention to stakeholders. We summarize other viewpoints of university core competitiveness in Table 2.3 below:

Table 2.3 Views of university's core competitiveness

Author	views
Meng (2002)	Core competitiveness of a university is the unique characteristics and advantages of a university.
J. S. Zhu et al. (2003)	The key of university core competitiveness lies in strategic positioning.
Rowley and Sherman (2004)	They believe low-cost leadership, differentiation and multi-dimensional competition are three kinds of competitive advantages.
Lynch and Baines (2004)	Resource based view is a new perspective for university strategic management, which can improve the competitive advantage of universities.
Liao and Tan (2018)	Universities should pay attention to the construction of specialty groups in order to form industry influence and core competitiveness.
Y. F. Tan (2021)	University core competitiveness is a unique integrated capability formed by a series of elements of teachers, ideas, systems, educational ability and scientific research ability

Source: self-developed by author

According to the unique characteristic of university like learning capability and knowledge, combined with the definition of enterprise core competitiveness, we conclude the definition of university core competitiveness concept in this thesis as follow: the core competitiveness of university is formed in the market competition, it is a comprehensive capability compared to its rivals to integrate various resources and capabilities to match the market environment.

2.2.2 Components of university core competitiveness

Since 2000, numbers of Chinese scholar attempt to find out the components of core competitiveness of university. Ma (2000) proposes that establish an effective human resource management mechanism is the most important factor that influence the formulation of university core competitiveness. Cheng (2005b) made an in-depth analysis of the components of core competitiveness of Chinese private college in his doctoral thesis and concluded that academic productivity, talent production capability, management power and cultural power composed of the core competitiveness of private colleges. Zou (2005) believes that social creditability is the component of core competitiveness of university. S. B. Yang (2007) argues that the private operating mechanism, which can be interpreted as the mechanism that integrate all the productive factor effectively, is the key component of core competence of private college for its sustainable development. H. T. Luo (2007) and Li (2012) points out that the components of core competitiveness of Chinese private college are the combination of flexible running policy, flexible and reasonable institution and various resources. According to understanding of university core competitiveness, C. J. Yu (2015) believes that resource elements, organizational elements, cultural elements, functional elements combined with environmental factors constitute university core competitiveness, and reveals the hierarchical structure and interaction process among different elements of the university core competitiveness from a dynamic perspective. Table 2.4 summarizes views of other scholars towards the components of university core competitiveness.

Table 2.4 Components of core competitiveness of university

Authors	views
Bie and Tian	A system composed of institution subsystem, capability subsystem and culture subsystem.
Zhang	Two components: academic core and management shell. .
Luo	Three components: technology, culture and system.
Song	Four components: students' quality, teaching staff, scientific research activities, discipline

	construction.
Li	Five components: personnel, technology, management system, information system and innovation.
Wang and Wen	Three components: teachers, management level and university president.

Source: from Jian et al. (2010)

2.2.3 Connotation of core competitiveness of Chinese private college

According to the definition of Chinese private college and its unique characteristic, numbers of scholar proposed their views about core competitiveness of private college. Zou (2005) argues that based on the similar external circumstance, building good social credibility can acquire the core competitiveness. Besides resource, capability, environment and knowledge perspective, S. B. Yang (2007) argues that the core competitiveness of private college is the flexible college system compared to public universities. M. M. Yang (2011) believes that the core competitiveness of private colleges is the capability to constantly integrate and innovate various competitive factors to adapt to the internal and external environment, so as to gain competitive advantages and obtain high-quality school resources from society based on the flexible school-running system of private colleges. From the knowledge management perspective, Y. Duan (2014) believes private colleges can acquire core competitiveness by identifying and providing knowledge system which is constituted of knowledge resources, financial and infrastructure system, management system, and value system.

Based on the understanding of university's core competitiveness and the unique characteristic of Chinese private college, we conclude that the core competitiveness of Chinese private college is a comprehensive capability to make use of their own advantages, integrate existing resources, anticipate the market trend, and formulate own strategic plans in order to facilitate the sustainable development of private college.

2.3 Constituent element model of core competitiveness

Based on the analysis of core competitiveness of private college, resources and capabilities are the basic elements of core competitiveness. Analyzing these critical elements has great significance to deeply study the formation and development of core competitiveness of Chinese private college.

2.3.1 Resource system of private college

Resources are the basis for private colleges to obtain competitive advantage and achieve sustainable development. According to Wernerfelt (1984), resources can be classified as tangible resources and intangible resources. Barney (1991) classified firm resources into three categories: physical capital resources, human capital resources and organizational capital resources. Combine with different classification and with consideration of the circumstance of private college, the definition of resource in this thesis is a set of elements that enable a firm to implement its strategies efficiently and create more value for the company. Therefore, we categorize the resources of private college into four groups (as shown in Figure 2.3): organizational culture, knowledge and information system, human resource, and basic resource.

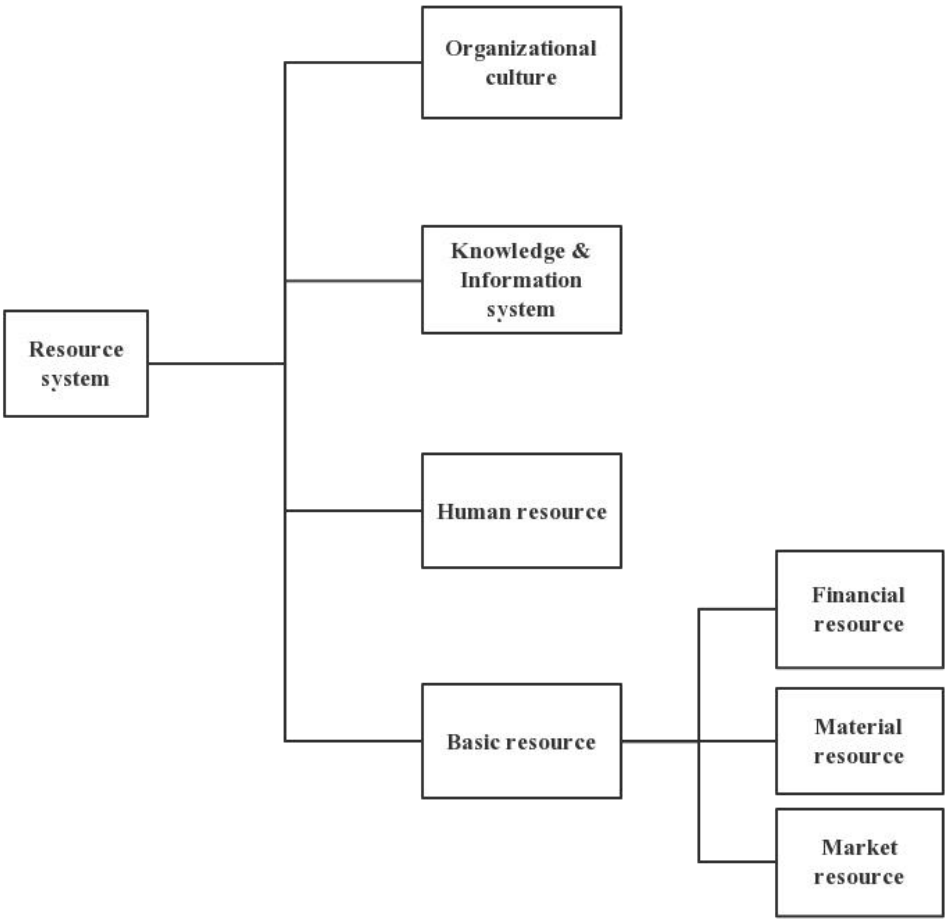

Figure 2.3 Resource system of private college

Source: self-produced by author

(1) Organizational culture

Corporate culture is the common thought, style, values and code of conduct gradually formed by enterprises and their employees in the practice of production, operation and reform.

Corporate culture can be divided into three levels: spiritual culture, institutional culture and behavioral culture. Spiritual culture includes enterprise goals, enterprise values and enterprise management concepts; Institutional culture refers to the institutional provisions made by enterprises in management modes and methods to achieve the content advocated by spiritual culture; Behavior culture is the behavior standard formulated to regulate the specific behavior of employee. Corporate culture is an unique resource that is difficult to imitate and replace. It plays a very strong guiding and dominant role in the value orientation and behavior of employees, and then has critical impact on corporate performance. Famous enterprises all over the world have their unique cultures. Taking the "wolf culture" of Huawei Company as an example, Huawei CEO Ren Zhengfei emphasized the importance and influence of culture, he integrates the wolf's character into the management culture and takes it as his duty to cultivate a group of "hungry wolves" who are always keen to the market. The high-speed development of Huawei Company depends on its enterprise value: customer orientation, employee striving orientation, and long-term hard work. Therefore, Huawei's employees commonly have characteristics of customer first, keen sense, tenacious and persistent, and cooperation spirit. The "wolf culture" enables Huawei Company to form a strong internal cohesion to maintain rapid growth and lead its competitors in the increasingly competitive communication market (Jiang et al., 2017).

Similar to corporate culture, university culture is a kind of peculiar organizational culture which is formed on the basis of long period of running practice, traditional inheritage, many internal effort and external influence (H. C. Wang, 2005; Y. F. Zhou, 2006). Due to the unique structure of private college, the culture of private college is a unique product of the conflict and blending of two different cultures: university culture and private enterprise culture (Sheng, 2015). On one hand, private college has public welfare attribute, the university culture guides its members to pursuit truth and knowledge, improve learning capability and foster the development of private college; on the other hand, private college has enterprise-like attribute, the private enterprise culture leads their employees to chase profit and achieve economic value.

University culture usually includes environmental culture, behavioral culture, institutional culture and spiritual culture (J. S. Wang, 2005). Environmental culture refers to those cultural images that can be seen, heard and felt. For example, those tangible assets which can represent the style and feature of the university, like university campus, teaching facilities and architecture design. The behavioral culture refers to university members' overall behavior that be affected by university culture. The management's behavior can generate cohesion function

to teachers and students according to the running concept, working style and value expressed in process of decision making, task implementation and communication. Teachers can convey correct values to students through the teaching process, and establish a positive cultural image for students through rigorous academic attitude and continuous exploration spirit. Institutional culture can not only constraint members' behavior, cultivate good behavior morality, but also improve overall management efficiency. Spiritual culture is a common value and a tacit culture in the deep layer of university culture. The most basic premise for private college to improve their competitiveness is that they have strong cohesion within the organization, and spirit culture can provide internal spiritual power for the development of private college.

Excellent private college culture can create a good campus environment, improve the moral, scientific and cultural quality of teachers and students, form the cohesion of private college internally, improve the competitiveness of private universities externally, and mobilize and reasonably allocate the positive factors conducive to the development of private college. We believe organizational culture is a critical resource of private college, and the formation of organizational culture has obvious path dependence and social complexity, so it is difficult for competitors to imitate (Barney, 1991). Therefore, private college with excellent organizational culture can maintain competitive advantage relative to its rivals in the competition.

In all, the culture of private college is a primary base for its surviving, developing, managing, and is contributing to the core competitiveness.

(2) Knowledge and information system

According to Grant (1996), the firm is conceptualized as an institution for integrating knowledge. Knowledge is not only the root of enterprise competition differences, but also the decisive force of enterprise competitiveness. The growth capability of an organization is based on its competitive advantages, which come from the enterprise knowledge formed by collective learning. On one hand, the knowledge owned by enterprise is different, so this can affect enterprise to formulate rent acquisition strategies different from other firms. On the other hand, the formulation of knowledge accumulation is path dependence, the process of knowledge accumulation makes the competitive advantage sustainable.

Knowledge and information system includes explicit knowledge, tacit knowledge, organizational procedures, patented technology, management experience, and the informatization level of university. Both organizational knowledge and information system can be seen as critical resources owned by university. University is an institution that produces knowledge. According to Han (2011), the formulation process of knowledge is dynamic and can be depicted as (shown in Figure 2.4) knowledge acquiring, knowledge

transferring, knowledge sharing, knowledge integration, and knowledge innovation. In this dynamic process, university members firstly acquire knowledge from both internal and external, and then transfer, share and utilize knowledge within universities, and further search for new knowledge and update knowledge within universities. In essence, knowledge is the key element hidden behind dynamic capability. Through the learning process, the university produces new knowledge to integrate existing resources, optimize management processes, improve discipline capabilities, and to form a sustainable competitive advantage in higher education market.

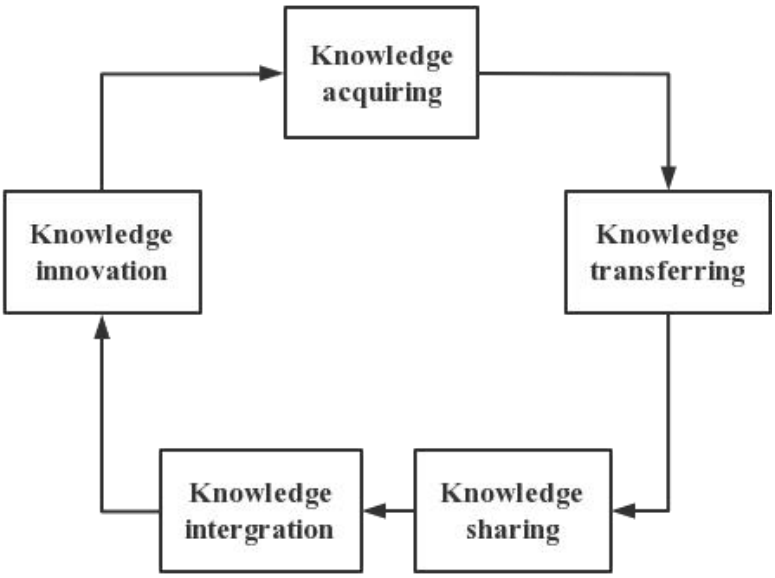

Figure 2.4 Knowledge formulation process

Source: reproduced by author from Han (2011)

Due to the path dependence of knowledge accumulation, the knowledge capital accumulated by university over time is unique, specific and social complex. This knowledge capital cannot be obtained through market transactions, and it is difficult to be imitated and replaced by other universities. Depending on the knowledge capital accumulated by universities for a long time, universities make strategic choices and innovate continuously. This knowledge-based behavior of continuous innovation is a manifestation of allocation and integration of resources and the formation of dynamic capability to match the external competitive market.

Therefore, knowledge resource of private college, including explicit knowledge and tacit knowledge, is valuable, rare, inimitable, and can be regarded as a source of competitive advantage.

Information system is also important for the formation of competitive advantage. The informatization level of private college is reflected in the establishment and management of

information network, ownership of advanced information equipment and information channels, and the application of e-commerce system. For example, an organization highly proficient in translating computing power into knowledge might develop a substantial edge over less skilled competitors (Barney, 1991). The upgrading of information infrastructure and the rapid development of information technology will make the production, storage, sharing and use of knowledge more technically feasible and economically cost-effective, and the allocation and combination of various resources will be more reasonable and effective.

(3) Human resource

Human resources include the personal knowledge and skill, the overall quality of organizational employees, which is the basis and carrier for the formation of capability. According to Barney's (1991) opinion, human resource has the characteristic of valuable, rare, inimitable and non-substitutable. So, human resource is a source of competitive advantage. Zhao (2002) has the similar viewpoint and believes that scarce human resources are the source of enterprise core competitiveness. First, human capital can improve the company's sensitivity to changes in key environmental variables. Second, human capital can also produce the ability to design strategies to deal with environmental changes more effectively. Third, once strategies are designed, they need to be implemented quickly and effectively. This challenge comes from the spirit of the staff activity and adaptability. Obviously, high-quality human capital can provide high flexibility to enable organizations to adapt to new technologies or new environments. Therefore, enterprise with high-quality human capital resources will have an advantage over competitors with a low-quality human capital resource.

Human resources of private college mainly refer to the management, teachers and administrative staff. Normally, human resources are embodied in the form of human intelligence and ability. The implementation of resource allocation, strategic planning and execution was achieved by human. Therefore, the overall quality of human resource can affect the development and competitiveness of private college.

The management of private college mainly is held of the retired leaders of higher education system and public university with rich managerial experience and high cultural cultivation. The management can grasp the development direction of private college, formulate corresponding development strategies, deal with the crisis in the development process, and then improve the core competitiveness of private college. Teachers are the backbone of private college to realize the function of talent training, and the critical resource to implement education. With the rapid development of private colleges in China, the sources of teachers are becoming more and more diverse, mainly including retired teachers from

public universities, fresh graduates or young teachers with high academic qualifications recruited by private colleges, as well as on-the-job personnel of public universities or enterprises hired by private colleges. Due to learning capability can be constantly improved and human intelligence is inexhaustible, human resources are the most dynamic resources to develop. Therefore, human resources are resources that can be developed indefinitely and are the main force to form the capability of private college.

(4) Basic resource

The basic resource of private college includes financial resources, material resources, and market resources. These resources are the most basic conditions for the running of private college, and can be obtained or created through the market.

The financial resources refer to the funds owned by private college that can support the daily running of private college. Financial resources also include the ways for private college to raise funds to ensure the long-term development and running of private college. Financial resources are the premise and guarantee of building material resources and introducing human resources in private colleges. With the same financial resources, different private colleges will have different financial resources allocation and effective utilization due to differences in strategic planning, human resources and other aspects, which will ultimately affect the generation and development of competitive advantages. Generally speaking, the financial resources of private colleges mainly come from tuition income, donations and sponsorship from social organizations or individuals, bank loans, investment from group enterprises, and benefits from serving the society through transformation of scientific research achievements, intellectual property rights, and school run enterprises. However, there is a big difference between Chinese private colleges and western private colleges. At present, the main financial income of private colleges in China still depends on students' tuition fees, and there are relatively few other sources of funds, such as social donation and alumni donation. The diversified financing environment of Chinese private colleges has not yet been formed, and the donation and sponsor system is not perfect. Few people support the development of private colleges in the name of individuals or enterprises. In this circumstance, effective allocation and efficient use of limited financial resources is the premise for private college to obtain competitive advantage.

The material resources of private college mainly refer to the hardware of private college, including land resources, teaching buildings, experimental instruments and equipment, books and office facilities. These resources are basic conditions for private college to meet the basic needs of running, and also are decisive factors of the annual enrollment scale. The efficient

allocation of material resources plays a fundamental role in supporting the development of private colleges. The material resources owned by private colleges is reflected through the indicators of average campus area per student, average building area per student, average teaching and scientific research equipment value per student, and average library collection per student. The strength of material resources become the measurement standard and basis for private colleges to meet the basic needs of school-running and the annual enrollment scale formulated by the Ministry of Education.

The market resources include social reputation and relationship with external stakeholders of private college. Positive reputation can be regarded as a source of competitive advantage from the literature (Barney, 1991; Porter, 1980). For private colleges, reputation resource is an important intangible resource and the public's evaluation on private colleges. Reputation resources reflect the image and status of private colleges in society. It is also reflected in the public's recognition and selection tendency of universities. For students, good reputation of private colleges means attaching the reputation value of the university to personal value, and have a certain competitive advantage in the future employment market; the reputation of private colleges and universities are directly affected by personal reputation, especially the leader's personal character, academic charm and social responsibility. Relationship resource is an important basis for private college to deal with multiple problems encountered in the process of development. Private colleges form a cross and interactive relationship with external stakeholders, so as to form relationship resources (S. Liu, 2008). For example, according to establish good relationship of university-government relationship, university-enterprise relationship and university-university relationship, it is conducive to private colleges to leverage these relationship resources to form competitive advantage.

All in all, the total amount of resources determines the positioning, development strategy and development scale of private colleges. Idiosyncratic resources (like human resources and knowledge resources) are the basis for maintaining the survival and development of private college and as well as generating competitive advantage. The sustainable competitive advantage of private college comes from the dynamic process of the formation, accumulation, maintenance and renewal of idiosyncratic resources.

2.3.2 Capability system of private college

Capability is considered as a dynamic factor of the growth of an organization, and is more important than static resources owned by organization. Based on the hierarchy idea of resource and capability to form enterprise competitive advantage proposed by C. L. Wang and

Ahmed (2007), and with the consideration of unique functional capability of private college, we classify the capabilities of private college into three groups (as shown in Figure 2.5): basic capabilities, leading capabilities and core capabilities. Basic capabilities reflect the basic ability of private college to implement the fundamental tasks of teaching, research and social service, also the organizational capability among these processes. Leading capabilities include entrepreneur capability and strategic capability, and they play the leading role in the development of private college and directly affect the process of private college's growth. Core capabilities include learning capability and innovative capability, and they play a fundamental and decisive role to other capabilities as well as the growth of private college.

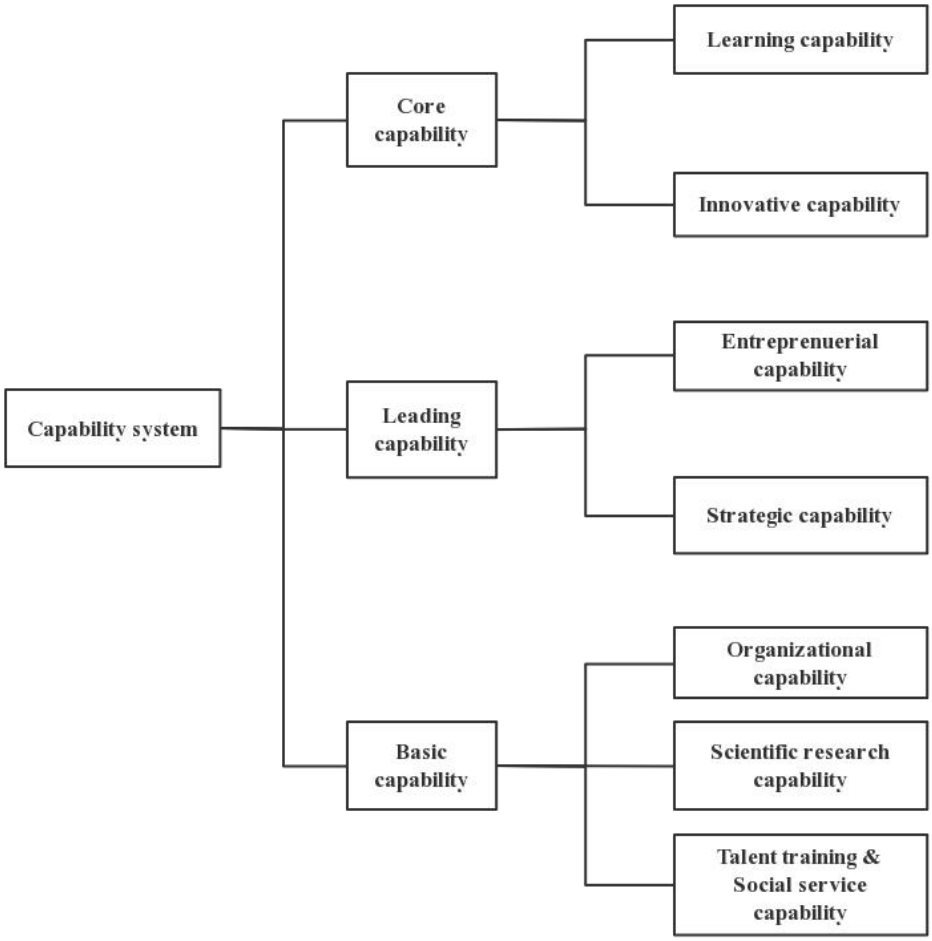

Figure 2.5 Capability system of private college

Source: self-produced by author

(1) Learning capability

The improvement of organizational capability depends on continuous knowledge accumulation, which depends on continuous learning. Learning can promote the transmission of explicit knowledge and tacit knowledge, and it is the fundamental way to cultivate and develop organizational capability. Zollo and Winter (2002) proposed that dynamic capability originated from organizational learning and evolved through the prudent learning mechanism

of experience accumulation, knowledge connection and coding process. L. X. Zhang (2007) believes that organizational learning capability is the capability of enterprises to obtain competitive advantage by coordinating various organizational learning behaviors and integrating various knowledge existing in individuals, groups, organizations and outside organizations. Organizational learning capability is a manifestation of organizational knowledge. Through the investigation of 242 Shenzhen enterprises, Zhang concludes that the organizational learning capability of enterprises is significantly positively correlated with enterprise performance, and has a direct impact on enterprise performance. He also believes that strengthen organizational learning capability can help enterprises improve their technological innovation ability, enhance their environmental adaptability, and improve their internal work efficiency.

Private colleges and universities are organizations that generates knowledge. Through learning, private college can become a learning organization that constantly absorbs knowledge, uses knowledge and creates knowledge so as to generate the core competence of private college. On the basis of the existing core competence, private colleges continuously innovate and cultivate new core competence, so as to improve its core competitiveness and maintain competitive advantage.

In the dynamic environment, learning capability is more important for private colleges. Only by strengthening organizational learning capability, private colleges can adapt to the dynamic environment. Therefore, organizational learning capability plays a decisive role in the growth of private colleges, and it is the foundation of other capabilities of private colleges.

(2) Innovative capability

Drucker (1985) believes that innovation is a process in which a new idea or invention is discovered, accepted and applied by an organization and can be transformed into economically valuable products or services. In his point of view, innovative capability can be trained and learned, and can produce more economic value for enterprises. Other scholars hold that enterprises can promote customer value and obtain competitive advantage by the way of innovating (Rothwell, 1992; Schumpeter, 1934). Lee and Hsieh (2010) argue that innovative capability has direct and positive impact on enterprise competitive advantage by investigating the relationships of innovative capability and sustained competitive advantage.

Due to the enterprise-like attribute of private college, we believe private college can enhance sustained competitive advantage by improving its innovative capability. When cultivating and developing competitiveness, private colleges may produce path dependence, which will make them more rely on the existing strategic model and form inertia in operation.

When the external environment changes, private colleges cannot take corresponding strategies in time, which makes the private colleges fall into the trap of relying too much on one specific capability. In order to cope with the complex changing environment, private colleges can always maintain their competitive advantage only by following the changes of the market and taking the strategies of differentiation and characteristics.

In order to improve dynamic capabilities to adapt to the changing private education market, private college has to create constant innovative capability which covers running concept innovation, talent training innovation, teaching staff innovation and management innovation in the development process of private college (Sheng, 2015). First, private college should redesign running concept which includes rethinking of college position and college running mode. The management should consider what position private college should locate in, what differentiate specialties private college should set so as to attract more students. Second, private college should reorganize discipline setting, talent training scheme, curriculum system and training mode in order to better adapt to the development of local economy. Third, private college should build teachers team with superior quality and reasonable structure through introduction, training and improvement. Fourth, private college should establish a high-quality and efficient modern university management system to improve college running efficiency and ensure the quality of talent training.

Therefore, innovation capability is a factor penetrating into all aspects of development of private college. It is the premise of the continuous development of private colleges, which affects the formation and development of the core competitiveness.

(3) Entrepreneurial capability

Entrepreneurs are leaders who have innovative consciousness, undertake business risks, effectively organize and control business activities, and are good at discovering market opportunities and coordinating the relationship between all parties. In the competition of enterprises, entrepreneurial capability is irreplaceable and one of the leading abilities of enterprises. Once without entrepreneurial capability, other resources and capabilities will not play their normal functions, and even lose their market value (H. Y. Zhang, 2007). According to the capability theory, the heterogeneity of enterprises is the basis for enterprises to obtain competitive advantage, and the entrepreneurial capability is the most important determinant of enterprise heterogeneity. F. Liu et al. (2014) regarded entrepreneur capability as a collection of capabilities and classified entrepreneur capability into the ability to find opportunities, the ability to form a relationship network, the ability to integrate resources, the ability to innovate, the ability to strategy, the ability to learn, and the ability to withstand pressure. Entrepreneur

is the soul of an enterprise. Entrepreneur capability plays an important role in obtaining enterprise resources and is the organizer of entrepreneurial resources. F. Liu et al. (2014) believes that the stronger the entrepreneur capability is, the more effective to improve the efficiency and effect of obtaining key resources, thus promoting the growth of new enterprises.

The entrepreneur of private colleges in China refers to the founder and the management of private college. Normally, they are high qualified professors or managers with industry experience, high sense of mission and social responsibility, and are good at dealing with internal and external relationships between all parties. Entrepreneur capability of private colleges can bring the increase of critical resources (financial resource, material resource and relationship resource), which are the basis for private colleges to establish other tangible and intangible resources, and the basis for private colleges to implement developmental strategies. Entrepreneur of private colleges can foster the development of private college by acquiring new resources, integrating existing resources and capabilities to form core competence so as to obtain sustainable competitive advantage.

These characteristics of entrepreneurial capability of private college enables private colleges to find potential opportunities and make effective use of them by formulating clear strategies, so as to better adapt to the changes of the external environment and promote private colleges to obtain sustainable growth.

(4) Strategic capability

Strategy is a very effective management way for organizations to adapt to future environmental changes. Environmental change means an opportunity or a challenge for organizations. If organizations ignore environment change and take action later than change, there will be threats; for organizations that pay close attention to the environment and dare to take action, there are opportunities.

We believe that the essence of strategy is a long-term dynamic description of the relationship between environment, capability and resource system. For private colleges, development strategy mainly involves two things: one is how to position, the other is how to integrate internal and external resources and capabilities to achieve strategic objectives. Positioning means private college can recognize its strength and weakness in order to formulate reasonable strategic objectives so as to locate in the appropriate competitive position in private higher education market. Dynamic capabilities can be formed according to reconfigure and renew those existing resources and capabilities of private college in order to adapt to the changing environment.

The strategic capability of private colleges emphasizes the capability of the management to make a long-term development plan for private colleges, and effectively implement dynamic strategic management in order to match the dynamic changing environment. In essence, strategic capability is accumulated in the process of private college's growth, which is the accumulated knowledge of private college. It's valuable and hard to imitate for other competitors. Strategic capability is the basis for the survival of private college and can plan and guide the development of private college, and make appropriate strategies for fundamental and overall issues of private college.

(5) Organizational capability

A. D. Chandler (1992) believes that although scale economies are one of the important advantages of large enterprises that currently locate a leading position in the world, the more important is that they have accumulated strong organizational capability due to their long-term operation in production, management and marketing. Chandler also believes the organizational capability was the guarantee for enterprise's long-term development and maintaining its competitive advantages. We believe that organizational capability is a specific capability solidified in the growth process of an enterprise and reflected through the internal organizational structure and business processes of the enterprise. It can be various rules and regulations, knowledge, behavior practices, identity, tacit understanding and execution accumulated by the organization. These capabilities are the key factors of organizational capabilities, and can not be disseminated and imitated by others.

For private colleges, organizational capability is a high-performance routine operated within private colleges and determined by process and position. Its evolution is affected by path dependence and technological opportunities. It is not only a specific capability of private colleges, but also a unique advantage that can not be transferred and imitated. Without organizational capability, other resources and capabilities of the private college will lose the value of existence. Only through internal organizational process, other resources and capabilities can be transformed into strength of private college so as to form competitive advantage.

(6) Scientific research capability

Higher education institute (HEI) has the basic function of conducting scientific research, creating and outputting knowledge, spreading university culture, cultivating students and serving the society. In addition to the function of cultivating students, scientific research is another important duty of private colleges and universities. Distinguished scientific research capability is critical for universities to attract injection of social funds. Universities can attract

social funds through its scientific research activities, to further improve the scientific research environment and conditions, which is conducive to the improvement of their own scientific research strength. For public universities, their sources of funds are relatively extensive, while most of the funds of private colleges come from the initial investment of the founder and subsequent tuition fees. Therefore, it is particularly important to improve the scientific research capability of private colleges in order to attract social funds so as to improve the running conditions of private colleges.

Scientific research can effectively promote the improvement of teachers' quality. Only through scientific research activities, teachers can continue to master the most cutting-edge knowledge, so as to improve their own teaching capability and educate students. It also attracts excellent and even first-class teachers, who in turn further support scientific research of private college.

Therefore, scientific research is an important index to evaluate the strength of private colleges and universities. In order to improve competitive advantage, private colleges and universities should improve their scientific research capability.

(7) Talent training & Social service capability

Talent training capability refers to the total capability of private college to train and educate talents so as to meet the requirements of society. The main function of private college is to cultivate applied technical talents for the development of local economy. Through the allocation and integration of resources, combined with the actual needs of society and the trend of scientific and technological development, private colleges strive to build their own advantageous and characteristic disciplines, and implement education process through high qualified teachers so as to improve the value of students' human capital. To a certain extent, the student employment rate is an important index reflecting the talent training capability of private college, and it is also the social recognition of the running quality of private college. Cultivating high quality graduates accepted by employers can have a positive impact on the reputation of private college, so as to promote the sustainable development of private college.

Therefore, talent training capability is the main manifestation of the core competence of private college. In private higher education market, private college with excellent talent training capability will be more competitive relative to its competitors.

Social service capability refers to the ability of private colleges and universities to make full use of their existing resources and professional knowledge to serve the society. On one hand, private college can utilize their resources to implement education, training, transformation of scientific and technological achievements. Teachers at private college can

also direct serve for the society by participating university-enterprise and university-government projects and providing their intelligent capital to the society. On the other hand, private colleges and universities can output high-quality students to social enterprise. After employment, students will serve the society and contribute their own strength through specific work so as to contribute to the local economic development. No matter what way private colleges and universities serve the society, these activities can help to improve their own capability, contribute to zone economic development, win social recognition and improve the reputation of private college, and finally enhance their competitiveness in the education market.

2.3.3 Resource, capability and competitive advantage

Resources are not only the basis for the survival and development of private colleges, but also the basis for the formation of core competitiveness. In the development process of private colleges, only resources are not enough. We need to effectively activate and enlarge the resource potential owned by private colleges, and also effectively utilize and integrate resources according to certain objectives and rules. This power of utilization and integration is capability. The competitiveness of private college depends not only on the resources they have, but also on the various capabilities formed in the process of development. It is the result of the interaction between these two indispensable factors, resources and capabilities.

In the development process of private college, capabilities are the dynamic factor that can improve the quality of resources, while resources are the static factor that can be carrier of capability. According to the core competitiveness analysis of private colleges, the capability and resource system and environment interact and evolve, so that the competitiveness of private college is constantly updated and developed.

Effective allocation of resources mainly depends on the private colleges' own capability system. Compared with resources, capability in the formation process of competitiveness is more important. Capability directly affects competitiveness, while resources indirectly affect competitiveness through the process of transformation to capability or auxiliary transformation. Private colleges can maintain long-term competitive advantage only by cultivating and shaping their capabilities.

2.3.4 Constituent element model of core competitiveness of private colleges

In addition to the internal factors we analyzed above, there are also environment, enterprise scale, organizational life cycle, path dependence may affect the core competitiveness of private college.

(1) Environment

Enterprises cannot exist independently from the environment. Various external environmental factors directly or indirectly affect the business activities of enterprises. We will analyze the impact of policy factors, market factors and scientific and technological factors on the competitiveness of private colleges.

Policy factors. Although the cultivation of the core competitiveness of private colleges mainly depends on the integration of their own capabilities and the improvement of their internal quality, this cultivation and improvement must be based on a good external environment, in which policy is one of the most important external factors. Throughout the history of the development of private higher education around the world, the prosperity and decline of private colleges and universities are closely related to the recognition and guidance of national policies. According to formulate policies like preferential use of land, tax reduction and exemption, determination of enrollment scale, college regulation, government policies can greatly affect the survival and development of private colleges and universities. Moreover, in the process of development of private colleges, almost every turning point is marked by the promulgation of policies. With the promulgation of laws and regulations such as the Regulations on Running Schools by Social Forces and the law on the Promotion of Private Education and Several Provisions on the Administration of Running Private Colleges, the development of private colleges and universities in China has experienced stages of encouragement development, standardization development, fluctuation development, vigorous development and competitive development. For private colleges, the national education policy is the most important environmental variable affecting the behavior and decision, resource allocation and economic performance of private colleges (S. B. Yang, 2007).

Market factors. With the deepening of the popularization of higher education in China, the number of students is steadily decreasing while the number of private colleges and universities are constantly increasing. There are more and more private colleges and universities for students to choose from, which will aggravate the competition between private colleges and universities. In this case, private colleges and universities are required to

further improve their comprehensive competitiveness in order to maintain competitive advantage so as to obtain a certain share in the private education market. With the transformation of economic structure, the market demand for talents is constantly changing. Private colleges and universities should dynamically adapt to the transformation of social demand for talents and cultivate more high-quality graduates to meet the requirements of enterprises.

Scientific and technological factors. Scientific and technological development and innovation provide a technological foundation for enterprise development. With the rapid development of mobile Internet in the world, especially the rapid popularization of mobile phones and the continuous improvement of network bandwidth, it has brought impacts to teaching activities of private colleges. On one hand, the function of teaching facilities can be further enhanced according to the use of modern multimedia technologies; however, on the other hand, the use of mobile Internet and mobile phones has also brought new challenges to teaching activities. Students can acquire knowledge in time through mobile Internet, and the knowledge taught by teachers in class is no longer the only source of students' knowledge. Moreover, the use of mobile phones and mobile Internet not only promotes learning, but also challenges the quality of classroom teaching by the behavior of indulging in mobile phones.

(2) Enterprise scale

Generally, it is believed that the competitiveness of enterprises is closely related to their scale. Large enterprises have advantages of capital, technology and talents, and have the ability to develop and apply advanced technology, and can conduct multi-field research, so as to enjoy the benefits of multi-field compounding and disperse the risks of scientific research investment. Large enterprises also have various channels to collect and accumulate extensive information, and make large-scale investment, so as to obtain scale economies and reduce the cost of research and development (Cai, 2008).

As for private colleges, large scale private colleges have advantages than small scale private colleges in raising funds, recruiting high quality teaching staff, and have the ability to conduct scientific research in multi-field. In turn, funds, teaching staffs and scientific research capabilities can feedback benefits in training students, applying and conducting research projects so as to obtain and maintain competitive advantage for private colleges.

(3) Life cycle

Haire (1959) was the first person to put forward the concept of enterprise life cycle theory. In the mid-1950s, he proposed that enterprises can be viewed from the perspective of life cycle in biology, and the development of enterprises also conforms to the growth curve in

biology. After that, Greiner divides the enterprise life cycle into growth stage, regeneration and maturity stage and aging stage (Hanks, 1990). Cao et al. (2009) argue that there are significant differences in the competitiveness of enterprises at different life cycle stages. At start-up stage, enterprises are relatively short of resources and mainly rely on their ability to compete; at growth stage, enterprises are increasingly rich in resources. Among the components of competitiveness, resources and capabilities are simultaneously developed; at mature stage, the enterprise is fully rich in human, financial, material and other resources, but capabilities begins to decline; In the recession period, the enterprise resources began to be exhausted and returned to the state of competition relying on ability. However, the learning capability, innovative capability and dynamic mechanism of the enterprise were the worst at this stage, which would affect the enterprise reform and lead to the death of the enterprise. According to Cao et al. (2009), we depict the relationship between enterprise competitiveness and enterprise life cycle as shown in Figure 2.6.

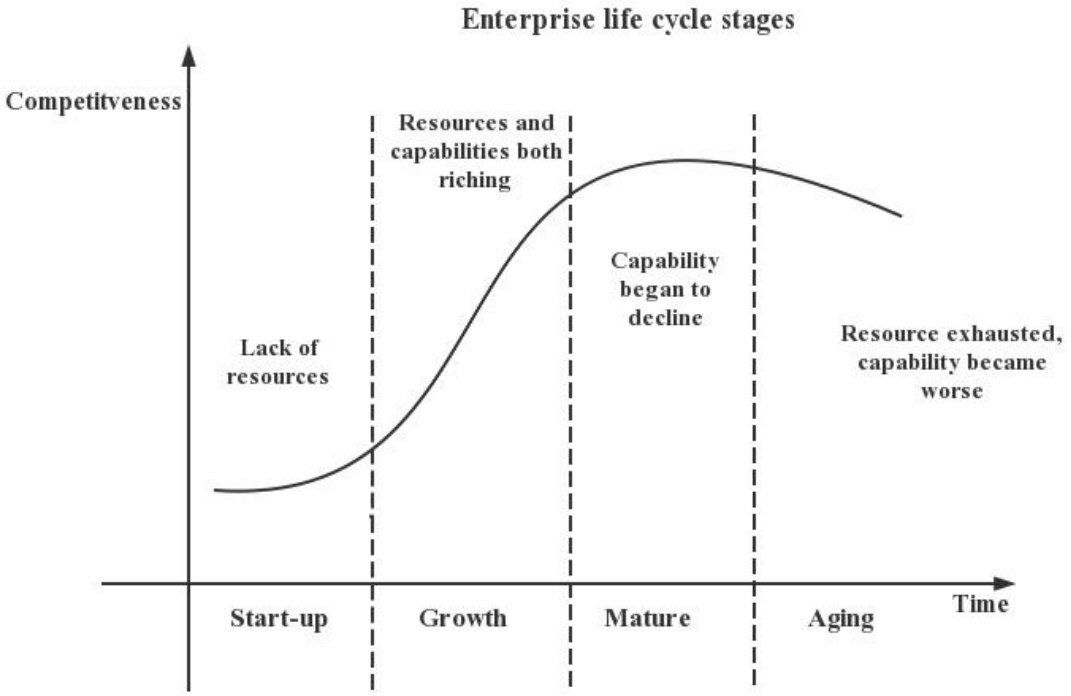

Figure 2.6 The relationship between competitiveness and enterprise life cycle

Source: reproduced by author from Cao et al. (2009)

Like the core competitiveness of enterprises, the formation process of the core competitiveness of private colleges is also a process of continuous development and evolution. Along with the different organizational structure, leadership style and management system at each stage, the core competitiveness of private colleges required are also different. At growth stage, basic resources and capabilities are important for private college. Private colleges must pay attention to the coordinated development of various elements in the core competitiveness,

strive to focus on the development of its most important disciplines. At maturity stage, the core competitiveness of private colleges and universities can radiate teaching, scientific research and social services, and can bring overall performance and social influence to society. At maturity stage, the strategic capability and entrepreneur capability become more important (H. C. Wang, 2005). At aging stage, new market environment has had an impact on the original competitive resources and capabilities, resulting in the increase of cost and resource consumption of the existing running mode. As a result, the core competitiveness begins to decline, and at the same time, it breeds the outbreak gene of new competitiveness of private colleges. The management have to conduct organizational innovation and re-engineering, break through the growth ceiling of the organization, and enable private colleges to remain invincible in the market competition.

Therefore, core competitiveness of private colleges has different characteristics and implication at each stage of enterprise life cycle. Private colleges must adapt to the changes of the environment to form competitive advantage over its competitors in private higher education market.

(4) Path dependence

Path dependence means that the future trend of the development of things is subject to the history of its development. This concept was first proposed by W. Brian Arthur when he studied the self enhancement mechanism. That is, a chance leads to a solution, and once this method becomes popular, it will form a certain convention and track (Leonard-Barton, 1992). Practice shows that successful enterprises are prone to success syndrome. With the passage of time, enterprises take the past successful practices and systems as standard operating procedures, so as to form a certain conventional code of conduct. Even when the external conditions change, the enterprise still goes its own way and operates according to inertia. However, it is believed by dynamic capability theory that adapting to the changing environment, enhancing own capabilities of enterprises and overcoming path dependence are critical to cultivating the competitiveness of enterprises. The development process of private colleges is under unique environment and specific history settings. Each historical stage of the development of private colleges has its own background and characteristic so as to have influences on the decision making, behavior, culture and concept of private colleges, and then these impacts may help to form a certain core competence which private colleges depend on. So, path dependence can be an impact factor for private colleges to maintain competitive advantage.

Based on the above analysis, we summarize the constituent elements model of private

colleges' core competitiveness from resource and capability angle (as shown in Figure 2.7). In this model, from the internal perspective, capability factor plays more important role compared to resource factor in the development of private colleges. More specifically, core capability lays in the upper layer and plays decisive role in the developmental process of private colleges; leading capability and basic capability lays in the middle layer and play leading and fundamental role to the development of private colleges. Resource lays in the lower layer and provides basic financial and market conditions to support the development of private colleges. From the external perspective of private colleges, the factors of environment, enterprise scale, enterprise life cycle and path dependence may affect the development of private colleges. In all, the resources and capabilities owned by private colleges with external factors together formulate the core competitiveness of private colleges and affect its sustainable development.

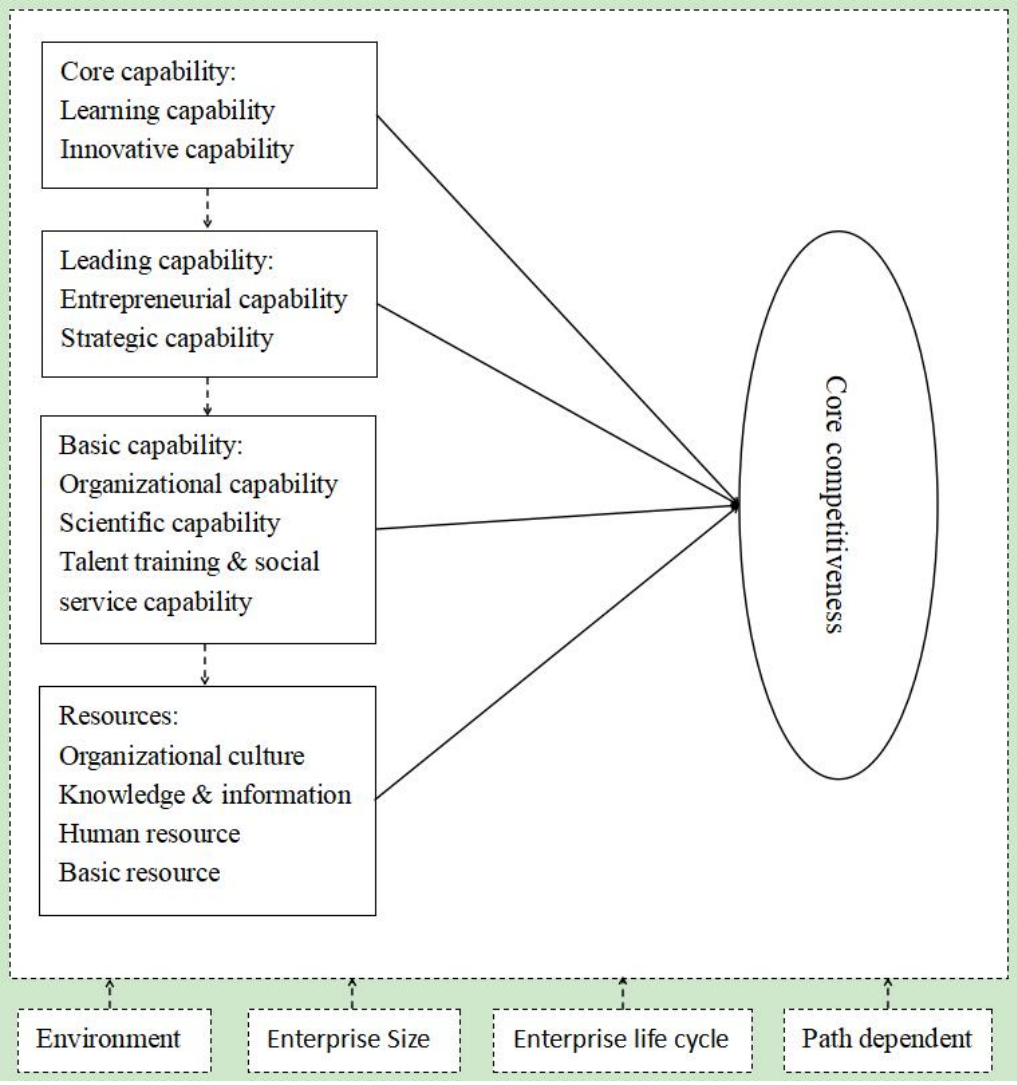

Figure 2.7 Constituent elements of core competitiveness of private college

Source: self-produced by author

2.4 Summary

According to the research questions, this chapter reviews the theoretical basis of competitiveness, and the studies of core competitiveness, resource-based view, capability-based view and dynamic capability view. The main theories applied in this thesis are competitiveness theory, resource-based theory and dynamic capability theory. These theories study the competitive advantage of enterprises from different perspectives. In order to explore the source of organizational competitive advantage, we analyze the internal and external elements of the enterprise, and review the important role of dynamic capability in forming organizational competitive advantage.

Due to enterprise-like characteristics of private colleges, scholars transferred the enterprise competitiveness theory to universities. We review the development of the theory of university's core competitiveness, analyze the concept of core competitiveness of private colleges. We also propose a constituent element model of core competitiveness of Chinese private colleges by classifying core competitiveness into resource subsystem and capability subsystem. The resource subsystem includes organizational culture, knowledge & information system, human resource and basic resource while capability subsystem includes learning capability, innovative capability, entrepreneur capability, strategic capability, organizational capability, scientific research capability and talent training & social service capability.

[This page is deliberately left blank.]

Chapter 3: Research Method and Design

The main research method of this thesis is a case study. This chapter introduces the research method namely case study, and methods for collecting data, including the collection of first-hand data and second-hand data. First-hand data is collected through questionnaire survey and in-depth interview with target private colleges, while second-hand data is collected from online resources, government information and other open and accessible resources. After data collecting, data processing and analytic method is also introduced in this chapter.

3.1 Research method: case study

The case study is one of several ways of doing social science research. Other ways include experiments, surveys, histories, and economic and epidemiological research (Yin, 1994). Each method has its own advantage and disadvantage, and the selection of which method to use in research depends on three factors: (i) the category of the research issue; (ii) the researcher's control over the objects; and (iii) whether the focus is on current issues rather than historical phenomenon.

Case study research can be defined as an empirical inquiry into a contemporary real-life situation in which multiple sources of evidence are used. In the case study, generally a single object, an event or an organization is investigated in detail. Although case study methods remain a controversial approach to data collection, they are widely recognized in many social science studies especially when seeking in-depth explanations of a social behavior or social phenomenon (Yazan, 2015).

Normally, there are several categories of case study. Yin et al. (1985) argued three categories case study, namely, exploratory, descriptive and explanatory case study while McDonough (1997) believed other categories include interpretive and evaluative case studies. Stake (1995) distinguishes three types of case study: the intrinsic case study which set to solve the specific problems of an individual case while the instrumental and the collective case study which allow for the generalization of findings to a bigger population.

Following Yin (1994), in general, case studies can be seemed as the preferred strategy when "how" or "why" questions are posed, when the investigator has little control over events,

and when the focus is on a contemporary phenomenon within some real-life context.

Crafting the design of case studies is of paramount importance. Researchers can adopt either a single-case or multiple-case design depending on the issue in question. In cases where there are no other cases available for replication, the researcher can adopt the single-case design. The drawback of a single-case design is its inability to provide a generalizing conclusion. The multiple-case design can be adopted with real-life events that show numerous sources of evidence through replication rather than sampling logic (Yazan, 2015).

In social science research, quantitative method and qualitative method are two research methods that has been used commonly. The strengths of quantitative methods are that they produce factual, reliable outcome data that are usually generalizable to some larger population while the strengths of qualitative methods are that they generate rich, detailed, valid process data that usually leave the study participants' perspectives intact (Steckler et al., 1992). The case study is a qualitative research method, which refers to the profound, detailed and long-term study on social phenomena by field experience, open conversation, participant observation, literature review and case study. When conduct a case study, the researcher collects first-hand information at a certain place and then try to understand participants' behaviors and perspectives on the target issue. The researchers themselves are the main research instruments and their backgrounds and relationships with research participants need to be considered.

Qualitative research is classified into two different levels: (1) pure qualitative research, which is completely without or lacking in quantitative analysis, and tends to lead to conclusive and argumentative results; and (2) qualitative research built upon quantitative analysis. In actuality, qualitative and quantitative research often work together, and before quantitative research, researchers often need to decide the nature of their research through qualitative research. In quantitative research, researchers use qualitative research to decide where qualitative change occurs and why this qualitative change happens.

Based on above analysis, compared to other research method, case studies can provide a solid description and systematic understanding of cases, grasp the dynamic interaction process and context, and obtain a more comprehensive and overall view. The selection research method of this thesis is a single case study and the research object is our target private college. The case study process includes stages of case study design, case selection, data collection, data process and analysis, and also report formation. The case study flow chart is shown in Figure 3.1 as follows:

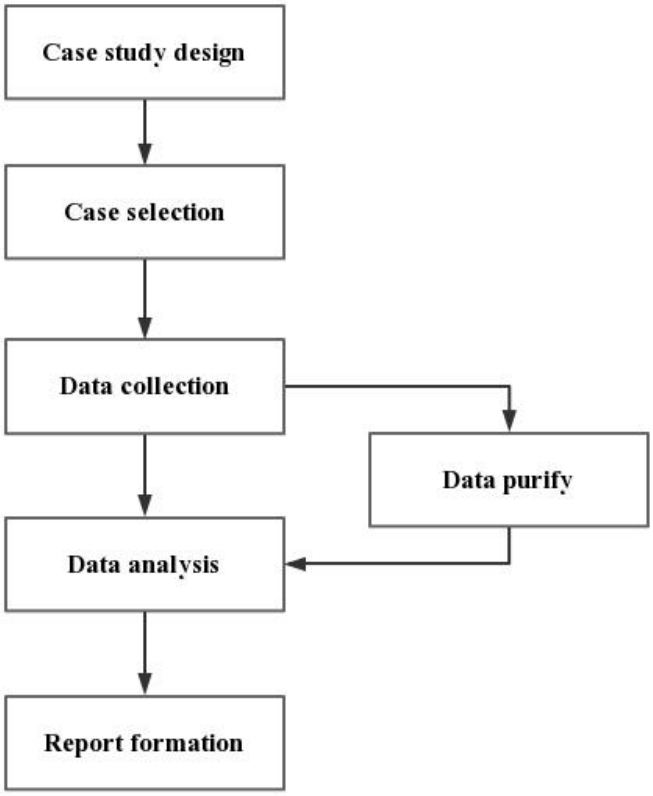

Figure 3.1 Flow chart of case study

3.2 Case selection

This thesis selects Chengdu College of University of Electronic Science Technology of China (hereinafter "X College") as the target case. The case study conducted in this thesis belongs to single case study.

This research selects a private college (X College) as the study object. We review the developmental path of X College, analyze its strengths, weaknesses, opportunity and challenge from the various life stage of its start-up stage to its mature stage. Its organizational structure, the connection between its performance and the resources and capabilities it has own are analyzed to identify its characteristics and rules of private college governance, and summarize the running principle that fits this kind of college, which can serve as a reference for other Chinese private colleges.

Based on the definition of Chinese private college we presented in chapter 1, X College is a higher education institution established by Guoteng Group, using non-state financial funds to implement general undergraduate academic education and junior college education. With the first-class teaching faculty support of UESTC in electronic and communication area and the financial funds provided by Guoteng Group, X College was established in 2001 as an

application-oriented technology-dominant private college at Chengdu. Experiencing 20 years of rapid development, X College is facing great competitive pressure. Along with the number of recruited students steadily decreasing and the number of private colleges increasing continuously in China, the buyer market of private higher education is gradually emerging. Students and their parents may choose ideal college with a comprehensive standards, like teaching quality, hardware condition, college culture and tuition fee. X College needs to continuously integrate high-quality resources, improve its own capability, explore and innovate in order to achieve better performance in the competition market of Chinese private higher education.

3.3 Research design

In order to obtain the real situation of core competitiveness of X College, we conduct a quantitative method, namely, questionnaire survey and a qualitative method, namely, in-depth interview to collect data in this thesis. The research design process is described as follows.

3.3.1 Questionnaire survey design

This research has adopted the quantitative method to obtain data of the respondent through questionnaire survey, so as to verify the fitness of constituent model of core competitiveness of X College posed in this thesis. Take into account the validity and reliability of the questionnaire issued, the steps for designing the questionnaire survey are as follows.

(1) Based on the research question and research purpose, this thesis documented the relevant literature of competitiveness, resources and capabilities in both domestic and foreign countries and searches for scales consistent with the meaning of variables involved in this research model. In this thesis, a 5-level Likert scale was adopted in the questionnaire.

(2) Before the formal questionnaire survey, 20 teachers from different departments of X College were invited to fill in the scale to investigate the subjects' understanding of the items in the scale and the effectiveness of the scale. After the trial filling, according to the feedback opinion of these 20 teachers, the expression of some items of the scale has been further modified, so as to ensure that the expression of the scale is more reasonable and accurate for use of X College.

(3) After the formulation of initial questionnaire, the research team has invited some experts experienced in private higher education to evaluate the measurement items in the

questionnaire, so that the problem statement is more in line with academic norms and university practices.

(4) Considering the sample numbers and data processing efficiency, this study issued and recycled the formal questionnaires in the form of both paper and electronic questionnaires.

3.3.2 Questionnaire structure

The questionnaire of this thesis is to investigate the resource and capability performance of X College and it consists of three parts.

The first part is a survey of the basic information of respondents of X College. Questions in this section were designed for information including gender, age, level of education, current position, working years and which life cycle stage the respondent believe X College is at. This information can reflect the individual characteristics of the research object more comprehensively.

The second part is a survey about the situation of the resources that X College own and how X College utilize these resources in its daily running process. Resources has been classified into six parts, like organizational culture, knowledge & information system, human resource, material resource, financial resource and market resource. Information obtained in this part can reflect the resource advantage of X College in private colleges and universities relative to their competitors.

The third part is a survey about the situation of the capabilities that formulate in the development process of X College. Capabilities have been classified into eight parts, like learning capability, innovative capability, entrepreneur capability, strategic capability, organizational capability, scientific research capability, and talent training and social service capability. Information obtained in this part can reflect the capability advantage of X College formulate in its development process.

3.3.3 Interview design

Interview is a kind of social science research method, which collects research materials and data by talking between researchers and respondents. Interview is widely used in quantitative and qualitative research of social sciences. Quantitative research usually adopts standard interview, also known as structured interview. This kind of interview emphasizes that all interviews adopt unified standards and the same norms. Interviewer asks questions in strict accordance with the interview questionnaire and the order of the questions are not allowed to

change freely. All respondents are required to choose answers from the given limited answers according to the same order.

Different from the standardized interview of quantitative research, qualitative research usually adopts semi-structured interview, also known as in-depth interview. During the interview, the interviewer can flexibly deal with the interview problems according to the actual situation, not limited to the interview outline. The interviewer can change the interview questions according to the specific interview object and interview progress.

In-depth interview is a main method of qualitative research in social sciences. It understands the life experience and lifestyle of a social group through in-depth conversation with the respondents, discusses the formation process of specific social phenomena, and puts forward ideas and methods to solve social problems. Rubin & Rubin pointed out that the advantage of in-depth interview is that it not only gives interviewers, but also gives interviewees a certain degree of freedom to jointly explore the central issues of the research (Legard et al., 2003). The process of in-depth interview includes interview preparation, interview sampling, interview, interview record, interview coding, interview analysis, memo writing and paper writing. We present the key process of in-depth interview as follows:

(1) Interview questions. Generally, there are two kinds of interview questions, namely, specific questions and open-ended questions. During the interview, we use the combination of specific questions and open-ended questions in order to maintain a positive and active interview rhythm to make the interview fruitful. In this research, the interview questions are organized based on the research questions proposed in Chapter 1. The content of the interview questions is mainly focused on the understandings of core competitiveness of private college, the importance and improvement strategy of resource and capability elements to the core competitiveness of private college and the developmental strategies of private college based on core competitiveness.

(2) Interview sampling. Because the sample of interview is relatively small, the method of purposive sampling is used to ensure the interview with the research objects that can provide the maximum amount of information for the main research questions (X. E. Sun, 2012). In this study, we mainly interviewed middle and senior management personnel with rich experience at private college in Chengdu, China. In this research, the number of interview objects follow the information saturation principle, that is, when researchers find that the information obtained in the interview begins to repeat and no new and important topics appear, they can think that the information has been saturated and there is no need for more interviews.

(3) Coding. Coding refers to summarizing the interview data according to multiple classification standards. It is a process of gradually refining concepts from the interview data, that is, using short phrases or words to summarize the characters, events, concepts and themes in the interview data. Strauss and Corbin (1990) summarized three coding methods: open coding, axial coding and selective coding. Combined with the division of coding by scholars at China and abroad, we adopt three steps in this research: open coding, associative coding and selective coding.

3.4 Data collection

There are many sources of data for case study. In this study, we use appropriate method to obtain first-hand data and second-hand data. In order to obtain first-hand data, we use both questionnaire survey and in-depth interview method while the second-hand data derives from open and accessible source, such as the official website of private college, archival information and documents.

3.4.1 Data collection for questionnaires

Since January of 2022, we conducted the questionnaire survey by sending paper and electronic questionnaires to three types of employees of X College, namely, administrative staff, teachers and management staff with the chance of semester summary meeting held by X College. The respondents can fill in the questionnaire easily and quickly during the meeting.

We handed out 243 questionnaires and had 243 responses returned, 202 of which were valid after data purify and hence the final response rate was 83.1%. Table 3.1 shows the distribution of the questionnaires against the different types of employee of X College.

Table 3.1 Distribution of questionnaires to employees of X College

Respondents of the questionnaire	pieces	Proportion
Administrative staff	14	6.9%
Teachers	185	91.6%
Management staff	3	1.5%
Total	202	100%

3.4.2 Data collection for interviews

For this research, the interviewee of the case study includes the management of X College (vice president, head of department, dean of secondary college of X College) and other senior managerial personnel of private colleges in Chengdu. The interview content is mainly

centered on the developmental strategy of Chinese private college, the understanding and the constituent elements of core competitiveness of Chinese private college, the performance of core competitiveness of Chinese private college. The questions were unstructured and interviews were conducted by author and his research team. The interviews were implemented in May, 2022. In-depth interviews are generally conducted in the interviewees' offices, and some interviews are also conducted in tea rooms or coffee shops in Chengdu. The profile of the interviews is shown in Table 3.2.

Table 3.2 Interviews about core competitiveness of private college

Interviewees	Position	Date of interview/ Duration of interview	Contents
XU Xuanwei	Dean, School of Engineering, X College	26th, May, 2022 12:00-13:30	The constituent elements of core competitiveness, the developmental policy for improving core competitiveness.
CHEN Chunfa	Vice president of X College	31th, May, 2022 12:00-13:30	The constituent elements of core competitiveness, the developmental policy for improving core competitiveness.
YAO Yiyong	Vice president of Tianfu College of Southwest University of Finance and Economics (SWUFE)	8th, May, 2022 15:00-17:30	The constituent elements of core competitiveness, the developmental policy for improving core competitiveness.
Wang Donghui	Director of Dean's Office, Tianfu College of SWUFE	27th, May, 2022 15:00-16:30	The constituent elements of core competitiveness, the developmental policy for improving core competitiveness.
XU Xuedong	Dean, School of arts, Chengdu College of Science and Arts	19th, May, 2022 18:00-20:30	The constituent elements of core competitiveness, the developmental policy for improving core competitiveness.
RAN Huaqing	Associate dean, School of Law, Chengdu College of Science and Arts	12th, May, 2022 12:00-15:30	The constituent elements of core competitiveness, the developmental policy for improving core competitiveness.

3.4.3 Data collection for second-hand data

In contrast from first-hand data, second-hand data refers to information selected out of the relevant literature and interpreted by research groups in relation to their own interests. Second-hand data generally includes data collected by other researchers, and investigations conducted by research institutions and governmental organizations.

In this research, we collect useful information through the official website of the Ministry of Education of the People's Republic of China, the official website of National Bureau of statistics of the People's Republic of China, the China Education Yearbook, the portal website of X College and other private colleges in Chengdu and other open and accessible information.

3.5 Data processing and analysis

After data collection, we conduct filtering, coding and data selection in order to get the pure data for the purpose of data analysis.

3.5.1 Processing the data of questionnaires

Take into account the number of respondents in the questionnaire survey, it is more convenient to use the electronic questionnaire to investigate the respondents' views on a certain issue. However, due to lack of necessary supervision, the respondents may not fill in the questionnaire carefully. To assure the quality of the data we collect, we use two criteria for eliminating the invalid questionnaires after the collection of questionnaires.

The index of the first criteria is response time. The response time was computed using the average number of seconds that the respondent required to complete each item of the scale. According to Huang et al. (2012), the screening participants who required less than 2 second per item may be judged as invalid questionnaire.

The index of the second criteria is named long string. Long string is computed as the maximum number of consecutive items on a single page to which the respondent answered with the same response option (Meade & Craig, 2012). Scholars suggest baseline rule of thumb that individuals with a string of consistent responses equal or greater than half the length of the total scale be considered as invalid by this technique (Curran, 2016).

In this research, we take into account the above two standards to purify the recycled

questionnaires. One questionnaire may be regarded as invalid if this questionnaire meets one of these two criteria. Based on the judging criteria, we checked all the questionnaire and eliminate the invalid ones. After the step of data purifying, the valid questionnaires are ready for statistical analysis.

3.5.2 Processing the data from interviews

During the interview process, we continuously modify and adjust the interview contents based on the last interview information we obtained in order to keep the interview questions more consistency to our research questions.

In order to extract the content related to our research theme from a large number of qualitative research data, we repeatedly listened to the recording of each interview and converted the audio materials into words. In this process, the author and his teammates cross check the correctness and accuracy of the recording contents.

After each interview, we systematically sort out the interview data through coding. In coding process, we summarize the views and opinions of the interviewee with short phrases or words and match the content of the interview with relevant concepts we classified in this research. When the coding is finished, the data is filtered and particular entries are selected from which relevant information is extracted for this research. These purified data are ready for next step analysis.

3.5.3 Data analytical method

The analytical methods of this study include descriptive statistics, reliability and validity analysis and factor analysis. We use SPSS26 tool to analyze and process the data.

(1) Descriptive statistics analysis. We use descriptive statistics to describe the basic information of the respondents (e.g. age, gender, position, working years and the life circle stage of X College) in order to identify whether the data will meet the research requirement.

(2) Reliability and validity analysis. The results of the reliability test show the reliability of the scale. Cronbach's α was used to measure the internal consistency of different items. The cut-off value of reliability is 0.4. When it is lower than the threshold of 0.4, indicators should be generally deleted; when it is lower than 0.5, it means the reliability of indicator is poor; when it is between 0.5 and 0.7, it means the reliability of indicator is acceptable; when it is greater than 0.7, it means the reliability of indicator is excellent.

The validity test was used to test the degree to which the indicator exactly measures the

constructs, which shows the effective level of the results. Specifically, the validity test includes content validity, convergence validity and discriminant validity.

(3) Factor analysis. Factor analysis is a collection of methods used to examine how underlying constructs influence the responses on a number of measured variables. There are basically two types of factor analysis: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The primary objectives of an EFA are to determine the number of common factors influencing a set of measures and the strength of the relationship between each factor and each observed measure while a CFA is to determine the ability of a predefined factor model to fit an observed set of data (F. Wang, 2003).

In this thesis, we use EFA to extract common factors of core competitiveness of X College.

3.6 Summary

In this chapter, we present the research method of this thesis which is a single case study method. The selected study target X College has been introduced. We depict the process of the research design, which include the questionnaire survey and in-depth interview design. We also introduce the data collection for both first-hand and second-hand data. For data processing, two criteria, namely, response time and long string analysis in this research has been introduced. Finally, we described the analytical method used in this research which include descriptive statistics analysis, reliability analysis, validity analysis and exploratory factor analysis.

[This page is deliberately left blank.]

Chapter 4: Case Study

This chapter charts the evolution of Chinese private higher education, introduces the different developmental stages and its characteristics of X College. After that, it analyzes the important constituent factors of core competitiveness of X College.

4.1 The development stages of Chinese private college

The development of private education in China has a long history, but Chinese private higher education really started to develop after the reform and opening up in 1978. We review the developmental path of Chinese private college in this part in order to better understand the developmental background of Chinese private higher education.

(1) Development stage after reform and opening up

After the Third Plenary Session of the 11th Communist Party of Chinese Central Committee in 1978, the basic national policy of focusing on economic construction is established by Chinese government. With the rapid recovery and development of the national economy in new China, the rapidly development of social and economic construction urgently needs a large number of specialized talents. China's private higher education has begun to emerge at this stage. From the developmental experience over the world, the development of private college is inseparable from the guidance and support of the government. The different development stages of Chinese private college can be classified based on the private higher education policy formulated by Chinese government.

(2) Initial development stage (from 1981 to 1991)

After the adjustment of colleges and universities in 1952 by Chinese government, all Chinese private colleges and universities transferred to public universities. Chinese private higher education bid farewell to the historical stage for nearly 30 years. With the acceleration of reform and opening up, the development of economy and society has constantly raised the requirements for the quantity and quality of workers. Talent shortage has become an urgent problem to be solved. Under this circumstance, Chinese private colleges returned to historical stage.

In December 1982, the Constitution of the People's Republic of China was promulgated and implemented, encouraging "other social forces to organize various educational

undertakings" as an important symbol of the legitimacy of private higher education. In 1984, Zhengzhou Yellow River University of Science and Technology (now changed to Yellow River Institute of Science and Technology) was founded, becoming the first private undergraduate college approved by the Chinese Ministry of Education (L. M. Luo, 2015). At this stage, private higher education normally developed in a difficult environment, with poor running conditions and small running scale.

(3) Preliminary development stage (from 1992 to 1996)

Since private colleges and universities at this stage mainly rely on national self-study examination, private colleges and universities must implement teaching based on this purpose. To some extent, private colleges and universities in this period are more like training institutions not really autonomous colleges and universities.

According to the statistical yearbook of China's education, at the end of 1996, there were 1274 private colleges and universities of various types in China, including 26 private colleges and universities with academic education approved, indicating that China's private higher education has entered a preliminary development period (MOE, 1997).

(4) Rapid development stage (from 1997 to 2002)

The Regulations on Running Schools by Social Forces promulgated by the State Council in October 1997 is the first administrative regulation specifically regulating private education in China. The regulations point out that "greater steps can be taken in the development of private education", and "the government encourages social forces to organize higher education and higher vocational education in various ways" (TSC, 1997). Under the guidance of this policy, the total enrollment of general higher education has increased significantly since 1998, and private higher education has made great progress.

The implementation of the enrollment expansion policy of colleges and universities in China in 1999 promoted the development of private higher education into a period of large-scale development. The rapid expansion of enrollment is bound to cause the shortage of higher education resources. Under this background, many private colleges and universities with independent qualification to issue academic diplomas developed and expanded rapidly during this period. At the end of 2002, there were 133 private colleges and universities with academic qualifications and 319800 enrolled students in China (MOE, 2003). So that China's private colleges and universities have entered a period of rapid, prosperity and development.

(5) Standardized development stage (from 2003 to 2007)

The formal implementation of the law of the People's Republic of China on the promotion of civilian run education in September 2003 marks that China's private education

entered a new historical period of healthy development. According to the law, it is of great significance to promote the formation of a new pattern of common development of private education and public education.

In order to strengthen the standardized management of private colleges and universities, protect the legitimate rights and interests of private college founders, teachers and students, and ensure the harmony and stability of private colleges and universities, the general office of the State Council issued the notice on strengthening the standardized management of private colleges and universities and guiding the healthy development of private higher education, and the Ministry of Education formulated several provisions on the management of private colleges and universities in 2006. These policies promote the healthy and rapid development of Chinese private colleges and universities.

According to the statistical bulletin on the development of national education in 2007, there are 615 private colleges and universities officially approved by the Ministry of education, including 297 private colleges and universities with 1.63 million students, and 318 independent colleges with 1.86 million students (MOE, 2007). At this stage, a relatively complete private higher education system with considerable scale has been preliminarily formed. Private colleges and universities have entered a new period of healthy and standardized development in which they are managed and run according to the law.

(6) Stable development stage (after 2008)

After the 21st century, the policy environment of private higher education in China has changed significantly. The advantages gradually accumulated by private higher education have gradually lost, even become disadvantages, and the competitiveness of private colleges and universities is gradually weakening. Some private colleges and universities blindly cater to the market demand in specialty and curriculum, which makes it difficult for private colleges and universities to develop specialty and establish brand advantage. Influenced by the enrollment expansion policy of higher education, private colleges and universities have been greatly impacted in the student source market and are facing the dilemma of survival.

At this stage, Chinese government issued a series of policies to further regulate the private higher education market: a) Notice on Strengthening the Standardized Management of Private Colleges and Guiding the Healthy Development of Private Higher Education in 2006, b) Several Provisions on the Management of Running Private Colleges in 2007 and c) Measures for the Establishment and Management of Independent Colleges in 2008. According to the statistical yearbook of China's education, by 2010, there were 676 private colleges and universities providing undergraduate or junior college education, accounting for about 25% of

2723 colleges and universities in China, and about 4.8 million students were enrolled in private colleges and universities, accounting for 21.5% of the students in ordinary colleges and universities (MOE, 2011).

Through more than 20 years of continuous exploration and development, Chinese private higher education has made great progress, and is moving forward in the direction of high quality and standardization. The tortuous developmental path of Chinese private higher education also shows that the importance of government policy for the development of private higher education.

4.2 The history and evolution of X College

Chengdu College of University of Electronic Science & Technology of China (hereinafter "X College") is an independent college established in 2001 at Chengdu, Sichuan province, China and approved by the Ministry of Education of China. It positions a regular HEI mainly responsible for academic education at undergraduate level, which is jointly founded by University of Electronic Science & Technology of China and Chengdu Guoteng Industrial Group. By the end of 2022, X College has 7 colleges and 68 majors in total, with more than 17000 students in campus. It has 8 experimental teaching centers, 3 provincial experimental teaching demonstration centers and 124 laboratories, with a total area of 13387 square meters. The college now has two campuses, Chengdu campus and Shifang campus, covering an area of 933380 square meters. Chengdu campus is located in Chengdu Hi-tech West Zone, a national high-tech industrial development zone with a large number of information technology and electronic enterprises, and Shifang campus is located in Shifang, a famous historical and cultural city in Sichuan Province with beautiful landscape and convenient transportation.

X College positions the discipline development as focusing on engineering and management, with electronic information and computer majors as the core discipline, and the interdisciplinary and coordinated development of science, economics, management, literature, art, sports, design and aviation. X College is committed to cultivating high-quality applied scientific and technological talents and technical leaders with systematic theoretical basis and engineering practice ability, sustainable development potential and innovative spirit. X College is also targeted as a private university based in Chengdu, radiating the whole country and serving the social and national economic construction.

X College has carried out extensive cooperation with enterprises and vigorously promoted

foreign exchanges with other colleges and universities. X College has 52 student practice bases jointly founded with enterprises and 135 cooperative enterprises in total. It has established good cooperative relations with many colleges and universities in the United States, Britain, Australia and other countries, and more than 100 students go abroad for exchange and study every year.

From 2001 to 2022, X College has trained more than 60000 high-quality applied talents for the country and society. The graduates serve all walks of life in the national economy, distributed in computer, microelectronics, electronic information, communication, finance, graphic art, aviation services, culture and other industries, and spread over more than 40 countries and regions in the world, such as the United States, Britain, Germany, Australia, Japan and Singapore. In recent years, the employment rate of school students has remained above 93%.

Since its establishment, X College has gained many honorary titles, such as “advanced collective of the national education system”, “national advanced independent college”, “excellent private higher education institutions in China”, “comprehensive award of private university of Sichuan province in innovation and entrepreneurship education demonstration”, and “comprehensive award of national private university in innovation and entrepreneurship education demonstration”.

In more than 20 years development history, X College has experienced growth and difficulties. In the following part, we will review each developmental stage of X College.

(1) Initial developmental stage (from 2001 to 2008)

In 2001 and 2002, the predecessors of X College, Guoteng Software College of UESTC and Guoteng Microelectronics College of UESTC, were established respectively. On July 14th, 2003, Guoteng Software College of UESTC and Guoteng Microelectronics College of UESTC merged into Guoteng College of UESTC. On February 23, 2004, Guoteng College of UESTC was renamed Chengdu College of UESTC (X College) and was recognized as an independent college by the Ministry of Education of China.

X College was established under the background of the rapid development of private higher education. In June 1999, the third national education work conference clearly put forward “to actively encourage and support social forces to run schools in various forms to meet the growing needs of the people for higher education, and form a pattern in which the government is the main body and public schools and private schools develop together, and further develop private higher education” (L. M. Luo, 2015). Under this situation, in order to improve the national quality and implement the strategy of rejuvenating the country through

science and education, Chinese universities began to expand enrollment on a large scale since 1999. Since then, the enrollment scale of students in higher education have continued to increase. After the enrollment expansion, the total demand for teaching conditions has increased sharply, while the public higher education resources are limited, which is difficult to meet the demand for educational resources. As a result, public colleges and universities are seriously overloaded, some normal teaching activities are affected, and the quality of education is difficult to guarantee. In this context, to solve the problem of college enrollment expansion, many public universities have explored the combination of the brand of public universities and private funds to establish private secondary colleges in order to increase educational investment and expand educational opportunities. The independent college is emerging at this period of time.

Independent colleges are the product of the joint action of government, market and society in the reform process of higher education system. Independent colleges refer specifically to secondary colleges at the undergraduate level organized by ordinary public universities according to the new mechanism and model. It has played an active role in expanding high-quality higher education resources and solving the problem of expanding the enrollment scale of colleges and universities. The special feature of independent college is that the running funds are not invested by the government and operate according to the private mechanism. From this perspective, independent college is a special mode of private college. To establish independent college is an effective policy to expand Chinese higher education resources faster and better, and also solve the two major problems of education quality and investment capital in the process of higher education popularization. At the same time, it also conforms to the international trend of privatization and diversification of higher education all over the world.

From the beginning of its establishment, X College has relied on the excellent resources of UESTC and Guoteng Group to lay a solid foundation for the sustainable development in a long run. For example, as the co-founder of X College, UESTC is a technology-based university that covers the whole electronic information discipline in China and also as one of the A-class candidate universities in the national construction of “world-class universities”. At the beginning of its establishment, X College obtained tremendous support of high-quality faculty from UESTC. The faculty of X College are mainly famous professors, discipline leaders and retired teachers with rich experience from UESTC. The president and management of X College are also well-known professors and experts from UESTC with rich experience in higher education management. In the meanwhile, the students and their parents

are also attracted by the excellent brand and reputation of UESTC. At the beginning of the establishment of X College, the degree certificates obtained by graduating students were directly issued by UESTC. There is no difference between the degree certificate obtained by the graduates of X College and the graduates of UESTC. With the degree certificate of UESTC, graduating students at X College can generally obtain better income and better positions in employment market. Actually, in the initial developmental stage of X College, this policy has greatly stimulated the enthusiasm of local high school graduates to apply for X College and further attracted more students nationwide.

As the founder and investor of X College, Chengdu Guoteng Group, a famous enterprise radiating southwest region of China and focus on areas of electronic information, information security and Beidou navigation, provided initial funds, land resource and good cooperative relationship resources with tens of famous enterprises in electronic information area to X College. For example, with the good relationship of local government, Guoteng Group has obtained 466666 square meters educational land with excellent location near the urban area of Chengdu. In this case, X College may have better zone position advantage than others equivalent private colleges. Guoteng Group also provided huge funds to construct large-scale and modern teaching buildings, tens of student dormitories, library, college stadium and other facilities in Chengdu main campus.

With excellent human resource, financial resource and market resource provided by UESTC and Chengdu Guoteng Group, X College began its rapid development. From 2004 to 2008, the number of enrolled students at campus remains steady at 15000 to 16000 each year. The continuous increasing students need a large number of teachers for X College. Apart from the high quality faculty of UESTC, X College began to recruit its own teachers, including young teachers, graduates with master degree, part-time teachers and qualified personnel with engineer certificate. The main duty of young teachers recruited by X College is to give lectures to students. There is nearly no requirement for teachers to do scientific research or other relevant projects. At this stage, from specialty setting, curriculum arrangement to teaching management, X College completely copied UESTC's mode. However, due to the strong support of high-quality teacher resources and the policy that issued degree certificate of UESTC, students and parents of X College are satisfied with being able to study in X College.

(2) Steady growth stage (from 2009 to 2016)

Experiencing 5 years rapid development, X College gradually grew as a private college providing academic education at undergraduate level with specialties in electronic

information, engineering, science, art and aviation. After the rapid development in initial developmental stage, X College entered steady growth stage.

In this period, due to its own development needs of UESTC and the transformation guidance of government policy, the majority of teachers derive from UESTC came back to their own university gradually, leaving only a small number of teachers to guide the young teachers of X College. Teachers recruited by X College became the main force of the college. Therefore, X College has made great efforts to train its own young teachers and set up various teaching centers and research offices. For the construction of high-quality applied teachers' team, X College has comprehensively promoted and constructed a teacher team through "famous teacher project" and "double qualified teacher project". The "famous teacher project" aims to improve teaching quality and teaching level. The objective of "famous teacher project" is to cultivate a group of famous teachers with strong teaching ability and teaching experience for X College in a long run. The "double qualified teacher project" focuses on strengthening teachers' practical ability. It requires teachers to become not only teachers who can teach courses well, but also to be engineers, designers and economists with qualified certificate in relative areas. In the meanwhile, double qualified teachers have responsibilities to lead students to do engineering design, innovative experiments, project development and scientific research.

As an independent college, the main duty of X College mainly focuses on course teaching, supplemented by scientific research, and takes into account a few number of cooperation research projects with enterprises. Apart from teaching, the scientific research capability of teachers of X College has been gradually improved according to the practice of scientific research project. Due to lack of experience and the successful cases in applying for scientific research projects in the past, coupled with focusing on course teaching, X College is usually difficult to apply for scientific research projects at the beginning of its establishment. Normally, the teachers with strong research capability can apply for a few number of scientific research projects from Chengdu Science and Technology Bureau, Sichuan Science and technology department and Sichuan Education Department. The cooperation between X College and enterprises has been gradually increased at this stage. X college makes full use of enterprise resources accumulated in electronic information field and the industrial resources of Guoteng group, and widely carries out various school-enterprise cooperation to realize the "seamless connection" of students from the college to the industry. The college also implement close school-local cooperation with surrounding cities such as Chengdu, Suining, Pixian and Pengzhou, which not only serves the local economic construction, but also

provides students with more extensive practical training opportunities.

Before 2012, due to the cooperation relationship with UESTC and the own running quality of X College, the graduate students at X College can obtain degree diploma issued by UESTC. This phenomenon is popular in private colleges at the initial stage of Chinese higher education popularization. In the early stage of the development of independent colleges, in order to encourage social capital to invest in running private colleges, the regulators adopted a tacit and wait-and-see attitude towards this phenomenon. As the government further standardizes the running of private colleges and universities, independent colleges are gradually required to improve the running quality and issue degree diploma independently. Since 2012, with the continuous improvement of its own running quality, X College can issue the degree certificate independently with the permission of the Ministry of Education. The students at X College obtain the degree certificate of X College rather than the degree certificate of UESTC. This indicates that X College has gradually separated from the help of UESTC and embarked on the stage of stable development.

At the beginning of its emergence, independent colleges provided more higher education resources to supplement public universities and played an important role to meet the higher education requirement of citizens. However, it also had caused controversial due to the lack of necessary control. With the promulgation of policies and regulations of the Ministry of Education, the running and management of independent colleges are becoming more standardized. Review the developmental process of X College, government policy is undoubtedly the most powerful factor that can affect its development. In 2003, Several Opinions on Standardizing and Strengthening the Management of Independent Colleges in Universities with New Mechanisms and Models was issued by the Ministry of Education. It is the first landmark policy for independent colleges. This document is intended to solve various problems caused by the “dependence” of independent colleges. It aims to weaken the dependent relationship between independent colleges and its parent universities, and regulate the management and running of independent colleges. The Measures for the Establishment and management of Independent Colleges issued in 2008 are clearer and more detailed for this purpose. It defines a number of basic paths for future development of independent colleges, including continuing to exist after inspection and acceptance, transferring to private colleges and universities, and returning to public colleges and universities. The government also formulates a clear timetable and gives a five-year transition period for independent colleges.

According to the developmental path of independent college formulated by the

government and take into account for its own situation, at the end of 2016, the board of Guoteng Group and the management of X College has decided to implement transformation strategy, namely, X College will terminate the cooperation relationship with UESTC and transferred to pure private college. Since then, the development of X College has entered a new chapter.

(3) Transformation stage (from 2017 to date)

From 2004 to 2016, X College experienced rapid development at the initial stage and stepped into its steady developmental stage, and became one of the influential regional private colleges in electronic information and engineering area. After 2016, the focus work of X College has shifted to the transformation of regular private college.

Along with the attitude of government towards the form of independent colleges tends to be strict and cautious, the problem of future development of independent college has been put on the agenda. Taking advantage of the high-quality educational resources and brand effect of public universities, independent colleges have obtained many developments convenience in the initial stage, such as attracting more high-quality students, directly recruiting undergraduate students, opening more disciplines and majors. The emergence of independent college has certain rationality in the initial stage of the popularization of higher education in China around 1999, and conforms to the historical trend of the popularization of higher education. However, independent college is still a transitional product emerging at the expansion stage of Chinese higher education popularization. Independent college must choose its future developmental path as the strict regulation and control by the government.

Nationwide, there are two main forms of Independent Colleges: one is public ownership, that is, independent colleges are mainly held by the public universities; the other is non-public ownership, that is, independent colleges are mainly held by private capital and the holder must pay management fees to the parent universities. For the former, as it was owned by public universities, the most probability of development for the independent college is it will stop running and return to public university until the deadline of transformation setting by Chinese Ministry of Education. For the latter, due to the private ownership attribute of independent college, it is better transform to regular private college for the long-term development of independent college. Along with the inherent advantages relying on public colleges and universities have been gradually weakened with the constraints of policies and their own maturity, the independent colleges can obtain the resource dividend from the parent universities are becoming more limited. On the contrary, the negative impact of “dependence” is gradually emerging. For example, it is necessary to pay a large management fee to the

parent university (usually 10% to 30% or higher of the annual tuition income). Independent colleges of non-public ownership usually have relatively independent and strong social capital. As the main investor, they can relatively easily distinguish themselves from their parent universities in terms of property rights and management. Transfer into regular private college is undoubtedly one of its best development options for independent college of non-public ownership.

X College is an independent college that is owned by Guoteng Group, that is, it belongs to the independent college of non-public ownership. Due to the faculty and brand support provided by UESTC, X College must pay a number of management fee to UESTC every year. Along with the support of UESTC came to weaken and the young teachers at X College gradually growing up, also with the strict regulated control purpose proposed by government, the board of Guoteng Group and the management of X College hope to terminate the cooperation with UESTC and transfer into a regular private college.

The Measures for the Establishment and Management of Independent Colleges issued by the Ministry of Education in 2008 stipulates that the establishment standards of independent colleges must be referred to the establishment standards of public undergraduate colleges and universities. Furthermore, this document stipulates the specific requirements for the construction area of the campus, investment funds, student teacher ratio, proportion of associate senior qualifications or above and degree awarding qualification. These standards are still difficult for independent colleges to meet in the short term. Therefore, independent colleges that are determined to be transferred have increased their investment and strive to meet the requirements within the time limit of transfer.

The transformation work of X College has begun since 2017. In order to meet the transformation requirements required by the Ministry of Education, X College implemented a series of policies, including recruit a large number of young teachers, reform the salary system of associate professors and professors, teaching and research level improvement plan and establish Shifang new campus. For example, X College decided to establish Shifang campus in order to meet the standard of the campus area since 2016. Shifang campus is located in Shifang city, which is 80 kilometers away from Chengdu campus. Take into account for the distance issue, a few teachers choose to leave since the spreading of the rumor of X College is moving to Shifang new campus. The foundation of steady development of private college is owning a number of stable teachers with qualifications and experiences. However, from 2016 to 2018, affected by the possible relocation of X College, a certain number of core teachers especially associate professors and professors at X College have

transferred to nearby colleges and universities. In this case, X College has to recruit new teachers to supplement. In 2018, the management of X College officially announced the college was planning to build Shifang campus and the college will maintain dual campus operation of Chengdu campus and Shifang campus. Finally, Shifang campus was officially opened in 2021, and the first batch of students officially moved into the new campus in September, 2021. The main purpose of the establishment of Shifang Campus is to meet the running requirement of the Ministry of Education of China for the construction area of private college. Originally, Chengdu campus of X College is close to the main urban area of Chengdu city, which is attractive to students and teachers. However, the change of geographical location will bring more daily commuting costs, which will reduce the location advantage of X College.

To keep associate professors and professors stay, X College reformed the salary system of associate professors and professors to enhance the income level in 2019. Along with the increase of teachers recruited in recent years, the average teaching workload of teachers decreased year by year. For private colleges in China, teaching income accounts for a large proportion of teachers' total income. The decline of teaching workload will inevitably lead to the decline of teaching income and also teachers' total income. So, X College encouraged teachers to engage in scientific research and projects to keep the total income level. All of these policies implemented by X College are based on the purpose of meeting the transformation requirements of the Ministry of Education.

As we know, reform is difficult all over the world. In transformation stage, with the increasing pressure on survival, X College was forced to make reforms in various aspects of teaching, student cultivating, scientific research and daily management. As the actual owner of X College, Guoteng group has to enlarge investment in renewing teaching facilities and laboratory equipment to X College to meet the transformation standard set by the Ministry of Education. X College must strengthen the management capability, improve teachers' teaching and scientific research capabilities to further enhance the comprehensive competitiveness in the future.

As we mentioned in Chapter two, there are significant differences in the competitiveness of enterprises at different life cycle stages. So, it has great value to study and analyze the competitiveness changes of X College at each development stages. We summarize the developmental milestones of X College and analyze the competitiveness of each stage from 2001 to date as shown in Table 4.1:

Table 4.1 The milestones and competitiveness of X College

Year	Description of milestone	The core competitiveness of this stage
2001	Guoteng Software College of UESTC established.	Non-competitiveness stage: the core competitiveness of X College in this stage is relying on core competitiveness of UESTC.
2002	Guoteng Microelectronics College of UESTC established.	
2003	Guoteng Software College of UESTC and Guoteng Microelectronics College of UESTC merged into Guoteng College of UESTC.	
2004	Guoteng College of UESTC was renamed Chengdu College of UESTC (X College).	General competitiveness stage: financial resource, location advantage play important role in the formation of competitiveness.
2009	Implement “famous teacher project”.	Primary core competitiveness stage: (1) high-quality human resource improves the core competitiveness.
2012	Can issued degree diploma independently.	(2) Talent training capability improvement strengthen the core competitiveness of X College.
2013	Based on CDIO engineering education concept to promote the “project-oriented” teaching reform.	(3) Talent training capability improvement strengthen the core competitiveness.
2015	Further promote school-enterprise cooperation.	(4) Social service capability improvement strengthens the core competitiveness.
2017	Decided to transfer to regular private college.	Strict policy supervision requires X College to improve its core competitiveness.
2019	Implement salary system reform towards associate professors and professors.	(5) Further consolidate the competitiveness through keeping high-quality teachers’ team stay.
2021	Shifang campus officially opened.	Mature core competitiveness stage: college scale expansion further enhances the core competitiveness.

Source: self-developed by author

4.3 The organizational structure of X College

X College is an independent college held and invested by Guoteng Group. Guoteng Group is the owner of X College and has property right to X College. From this point of view, the board of directors of Guoteng Group controlled X College. Major issues and important decisions of X College are decided by the board of directors of Guoteng Group. For example, the president, vice president, Dean of secondary colleges and department head of the college are appointed by the board of directors of Guoteng Group. The expense of X College must be

approved by the board of directors of Guoteng Group. In conclusion, the organizational structure of X College is that the president takes full responsibility of overall management of the college under the leadership of the board of directors of Guoteng Group. However, there is no reasonable balance between the ownership and control between the board of directors of Guoteng Group and the management of X College. Due to the management of X College was appointed or recruited by the board of directors of Guoteng Group, it is difficult to guarantee the management power of the president of X College. In the actual operation of X College, the chairman often participates in the administrative management too much, and the phenomenon of "dislocation" or "vacancy" is easy to occur between the chairman and the president.

For X College itself, it has functional departments like Human Resources Department, Financial Department, Science and Technology Department, Teaching Resource Department, Enrollment and Employment Division and International Exchange and Cooperation Center, and six secondary colleges like School of Engineering, School of Computer, School of Business, School of Art and Technology, School of Art and Science and School of Aviation. All the functional departments and secondary colleges are led by the management of X College. The organizational structure diagram is shown in Figure 4.1:

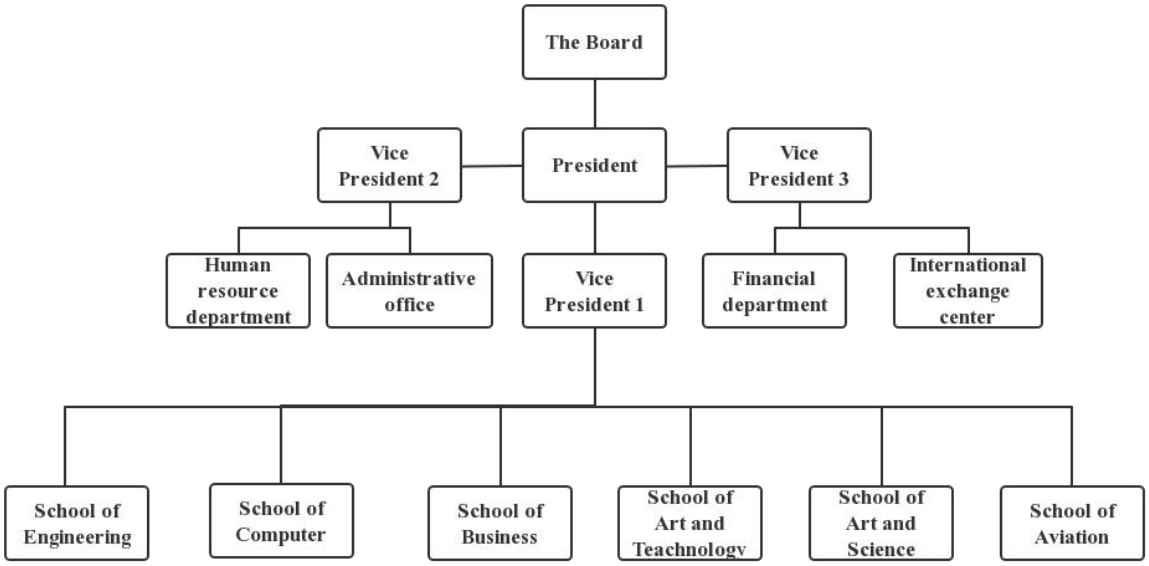

Figure 4.1 Organizational structure of X College

Source: self-produced by author

4.4 The empirical study of core competitiveness of X College

In this research, we conduct a questionnaire survey to employees of X College to investigate their opinions on various aspects of the competitiveness of the college. In this section, we firstly test the reliability and validity of the scale of core competitiveness for X College, extract the common factors which represent the different dimension of the core competitiveness of X College. After that, we interview several management personnel of X College and other private colleges in Chengdu. We summarize their views of the understanding of core competitiveness for private college, the constituent elements of core competitiveness and the managerial policies taken for the sustainable development of private colleges.

4.4.1 Scale reliability test

The scale we used in this research is based on relatively mature scales that already has a high reliability. However, according to our research purpose and research object, we modified the reference scale in order to adjust the situation of Chinese private college and Chinese cultural background. So, it was necessary to test the reliability of the scale. Cronbach's α is commonly used for reliability analysis to assess the internal consistency of scales. Generally, when the value of Cronbach's α is greater than 0.7, it means the reliability of the sale is good; when it is greater than 0.9, it means the reliability of the scale is excellent (Chai, 2010).

We test the reliability of the whole scale as Table 4.2 shows below. The total reliability of the whole scale is 0.988, higher than 0.9, indicating that the internal consistency of the scale is excellent.

Table 4.2 Reliability Statistics

Cronbach's Alpha	Number of Items
.984	44

After this operation, we test the reliability of each variable respectively as Table 4.3 shows below. The reliability of each variable of the core competitiveness is higher than 0.7, indicating the reliability of each variable of core competitiveness is good.

Table 4.3 Reliability Statistics of core competitiveness

Variable	Cronbach's Alpha
Organizational culture	.884
Knowledge & Information system	.830
Human resource	.974
Basic resource	.918

Learning capability	.919
Innovative capability	.937
Entrepreneur capability	.948
Strategic capability	.899
Organizational capability	.948
Scientific research capability	.918
Talent training & Social service capability	.912

4.4.2 Scale validity test

Generally speaking, validity can be divided into three types, namely, content validity, criterion-related validity and construct validity. For this study, we mainly test the content validity and construct validity of the scale.

(1) Content validity. Content validity refers to the extent to which the scale covers research subject. The content of this questionnaire is obtained through literature, and trial filling and correction are carried out so that the content of the questionnaire can fully cover the measured content. Based on this, we believe this scale has good content validity.

(2) Criterion-related validity refers to the ability of the content of the measurement tool to predict or estimate. This research is not predictive, so criterion-related validity is not tested.

(3) Construct validity. Construct validity can be divided into two types: convergent validity and discriminant validity. Convergent validity refers to the high correlation between items in the same construct. Discriminant validity refers to the low correlation between items in different constructs. For construct validity test, Kerlinger (1986) suggests to use factor analysis method. The operation principle is: in the same dimension, the larger the factor load value is, usually above 0.5, indicating the higher the convergence validity of the scale is. Each item can only have one factor load value greater than 0.5 in its dimension. The more items that meet this condition, the higher the discriminant validity of the scale is.

In order to test the construct validity of the scale, we followed Kerlinger's suggestion and carried out exploratory factor analysis. Before factor analysis, the KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) test are conducted first. Kaiser (1974) suggested that the mediocre standard for factor analysis is at least 0.6. Taking innovative capability dimension as an example, we firstly test KMO and the result shows as Table 4.4 below. In this case, KMO=0.881, meanwhile Bartlett sphericity test χ^2 = 868.015, df = 10 (p = 0.000<0.05), indicating variable of learning capability is suitable for factor analysis.

Table 4.4 KMO result of innovative capability

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.881
Bartlett's Test of Sphericity	Approx. Chi-Square	868.015
	df	10
	Sig.	.000

After the KMO test, we use principal component analysis method to extract common factor of innovative capability. Table 4.5 shows that the factor load value of each item is greater than 0.5, and 80.13% of total variance explained by one common factor we extracted. This result indicates the construct validity of innovative capability is good.

Table 4.5 Factor analysis of innovative capability

	Initial	Extraction
IC 1	1.000	.776
IC 2	1.000	.824
IC 3	1.000	.775
IC 4	1.000	.824
IC 5	1.000	.807
variance explained %		80.13%
Total variance explained Cumulative %		80.13%

Follow the same operation steps, we test construct validity of all variables of core competitiveness and the result indicates all the variables have good construct validity.

4.4.3 The empirical study result of core competitiveness of X College

In order to investigate the real situation of the core competitiveness of X College, we collect first-hand data through questionnaire survey and in-depth interview. In this part, we firstly use descriptive statistical method to summarize the demographic information of the sample and to find out the performance in resource and capability dimension of the core competitiveness of X College. After that, we use factor analysis method to extract common factors of core competitiveness. These extracted common factors represent the vital resources and capabilities for the sustainable development of X College.

4.4.3.1 Descriptive statistical analysis of demographic characteristics of sample

Descriptive statistics is to use mathematical language to express the characteristics of a group of samples or the characteristics of the correlation between the variables of the samples, which is used to summarize and explain the sample data. This study mainly describes the basic information of the survey sample, mainly including age, gender, position, working years and life circle, explains the mean, standard deviation, frequency and percentage of each variable. The data of the questionnaires obtained in this study were all conducted using online questionnaires. Respondents were invited to complete the questionnaire via social software.

The demographic information is summarized as Table 4.6 shows below.

Table 4.6 Demographic information summary of the sample

Variable	Description	Frequency	Percentage
Gender	Male	74	36.6%
	Female	128	63.4%
Age	Below 35 years old	91	45%
	35-45 years old	96	47.5%
	46-55 years old	11	5.4%
	Above 55 years old	4	2%
Education	Bachelor degree	37	18.3%
	Master degree	164	81.2%
	Doctor degree	1	0.5%
Position	Administrative staff	14	6.9%
	Teacher	185	91.6%
	Management staff	3	1.5%
Working years	Below 5 years	94	46.5%
	5-10 years	46	22.8%
	10-15 years	49	24.3%
	Above 15 years	13	6.4%
Life cycle	Start-up stage	4	2%
	Growth stage	141	69.8%
	Mature stage	34	16.8%
	Degenerating stage	23	11.4%

As can be seen from Table 4.6, there were 74 male and 128 female respondents who participate in this survey. The proportion of males and females in the total sample was 36.6% and 63.4% respectively. The number of female respondents was much higher than that of male ones. In X College, the majority of the employees are female teachers.

In terms of age, Table 4.6 shows that the majority of the respondents (187 respondents) were below 45 years old, accounting for 92.5% of the total sample; followed by ages 46 to 55 (11 respondents), accounting for 5.4% and ages above 55 (4 respondents), accounting for 2%. It can be concluded that the respondents aged 25 to 45 accounted for 92.5% of the total respondents were young and middle-aged employees. From the respective of the human resource structure of X College, young and middle-aged employees are the main body of X College.

As for education background, Table 4.6 shows that the 18.3% of the respondents (37 respondents) obtained bachelor's degree, while 81.2% of the respondents (164 respondents) obtained master's degree and only 0.5% of the respondents (1 respondent) obtained doctor degree. The largest proportion of the education background is master's degree. This is due to the recruitment requirements of X College are that full-time teachers must have a master's degree or above, and the personnel in administrative positions at least have a bachelor's degree.

For position distribution, the main body of the respondents were full-time teachers (185

respondents), accounted for 91.6% of the total sample; followed by 14 administrative staffs, accounted for 6.9% of the total respondents and 3 management personnel, accounted for 1.5% of the total respondents.

As can be found in Table 4.6, there were 46.5% of the total respondents (94 respondents) worked below 5 years for X College; 22.8% of the total respondents (46 respondents) worked between 5 to 10 years; 24.3% of the total respondents (49 respondents) worked between 10 to 15 years for X College and 6.4% of the total respondents (13 respondents) worked above 15 years for X College. Nearly half of the respondents in this survey were fresh employees, and they worked for X College less than 5 years.

In terms of the life circle of X College, as can be seen in Table 4.6, 4 respondents believe X College is in its start-up stage of the life circle, accounted for 2% of the total respondents; 141 respondents believe X College is in growth stage, accounted for 69.8% of the total respondents; 34 respondents believe X College is in mature stage, accounted for 16.8% of the total respondents; 23 respondents believe X College is in degenerating stage, accounted for 11.4% of the total respondents. Majority of the respondents (69.8% of the total sample) have the same views that X College is in growth stage of its life circle.

4.4.3.2 Descriptive statistical analysis of variables of core competitiveness

In this study, the minimum, maximum, average, skewness, kurtosis and standard deviation of each variable and specific item were calculated by the analysis software, IBM SPSS 26.0. The calculation results are shown in Table 4.7.

Table 4.7 Descriptive statistics of variable measure items

Variable	Item	N	Mini	Max	Avg	SD	Skewness	Kurtosis
OC	OC1	202	1	5	3.38	0.982	-0.508	0.024
	OC2	202	1	5	3.45	1.007	-0.438	-0.214
	OC3	202	1	5	3.51	1.013	-0.446	-0.131
	OC4	202	1	5	3.35	1.102	-0.273	-0.164
KI	KI1	202	1	5	3.46	0.957	-0.35	-0.114
	KI2	202	1	5	3.47	0.973	-0.308	-0.193
	KI3	202	1	5	3.26	0.979	-0.312	-0.185
HR	HR1	202	2	5	4.03	0.749	-0.272	-0.58
	HR2	202	2	5	3.97	0.785	-0.384	-0.304
	HR3	202	2	5	4.01	0.74	-0.239	-0.534
BR	BR1	202	1	5	2.80	1.081	0.078	-0.577
	BR2	202	1	5	3.00	0.975	-0.238	0.019
	BR3	202	1	5	2.72	1.063	0.082	-0.586
	BR4	202	1	5	2.99	1.084	-0.051	-0.519
	BR5	202	1	5	3.41	0.884	0.099	-0.084
LC	LC1	202	1	5	3.46	0.952	-0.361	0.061
	LC2	202	1	5	3.58	0.918	-0.626	0.605

	LC3	202	1	5	3.46	1.013	-0.53	-0.009
IC	IC1	202	1	5	3.40	1.08	-0.483	-0.224
	IC2	202	1	5	3.18	1.116	-0.346	-0.583
	IC3	202	1	5	3.56	0.961	-0.49	-0.10
	IC4	202	1	5	3.14	1.084	-0.303	-0.537
	IC5	202	1	5	3.36	1.084	-0.512	-0.288
EC	EC1	202	1	5	3.70	0.957	-0.645	0.356
	EC2	202	1	5	3.70	0.993	-0.452	-0.172
	EC3	202	1	5	3.60	0.984	-0.39	-0.093
	EC4	202	1	5	3.83	0.944	-0.652	0.247
	EC5	202	1	5	3.67	0.964	-0.537	0.043
SC	SC1	202	1	5	3.54	1.037	-0.499	-0.018
	SC2	202	1	5	3.48	1.033	-0.398	-0.102
	SC3	202	1	5	3.36	0.979	-0.297	-0.028
OMC	OMC1	202	1	5	3.42	0.99	-0.447	-0.053
	OMC2	202	1	5	3.51	0.999	-0.45	-0.032
	OMC3	202	1	5	3.37	1.067	-0.428	-0.28
	OMC4	202	1	5	3.43	1.064	-0.443	-0.119
SRC	SRC1	202	1	5	3.02	0.995	-0.142	-0.422
	SRC2	202	1	5	3.22	0.964	-0.259	-0.261
	SRC3	202	1	5	3.26	0.910	-0.294	-0.253
	SRC4	202	1	5	3.16	1.01	-0.265	-0.336
TSC	TSC1	202	1	5	3.68	0.904	-0.708	0.61
	TSC2	202	2	5	3.62	0.803	-0.015	-0.491
	TSC3	202	1	5	3.41	0.948	-0.257	0.028
	TSC4	202	1	5	3.35	0.977	-0.322	-0.197
	TSC5	202	1	5	3.25	1.007	-0.396	-0.029

As shown in Table 4.7, the absolute value of the kurtosis of all the items is less than 8 and the absolute value of the skewness of all the items is less than 3. The results indicate that the sample data obtained in this study have met the requirements of normal distribution, and they are also suitable for the subsequent data analysis by SPSS used in this study.

Table 4.8 Descriptive statistics of variable

	N	Mean	Std. Deviation
Human resource	202	4.0050	.73938
Entrepreneurial capability	202	3.7000	.88081
Learning capability	202	3.4983	.89235
Talent training & Social service capability	202	3.4594	.80027
Strategic capability	202	3.4587	.92726
Organizational capability	202	3.4307	.95815
Organizational culture	202	3.4233	.86476
Knowledge& Information	202	3.3960	.83750
Innovative capability	202	3.3277	.95372
Scientific research capability	202	3.1658	.86981
Basic resource	202	2.9842	.88489
Valid N (listwise)	202		

As the result shows in Table 4.7 and Table 4.8, the average value of the OC (organizational culture) variables is 3.423, and the standard deviation is 0.865. The item OC3 that is “All employees have a common vision” has the highest average value, at 3.51. The

item OC4 that is “X College has a perfect cultural system” has the lowest average value, at 3.35. However, the average value of all the items for organizational culture is above 3, indicating that the organizational culture of X College perceived by the respondents is relatively high.

The average value of the KI (knowledge & information system) variables is 3.396, and the standard deviation is 0.838. The item KI2 that is “X College has perfect channels to access information” has the highest average value, at 3.47. The average value of all the items for knowledge & Information system is above 3, indicating that the knowledge & information system of X College perceived by the respondents is relatively high.

The average value of the HR (human resource) variables is 4.005, and the standard deviation is 0.739. The item HR1 that is “All employees have a common vision” has the highest average value, at 4.03. The average value of all the items for human resource is above 3, indicating that the human resource of X College perceived by the respondents is relatively high.

The average value of the BR (basic resource) variables is 2.984 with a standard deviation at 0.884. The item BR3 that is “X College has advanced teaching and experimental equipment” has the lowest average value, at 2.72. The average value of all the items for basic resource is below 3, indicating that the basic resource of X College perceived by the respondents is relatively low.

The average value of the LC (learning capability) variables is 3.498, and the standard deviation is 0.892. The item LC2 that is “Be able to integrate new and old knowledge well” has the highest average value, at 3.58. The item LC1 and LC3 that is “Access to external knowledge through various channels” and “Can quickly and effectively apply new knowledge to teaching, scientific research and talent training” has the lowest average value, at 3.46. However, the average value of all the items for learning capability is above 3, indicating that the learning capability of X College perceived by the respondents is relatively high.

The average value of the IC (innovative capability) variables is 3.327, and the standard deviation is 0.954. The item IC3 that is “X College encourages inter departmental communication and cooperation” has the highest average value, at 3.56. The item IC4 that is “X College has great investment in innovation activities” has the lowest average value, at 3.14. However, the average value of all the items for innovative capability is above 3, indicating that the innovative capability of X College perceived by the respondents is relatively high.

The average value of the EC (entrepreneurial capability) variables is 3.700, and the standard deviation is 0.881. The item EC4 that is “College leaders have strong

professionalism" has the highest average value, at 3.83. The item EC3 that is "College leaders have strong ability of development and innovation" has the lowest average value, at 3.60. However, the average value of all the items for entrepreneurial capability is above 3, indicating that the entrepreneurial capability of X College perceived by the respondents is relatively high.

The average value of the SC (strategic capability) variables is 3.459, and the standard deviation is 0.928. The item SC1 that is "X College has completed strategic planning" has the highest average value, at 3.54. The item SC3 that is "X College can make strategic adjustments to environmental changes in time" has the lowest average value, at 3.36. However, the average value of all the items for strategic capability is above 3, indicating that the strategic capability of X College perceived by the respondents is relatively high.

The average value of the OMC (organizational capability) variables is 3.431, and the standard deviation is 0.958. The item OMC2 that is "X College has a perfect governance structure and rules and regulations" has the highest average value, at 3.51. The item OMC3 that is "X College has advanced management concepts and innovative management method" has the lowest average value, at 3.37. However, the average value of all the items for organizational managerial capability is above 3, indicating that the organizational managerial capability of X College perceived by the respondents is relatively high.

The average value of the SRC (scientific research capability) variables is 3.166, and the standard deviation is 0.870. The item SRC3 that is "Teachers of X College are good at applying for and obtaining patent authorization" has the highest average value, at 3.26. The item SRC1 that is "Teachers of X College are good at publishing papers in core journals and above" has the lowest average value, at 3.02. However, the average value of all the items for scientific research capability is above 3, indicating that the scientific research capability of X College perceived by the respondents is relatively high.

The average value of the TSC (talents training and social service capability) variables is 3.459, and the standard deviation is 0.800. The item TSC1 that is "X College has maintained a high employment rate of fresh graduates" has the highest average value, at 3.68. The item TSC5 that is "X College is good at cooperating with enterprises to jointly establish laboratories" has the lowest average value, at 3.25. However, the average value of all the items for talent training and social service capability is above 3, indicating that the talent training and social service capability of X College perceived by the respondents is relatively high.

As the result of data analysis shown above, the human resource variable has the highest

average score of 4.005, and the standard deviation is 0.739. This means there is a common recognition among the respondents that X College has high quality employees or human resource. Entrepreneurial capability variable has the second highest average score of 3.700 with a standard deviation of 0.881 and learning capability variable has the third highest average score of 3.498 with a standard deviation of 0.892. This means the respondents believe that X College has good performance in terms of human resource, entrepreneurial capability and learning capability.

Meanwhile, the basic resource variable has the lowest average score of 2.984, and the standard deviation is 0.885. This means majority of the respondents believe that the basic resource cannot meet the requirement of the development of X College. Scientific research capability variable has the second lowest average score of 3.166 with a standard deviation of 0.870 and innovative capability variable has the third lowest average score of 3.327 with a standard deviation of 0.954. This means the respondents believe that X College has relative bad performance in terms of basic resource, scientific research capability and innovative capability, and there is room for X College to improve in these aspects.

4.4.3.3 Factor analysis for core competitiveness

In this research, we sorted and summarized resources and capabilities from literature to constitute the core competitiveness of X College. However, the division of core competitiveness based on resources and capabilities are generally applied to enterprises. Taking account to the enterprise-like attribute of private college, we adjust the scale and apply this division of core competitiveness to X College. So, it is necessary to verify the correctness of this division of core competitiveness that applied to X College. We use factor analysis method to extract the common factors in order to verify the correctness of division of core competitiveness and further investigate the performance of these resources and capabilities towards to core competitiveness of X College.

Prior to implementation of factor analysis, the KMO test are carried out first. Table 4.9 shows the KMO result. In this case, KMO=0.961, meanwhile Bartlett sphericity test χ^2 = 10522.208, df = 946 ($p = 0.000<0.05$), indicating that the net correlation matrix of variances is not identity matrix and there are common factors among the correlation matrix. This result indicates that there are common factors among those variances, and they are suitable for factor analysis.

Table 4.9 KMO result of core competitiveness

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.961
Bartlett's Test of Sphericity	Approx. Chi-Square	10522.208
	df	946
	Sig.	.000

Table 4.10 shows the results of using the principal component analysis method to extract the principal components. The rotation method is the maximum variance orthogonal rotation method. There are 4 eigenvalues greater than 1, which are also the number of common factors extracted during factor analysis. The four common factors can explain 72.576% of the variation.

Table 4.10 The total variance explained of the whole scale

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	%of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	26.369	59.930	59.930	26.369	59.930	59.930	12.359	28.090	28.090
2	2.470	5.613	65.543	2.470	5.613	65.543	8.210	18.660	46.749
3	1.769	4.020	69.563	1.769	4.020	69.563	7.506	17.060	63.810
4	1.326	3.013	72.576	1.326	3.013	72.576	3.857	8.766	72.576
5	.999	2.272	74.848						
6	.874	1.987	76.835						
7	.818	1.859	78.694						
8	.691	1.571	80.265						
9	.651	1.480	81.745						
10	.591	1.343	83.088						
11	.545	1.238	84.326						
12	.517	1.176	85.502						
13	.462	1.051	86.553						
14	.413	.938	87.492						
15	.395	.898	88.390						
16	.376	.854	89.243						
17	.358	.814	90.058						
18	.306	.695	90.753						
19	.304	.691	91.444						
20	.293	.665	92.109						
21	.278	.632	92.740						
22	.261	.593	93.334						
23	.249	.567	93.901						
24	.228	.519	94.420						
25	.222	.503	94.923						
26	.214	.487	95.411						
27	.203	.461	95.871						
28	.178	.405	96.277						
29	.177	.402	96.679						
30	.160	.364	97.042						
31	.149	.339	97.381						
32	.138	.315	97.696						
33	.134	.304	98.000						
34	.121	.275	98.275						

35	.112	.254	98.529
36	.106	.240	98.769
37	.098	.223	98.992
38	.095	.216	99.208
39	.084	.191	99.399
40	.075	.171	99.570
41	.069	.157	99.727
42	.061	.138	99.865
43	.048	.110	99.976
44	.011	.024	100.000

Figure 4.2 shows the results of factor scree. It can be found from the figure that after the fifth factor, the slope line is relatively flat, indicating that there are no special factors worth extracting, so it is appropriate to retain the first four factors.

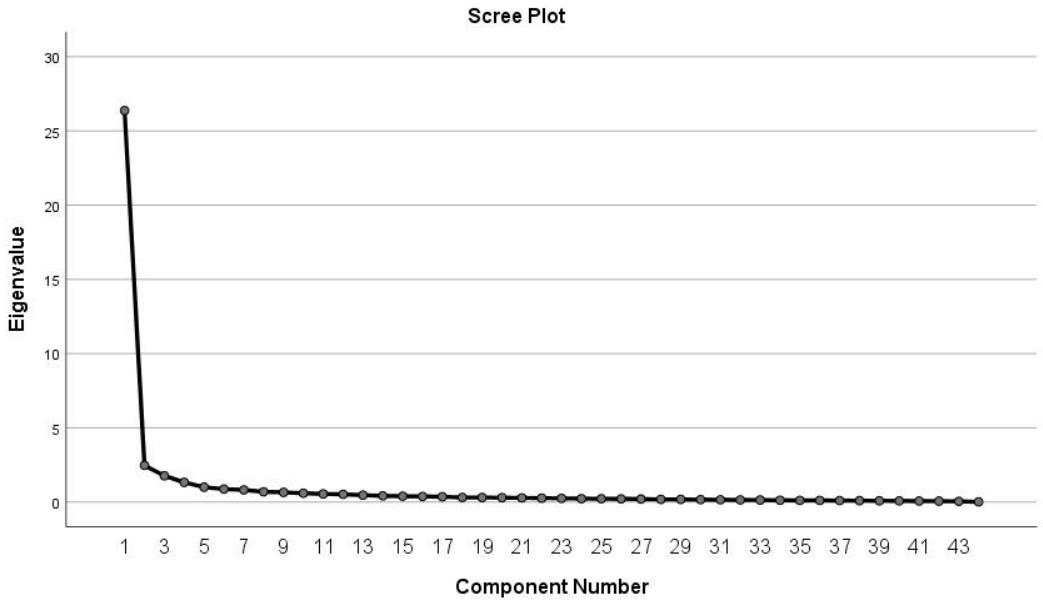

Figure 4.2 Factor scree plot

Table 4.11 shows the factor matrix after the rotation axis. The maximum variation method is used to transfer the values. The rotation axis is processed by the default Kaiser Normalization method. The factor load selection criterion is 0.5 to test. In the factor analysis, the selection criterion of the factor load is preferably above 0.5, and the common factor at this time can explain that the score ratio of the item variable is 20%. Factor one contains Item 17, Item 19, Item 18, Item 20, Item 28, Item 29, Item 26, Item 41, Item 10, Item 40, Item 25, Item 13, Item 38, Item 8, Item 24, Item 9, Item 37, Item 22, Item 36, Item 11, Item 7, Item 27, Item 39, Item 12, Item 21 and Item 23. This factor can be named “organizational resource and capability”, which include necessary resources (basic resource, organizational culture and knowledge & information system) and vital capabilities (learning capabilities, innovative capabilities, strategic capabilities and organizational capabilities). Factor two includes Item 33, Item 31, Item 32, Item 34, Item 30 and Item 35. These items can be named “entrepreneurial

capability". The third factor that includes Item 44, Item 43, Item 42, Item 45, Item 49, Item 48, Item 46, Item 50 and Item 47. This factor can be named "university functional capability". The fourth factor including Item 16, Item 15 and Item 14, and this factor can be named "human resource". The result of factor analysis shows that the division of core competitiveness of enterprises based on resources and capabilities is basically applicable to private colleges. However, the factor analysis results of this research shows that the composition of the core competitiveness of private colleges reflects both the characteristics of the enterprise's core competitiveness and the attributes of the university's core competitiveness. Even more, factor two further emphasizes the importance of the entrepreneurial capability (the founder of private colleges and universities) to the core competitiveness of private colleges and universities.

Table 4.11 Component matrix after rotation

Rotated Component Matrix				
	Component			
	1	2	3	4
Item 17	.815			
Item 19	.775			
Item 18	.770			
Item 20	.739			
Item 28	.700			
Item 29	.691			
Item 26	.673			
Item 41	.655			
Item 10	.649			
Item 40	.636			
Item 25	.622			
Item 13	.617			
Item 38	.617			
Item 8	.612			
Item 24	.603			
Item 9	.590			
Item 37	.587			
Item 22	.584			
Item 36	.576			
Item 11	.559			
Item 7	.548			
Item 27	.542			
Item 39	.540			
Item 12	.536			
Item 21	.533			
Item 23	.512			
Item 33		.804		
Item 31		.764		
Item 32		.762		
Item 34		.729		
Item 30		.695		
Item 35		.633		

Item 44	.793	
Item 43	.781	
Item 42	.749	
Item 45	.709	
Item 49	.621	
Item 48	.614	
Item 46	.609	
Item 50	.584	
Item 47	.549	
Item 16		.929
Item 15		.924
Item 14		.905

4.5 Core competitiveness analysis of X College

In order to obtain better development in a long run, the board of the directors of X College has made decision to terminate the cooperation with UESTC and transfer to regular private college in the future. Without the faculty support and the brand effect of UESTC, X College will rely on its own resources and capabilities to develop. In this context, how to improve the core competitiveness so as to obtain competitive advantage constantly in the competition of private colleges has become very important for X College. Based on the factor analysis we conduct above, the analysis of four common factors of core competitiveness of X College will be made in the following part.

(1) Organizational resource and capability

According to the factor analysis result, factor one makes the greatest contribution to the competitiveness of X College and can explain 28% of the total variance. Factor one is organizational resource and capability for X College that includes the basic resources, organizational culture, knowledge & information system, learning capability, innovative capability, strategic capability and organizational capability. Although factor one includes many items, the logic is clear and make sense. Financial resources are the most important factor for the development of both public and private universities. Adequate funds and reasonable and efficient use of funds are the necessary basis for the development of universities. Universities with sufficient funds can introduce high-quality talents, and high-quality talents usually have strong learning capability, scientific research capability and knowledge system. These traits of human resource can help university to better carry out organizational innovation, optimize organizational routines, improve organizational efficiency, and then comprehensively enhance the core competitiveness of universities.

Among the components of factor one, the basic resource (includes financial and material

resource), innovation capability and organizational culture of X College rank in the top three. Compared with public universities relying on government allocated resources, private colleges are relatively lack of resources, which is mainly reflected in the aspects of financial resources and material resources. The financial resource refers to the funds that support the daily running of the college and also includes the capability of raising funds. Different from the diversified sources of funds for running private colleges and universities in western countries, the running funds of private colleges and universities in China completely depend on the financing capability of the founder. For Chinese private colleges, all the operation funds are raising according to the founder and there are no funds support from alumni and other social groups. Without the necessary financial and material resources as the basis, it is difficult for private college to gain competitive advantage in the higher education market.

First of all, in terms of financial resources, the running funds of X College mainly rely on the investment of Guoteng Group. More specifically, the running funds include two parts: the initial investment of Guoteng Group at the establishment of X College and the students' tuition income. Guoteng Group as a private group company has formed three business segments: electronic information R&D and manufacturing, science and technology park development and operation, and education services. Undoubtedly, education services especially the running of X College is the most profitable service for Guoteng Group. However, due to Guoteng Group's business philosophy of controlling costs and ensuring profits, the investment to X College is far less than the profit obtained from X College. As the actual owner of X College, Guoteng Group has nearly no more investment to X College after the initial investment. Therefore, almost all the expenses of X College are paid from the annual tuition income of students. This situation of lack of investment limits the development of X College. For example, the teaching buildings have not been renovated after the establishment of X College. The laboratory equipment is old and no more new funds to invest into the construction of laboratory in recent years. In order to implement Shifang campus construction, Guoteng Group has borrowed nearly one billion yuan bank loan for land acquisition and new construction of teaching buildings. This bank loan increased the interest expense of Guoteng group, which also indirectly affected the development of X College.

There were common views among the employees of X College that the financial resources are short for long term development of X College. According to the results of the questionnaire survey, the score of financial resource items given by respondents is relatively low in all of the resources and capabilities variables. The item "X College have sufficient internal funds for operation" has the second lowest score, at 2.80. This reflects the fact that

Guoteng group has insufficient investment in X College and the lack of long-term development funds of X College. In terms of material resource, the item "X College has advanced teaching and experimental equipment" has the lowest average value, at 2.72. This indicates X College must enlarge the investment to upgrade the necessary teaching and experimental equipment to meet the basic requirement of teaching and studying. The average value of all the items for basic resource is 2.98, which is the lowest score of all resource and capability variables, indicating that the basic resource of X College perceived by the respondents is relatively low. This also indicates the basic resources especially financial resource and material resource of X College must be improved immediately. According to the view of interviewee YAO Yiyong, "in addition to financial capability, the development of private colleges and universities also depends on capital use efficiency". He also believed that "reasonable and efficient use of existing funds is an important capability to highlight the core competitiveness of private colleges and universities".

Second, the formation of culture is a long-term summary, historical accumulation and concise process. University culture represents its unique spiritual temperament, which reflects the running concept, universities spirit, the university system and material conditions of universities. Good organizational culture can enhance the cohesion of employees and strengthen their sense of happiness and identity. Good campus culture can promote to infections, purification, and the shaping of a full personality student. For private colleges, its culture should highlight the goal of cultivating applied talents and show their own personality and characteristics. However, the organizational culture of private college shows the characteristic of personality deficiency. In order to pursue rapid development, most private colleges develop campus culture by learning from or copying the running philosophy and experience of public universities. X College is not an exception. In the process of cultural construction, X College failed to fully combine the school history and school situation, and also failed to well combine its own school running positioning and characteristics. According to interviewee CHEN Chunfa's viewpoint, "organizational culture is rooted at the bottom of the organization and also something hiding at a deeper level of the organization, which can be reflected in the employees' speech, behavior, dress and recognition". Universities have the basic function of cultural inheritance. At present, most private colleges and universities are more in pursuit of the smooth and stable operation of the school than the inside information of organizational culture. Only a few private colleges and universities have their own organizational culture. The campus culture embodied by a private college should be a positive learning and research atmosphere. For example, in recent years, the Ministry of Education has

promoted the construction of "three ethos" in colleges and universities: the school spirit, study style and work style. These ethos are a form of promoting positive campus culture. According to the result of questionnaire survey, the average score of organizational culture of X College is 3.42, which positions at the middle of all the variables of resources and capabilities. This indicates there is room to enhance for the construction of organizational culture of X College.

Third, based on the opinions of all the interviewees we investigated, learning capability and innovative capability are vital for the development of private colleges. Based on capability-based view, capability is the method and skill to combine and utilize resources. Capabilities are dynamic and more important than static resources to form competitiveness. According to the division of capabilities for private colleges in Chapter two, learning and innovative capabilities are core capabilities that play a fundamental and decisive role to other capabilities as well as the growth of private college. Strategic capability is the leading capability that can help private college to position and achieve long term objectives. Organizational capability is the basic capability that can guarantee the running of private colleges and universities.

Knowledge is not only the root of enterprise competition differences, but also the decisive force of enterprise competitiveness. The improvement of capability depends on continuous knowledge accumulation, which depends on continuous learning. Learning can promote the transmission of explicit knowledge and tacit knowledge, and it is the fundamental way to cultivate and develop organization capabilities. For colleges and universities with the task of knowledge output, learning capability is particularly important. The learning capability of an university is reflected in the learning capability of individual employees, but it is not just a simple superposition of individual learning capability. According to the questionnaire survey result, the average value of learning capability variable is 3.49. This indicates the score of learning capability of X College perceived by respondents is relatively high. However, compared with public universities, the disadvantages of learning capability of private colleges are as follows: first, the gap in teachers' academic qualifications determines the gap in learning capability. Most of the teachers in private colleges have a master degree, while the teachers in public colleges and universities have a doctor degree. Secondly, in terms of school positioning, private colleges mainly focus on teaching, lack the exercise of scientific research projects, and the improvement of teachers' learning capability is relatively limited. Thirdly, in terms of management system, private colleges are lack effective learning vision. The duty of the management of private college is in the process of cultivating learning organizational culture. According to the view of interviewee XU Xuedong, "on one hand, private colleges

and universities should learn from national guidelines and government policies in order to better understand the developmental direction of Chinese private colleges. On the other hand, private colleges and universities should learn the advanced concepts of world higher education and conform to the trend of world development. In the meanwhile, private colleges should also learn from the strengths of peer private colleges in teaching, research and management". Through continuous learning and promote learning capability, private colleges may improve its core competitiveness and lead the competition in private higher education sector.

Based on the questionnaire survey result of core competitiveness of X College, the average score of innovative capability is 3.32. The item IC4 that is "X College has great investment in innovation activities" has the lowest average value, at 3.14. The result shows that the innovative capability of X College perceived by the respondents is relatively low and the respondents perceived that the investment for organizational innovation activity is insufficient. In the meanwhile, there are common views of interviewees from the experts and management of private colleges that the overall innovative capability of private colleges is relatively weak compared to public universities. According to the viewpoint of interviewee XU Xuedong, innovation capability refers to "a dynamic capability of the organization to adapt to the development needs of society, industry and the world. The main content of innovation is to comprehensively improve people's capability. The essence of innovation is people's innovation. The improvement of people's knowledge and capability can bring innovation capability, and then improve the core competitiveness of private colleges and universities". Interviewee RAN Huaqing believed that "the innovation capability of private colleges is generally weak, which is mainly reflected in the lack of technological innovation (such as patent application), insufficient capital investment and insufficient attention of the management to innovation work. Meanwhile, the innovation model in private colleges is teachers' individual innovation instead of organizational innovation". Interviewee WANG Donghui believed that "the innovation of private colleges and universities is passive innovation instead of active innovation. Taking teaching reform as an example, the employees of private colleges and universities do not actively innovate teaching models and methods to improve teaching quality, but passively take the innovation required by their superiors as a task to complete". This requires that the management of private colleges design a better innovation incentive mechanism to truly promote comprehensive innovation. "In the meanwhile, the chairman and the president should be highly consistent in concept in order to form a driving force to push organizational innovation".

In terms of strategic capability, the essence of strategy is a long-term dynamic description of the relationship between environment, capability and resource system. For private colleges and universities, the strategic capability is mainly reflected in two aspects: how to position the private colleges and universities themselves and how to allocate and utilize resources reasonably and efficiently to achieve strategic objectives. According to the opinion of interviewee XU Xuedong, "the developmental strategy and management of private colleges must be taken under the guidance of national macro policy, that is, policy-oriented. Private colleges should formulate long-term development goals and identify the positioning according to their own situation and characteristic". In the application and establishment of private colleges and universities, the government tends to set up some private colleges and universities with characteristic specialties and disciplines in different fields. For example, X College is a private college mainly engaged in electronic and information disciplines and Tianfu College of SWUFE is a private college mainly engaged in finance and economics disciplines. In Chinese private higher education sector, the government's policies towards private colleges and universities tend to be standardized. In the development process of private colleges and universities, they must effectively integrate their own resources and capabilities, and constantly strengthen their own advantageous specialties so as to further improve their core competitiveness in private higher education market. According to the result of questionnaire survey, the average score of strategic capability of X College is 3.45. This indicates that the strategic capability of X College perceived by the respondents is relatively high.

The organizational capability is accumulated through the long-term operation in teaching, research and management process of private colleges and universities. We believe that organizational capability is reflected through the internal organizational structure and running processes of private colleges. It can be various rules and regulations, knowledge, behavior practices, identity, tacit understanding and execution accumulated by the organization. According to the viewpoint of interviewee XU Xuedong, "organizational capability is rooted in the daily operation and process of private colleges and is difficult imitated by others". He also suggests "the organization and management process of private colleges should reflect the flexibility of the private college system and be scientific at the same time. The organization and management process of private colleges should be constantly optimized and adjusted in practice to meet the development requirements of the industry and society". In terms of organizational structure of private colleges, he suggests "the specific education and research work should be done under the control of the president and the chairman of the board should

not participate in teaching and education staff too much". According to the opinion of interviewee WANG Donghui, "private colleges should set and implement the organization and management process based on students' position, that is, student-oriented process. Both the institutional setting and operation process should be formulated and adjusted under the consideration of students' interests". The students' recognition of the college will lead the positive reputation of the college then enhance the core competitiveness of private college. According to the questionnaire survey result, the average score of organizational capability of X College is 3.43. This indicates the organizational capability of X College perceived by the respondents is relatively high.

In all, essential financial and material resources are the fundamental condition for the development of private colleges. University culture and strategic capability position at the higher level of the organization and are vital for the sustainable development of private colleges. University culture is not only the soul of the university, but also the essential feature of the university. Organizational culture of private colleges may cultivate a positive learning and research atmosphere, while learning from all aspects can bring knowledge accumulation and transformation so as to improve learning capability of private colleges. Learning capability and knowledge owned by private college can promote and push innovative activities which will lead the improvement of organizational innovative capability. The strategy for private colleges is not to meet the needs of students and enterprise, but how to create needs and give students and enterprise greater value. Strategic capability can help private college to set suitable position and also make long term developmental plan. Organizational capability can be formulated in the daily operation of private college and reflects the essential capability of doing things. All these organizational resources and capabilities combined together can make private colleges to obtain competitive advantage relative to its peer private colleges.

(2) Entrepreneurial capability

According to the factor analysis result, factor two makes the second contribution to the competitiveness of X College and can explain 18% of the total variance. Factor two is entrepreneurial capability.

According to the capability theory, the heterogeneity of enterprises is the basis for enterprises to obtain competitive advantage, and the entrepreneur capability is the most important determinant of enterprise heterogeneity. The entrepreneurial capability is a kind of capability set which includes the capabilities to find opportunities, integrate and allocate resources, bear risks and uncertainties, and to constantly learn and innovate. Entrepreneur

forms the leading logic of the enterprise through knowledge sharing in the high-level managerial team, which is also the creation process of the enterprise management concept. The leading logic of the enterprise has played a guiding and binding role in the formation of enterprise conventions. Enterprise convention is essentially the core competence of an enterprise and the formation process of conventions is the process of enterprise organizational learning. Through the learning and innovation process, good organizational conventions can be formed inside the enterprise so as to make healthy operation of the enterprise.

Considering the characteristic of Chinese private colleges, the entrepreneur normally refers to the founder and the management of private colleges. In the organizational structure of X College, the president takes full responsibility of overall management of the college under the leadership of the board of directors of Guoteng Group. The relationship between the founder and the president of X College is principal and agent. In the process of the development of X College, the board chairman of Guoteng Group and the president of X College jointly make the major decisions for the college. However, the real situation is that the founder is the actual controller of X College. The pattern, vision and comprehensive capability of the founder will affect the decisions he makes and the founder's strategic positioning towards X College may determines its development height.

According to the viewpoint of interviewee YAO Yiyong, "the founders, government policy and funds are the three most important elements in the core competitiveness of private colleges and universities". He believed that "the quality, pattern and concept of the founder (entrepreneur) will have an important and far-reaching impact on the development of private colleges and universities". Generally speaking, the founders of private colleges and universities have good political and business relations, sufficient funds, and passion of higher education, good overall view and accurate understanding of national macro policies. These positive traits of the founder will help the establishment of the developmental strategy for private colleges and influence the developmental path of private colleges.

In China, the presidents of public universities are normally appointed by the government, while the management of private colleges are generally appointed or recruited by the founder. The management of private colleges are the leaders who have rich experience, innovative conscious and leading capability to organize and control daily running of private colleges. As the questionnaire survey result shows, the average score of entrepreneurial capability of X College is 3.70 and all the measuring item of entrepreneurial capability variable exceed 3.60. This indicates there are common views that the entrepreneurial capability perceived by employees of X College is relatively high.

The management of private colleges theoretically have more flexible and autonomous power than the president of public universities to manage private colleges. However, the management of private colleges usually cannot make decisions alone due to the intervention of the board of directors. In fact, sometimes the founder of private colleges may manage and operate private colleges based on enterprise management mode and business thinking mode, ignoring the law of the development of higher education itself. This situation will limit the healthy and rapid development of private college. Although private colleges have the enterprise-like attribute, it should be operated based on the law of higher education development in essence. Based on this situation, the founder of private college should constantly learn and renew the relevant knowledge and principles of private higher education and transform business philosophy in order to adjust the development of private colleges.

In terms of private college management, keeping power and responsibility in balance is important. To implement organizational management more effectively, those who have power must be responsible, and those who are responsible must have power. The powers and responsibilities of the founder and president of private colleges should be clearly defined. The founder of private colleges should focus in overall management and operation of the college, especially pay attention to strategic positioning, financial status and human resource of the college, while the president of private college should concentrate in teaching, scientific research and talent training, and also integrate resources, optimize processes and routines to support the daily operation of private college.

(3) University functional capability

According to the factor analysis result, factor three makes the third contribution to the competitiveness of X College and can explain 17% of the total variance. Factor three includes scientific research capability, talent training and social service capability and these capabilities can reflect the level of the basic function of teaching, talent training and scientific research of a HEI. According to the questionnaire survey result, the average score of talent training and social service capability of X College is 3.459, which positions at the fourth highest of the resource and capability variables. This indicates the talent training and social service capability perceived by the respondents is relatively high. For private colleges, the main task is to cultivate applied talents to the society and serve the social economy. Basically, there are three aspects in the process of cultivating talents need to be promoted for private colleges. First, the establishment of majors and disciplines should be based on meeting the diversified needs of talents for the society, highlight the college running characteristics, and be able to continue to further develop into their own advantageous majors. Second, the

teaching quality should be improved constantly. Teachers should continue to promote learning capability and pay attention to course design and knowledge renew process. Third, the talent training model of should be further optimized. The formulation of talent training program in private colleges and universities should be guided by the needs of employers, reasonably set up curriculum system, and constantly reform and innovate talent training mode. According to the opinion of interviewee XU Xuanwei, “talent training is one of the main approaches for private colleges to serve the society”. Cultivating professional talents required by the industry is the main task of private colleges. At present, X College work with the government and enterprises to create a platform for talent service. The government is responsible for investigating the talent demands, and X College and enterprises are responsible for implementing the talent training plan, and jointly building the talent training base. X College also jointly build IoT (Internet of Things) research academy with Chengdu Municipal Commission of economy and information technology and IoT Alliance. IoT academy can provide functions of professional consultation, talent training and professional guidance. According to the viewpoint of XU Xuedong, “currently, the ways that private colleges serve the society are self-organized behaviors instead of organizational behaviors and the service ability needs to be further improved”.

In terms of scientific capability, the average score of scientific research capability of X College is 3.16, which positions the second lowest average score in all variables. This indicates the scientific research capability perceived by respondents is relatively low and there is still much room for X College to improve their scientific research capability.

Scientific research capability is vital for the development of private colleges. Private college with strong scientific research capability can attract more social funds and top class professors so as to improve the research condition and promote the human resource quality. According to the view of interviewee RAN Huaqing, “for the purpose of cost control, some private colleges are unwilling to invest a lot of money in scientific research”. Meanwhile, “scientific research has characteristic of high risk, and the input of funds and personnel for scientific research may not necessarily achieve the same proportion of output, which is one of the reasons why some private colleges are unwilling to increase investment in scientific research”. She also believed the academic qualification gap of teachers between private colleges and public universities will lead the gap of scientific research capabilities, so as to influence the scientific research performance. Under this circumstance, teachers with strong scientific research capability may rely on their own capability and resources to apply for research projects. She suggests that private colleges may formulate corresponding policies to

encourage their employees to do scientific research.

To form a positive learning and research culture among the teachers of private colleges is also important to promote the scientific research activities and even enhance the scientific research capability. In recent years, X College has issued a series of policies to encourage teachers to engage in scientific research activities. Research activities such as patent application, thesis publication, and acquisition of projects with enterprises and government will bring to teachers not only material rewards and scientific research practice but also the promoting chance. More important, the running of these policies formulates a positive and active atmosphere for teachers of X College to participate more in scientific research activities. According to the practice of the scientific research activities, teachers may improve their scientific research capability, accumulate scientific research experience, and further promoting the overall scientific research level of X College.

(4) Human resource

According to the factor analysis result, factor four makes the fourth contribution to the competitiveness of X College and can explain 8% of the total variance. Factor four is human resource. According to the result of questionnaire survey, the average score of human resource variable is 4.00, which obtains the highest average score in all variables. The average score of the item "X College has high-quality employees" is 4.03, which is the highest average score in all items of the scale. This indicates the human resource of X College perceived by respondents is relatively high.

Human resource is the fundamental resource of an organization. High-quality teachers team can guarantee teaching, scientific research and talent training of private colleges. However, the factor analysis result shows human resource factor makes the fourth contribution to the core competitiveness, ranks behind other resources of X College. This is because the introduction of high-quality teachers is also related to the financial strength of private colleges, so the basic resources (especially funds and the capability to use funds) rank first within the four common factors, while university functional capability and human resource rank behind. Generally, in terms of human resource, compared to public universities, there are two major problems in the developmental progress of private colleges: first, the overall academic qualification of teachers in private colleges is relatively low; second, private colleges have unreasonable teacher structure and few teachers with senior academic and professional titles. For academic qualification, most private colleges require candidates to have a master's degree or above when recruiting teachers, while public universities require candidates to have a doctoral degree. Teachers with doctoral degrees are usually more

competitive in scientific research and can apply for more projects or patents. This is of great benefit to the improvement of the scientific research strength of private colleges. In recent years, a few teachers at X College have successively obtained doctoral degrees through their own efforts. However, without exception, these teachers who obtained doctoral degrees later chose to leave X College and go to public universities. On the one hand, the reason why these teachers leave is that X College has no obvious difference in the salary system and also no differentiated developmental plan for teachers with doctoral degrees; On the other hand, as X College is still dominated by course teaching and weak in scientific research, it is difficult for teachers with doctoral degrees to give full play to their strengths in scientific research.

The interviewee CHEN Chunfa has the same opinion of unreasonable human resource structures in private colleges. He believed that "there are three kinds of unreasonable human resource structure in private colleges. First, the age structure of teachers in private colleges is unreasonable, there are too many young teachers in private colleges and this situation leads the corresponding lack of teaching experience. Second, the structure of educational level is unreasonable. The teachers' educational level of private colleges is dominated by master's degree teachers, nearly has no doctoral degree teachers, and even has some bachelor's degree teachers. Third, the structure of professional titles is unreasonable. There are few associate professors and professors in private colleges. The three unreasonable structures also reflect the high mobility of teachers in private colleges and universities". The survey sample data we collect can also verify CHEN Chunfa's point of view. In terms of age structure, there are 45% respondents of the total are below 35 years old. Most of these respondents are young teachers, account for 91.6% of the total. According to the recruitment requirements of X College, these young teachers must have master's degrees (account for 81.2% of the total sample). In terms of working years, 46.5% of the respondents have worked less than 5 years for X College. This situation will lead lack of working experience for these young teachers in X College.

According to the viewpoint of interviewee XU Xuedong, "the ways to improve human resources in private colleges are as follows: first, private colleges should directly introduce talents needed for development through social recruitment; second, private colleges should focus on cultivating their own talents". The talents cultivated by private colleges themselves have deeper feelings for the college, higher loyalty, and more recognition of the college. He also believed "private colleges should let employees have a sense of belonging, be recognized by the college so as to create value for the college". The main ways for private colleges to retain talents are career retention, treatment retention and emotion retention.

Taking X College as an example, before the salary system reform in 2019, there was little

difference in income of lecturers, associate professors and professors. The income of associate professors and professors is slightly higher than that of lecturers, but their teaching workload is significantly higher than that of lecturers. Therefore, numbers of teachers are not positive in obtaining professional titles. The lack of sufficient incentive policy is one of the reasons why there are few teachers with senior professional titles in X College. Due to dominate in course teaching of X College and lack of training in scientific research projects, the teachers at X College are generally not strong in scientific research capability. In this situation, it is difficult for teachers at X College to meet the requirements for senior academic and professional titles.

4.6 Summary

In this chapter, we firstly review the developmental process of Chinese private higher education, then review and analyze the evolution path of X College. After that, we conduct an empirical study of the core competitiveness of X College through questionnaire survey investigation, study the current situation of the core competitiveness of X College. Then, an in-depth interview investigation has been conducting among the experts and senior managerial personnel of private colleges in order to obtain their views of the core competitiveness of private colleges. Finally, we analyze and discuss the competitiveness of X College from resources and capabilities perspectives.

[This page is deliberately left blank.]

Chapter 5: Conclusion and Recommendations

This chapter gives a short conclusion of the thesis. Based on the analysis of core competitiveness of X College, this chapter make recommendations from resource and capability angle for core competitiveness of X College in a long run. The research limitation and future work has also been posed in this chapter.

5.1 Conclusion

The thesis takes a Chinese private college as research object. On basis of competitiveness theory, resource-based theory and dynamic capability theory, case study is applied and data is collected through questionnaire and in-depth interview. After data processing and combining theoretical model and practical analysis, core competitiveness constituent element model is proposed for X College. Based on statistical method and factor analysis method, we extract four factors for the core competitiveness, and analyze the performance of different resources and capabilities for X College. On basis of conclusions of all chapters, more conclusion details on research are as follow:

(1) X College was a private college established in 2001 as focusing on electronic information, telecommunication and computer related areas and training applied talents as its duty. It was jointly founded by Chengdu Guoteng Group and UESTC through a new operation mechanism, and obtained faculty support from UESTC and investment from Chengdu Guoteng Group. Due to its special operation model, we select it as case study object and analyze its core competitiveness. Experiencing twenty years development, X College was gradually evolved to a local private college with strong influence in electronic related area. However, along with the high-quality faculty come back to UESTC and the competition of private colleges becoming fiercer, X College has suffered the dilemma of how to provide excellent and differentiated higher education service to students relative to its peers. From this perspective, X College should focus on how to improve its own core competitiveness among Chinese private colleges. Based on the understanding of university's core competitiveness and the unique characteristic of X College, we believe that the core competitiveness of X College is a comprehensive capability to make use of their own advantages, integrate existing resources, anticipate the market trend, and formulate own strategic plans in order to facilitate

the sustainable development.

(2) In this thesis, we divided the core competitiveness of X College into resource and capability part based on literature, and also consider the impact of environment, organizational scale, organizational life cycle and path dependence. The resource part includes basic resource, human resource, knowledge & information system and organizational culture. The capability part includes core capability (learning capability and innovative capability), leading capability (strategic capability and entrepreneurial capability), and basic capability (organizational capability, talents training & social service capability and scientific research capability). Combine with the viewpoint of interviewee and the managerial practice, resources are the basis for the sustainable development of X College and valuable, rare, inimitable and non-substitutable resources can form competitive advantage. Capabilities are dynamic factors and more important than static resources. Human is the carrier of resource and capability who can constant learning, innovation and integrate useful resources so as to form competitive advantage. Capability, resource and environment interact and evolve, so that the competitiveness of X College is constantly updated and developed. According to the factor analysis result, the contribution of capability to core competitiveness of X College, in order of magnitude, is as follows: the core capability, the leading capability and the basic capability. This result further confirm our division of capability for X College.

(3) Empirical study result shows that the division of resource and capability groups of core competitiveness of X College is basically reasonable. However, through the result of factor analysis, we find that the result was slightly different from our expectation. The core competitiveness of X College is mainly determined by four common factors, namely, university organizational resource and capability, entrepreneurial capability, university functional capability, and human resource. These factors can explain 72.57% of the total variance of core competitiveness. In terms of resources, the factor analysis result shows that the basic resources, organizational culture and knowledge & information system make more contribution than human resource for X College. This is because basic resource, which includes financial resource and material resource, is fundamental and vital for private colleges in China. Considering the real situation of Chinese private higher education, a stable and high-quality teachers' team is fundamental for private college. However, high-quality faculty can be introduced by using financial capability of an organization. So, the founder of X College should pay more attention to financial resource and material resource. Entrepreneurial capability is special among these four factors. Due to the particularity of private colleges, their organizational structure is different from that of public universities. Private colleges are

also commonly referred to as “enterprises run schools”. The founders of private colleges are usually at the top of the management structure of private colleges and has absolute control over private colleges. The major decisions of private colleges are usually decided by the founder rather than the president. It can be said that the founders of private colleges to a large extent influence and restrict the development of private colleges. The pattern, vision and strategic positioning of the founders towards private colleges will largely determine the development trajectory of private colleges. On one hand, the empirical study result shows the average score of human resource, entrepreneurial capability and learning capability lie in the top three highest score of the constituent elements of core competitiveness. This result indicates the respondents believe X College performs relatively well in these aspects. On the other hand, the average score of basic resource, scientific research capability and innovative capability lie in the three lowest score of the constituent factors of core competitiveness. This results indicates that these resources and capabilities are relatively weak and should to be improved immediately.

(4) To find out the measures of how to improve the core competitiveness of X College, we carried out in-depth interviews with the senior managerial personnel of private colleges in Chengdu in order to obtain their opinions. The opinions of interviewees also confirm the result of the empirical analysis of this study. According to the views of interviewees, comprehensive capability of the founder of private college, the financial capability and human resource are the most important internal elements in core competitiveness of private colleges. In addition to internal elements, government policy is the most important external factor that can influence the development of private colleges. Meantime, these interviewees believed that the shortage of investment, lack of unique university culture and unreasonable human resource structure are the main disadvantages compared with public universities. For X College, the founder should increase investment, renew teaching and experimental facilities, optimize working process, retain high-quality faculties and understand the government policy accurately in order to foster the development of X College in a long run.

5.2 Recommendations on core competitiveness of X College

X College is a private HEI mainly responsible for academic education at undergraduate level. It aims at training applied talents and serving the local economy. Due to the background of Chinese higher education popularization, X College obtained rapid development with the support of UESTC and Guoteng Group. However, the rapid development of X College has

brought a series of problems. In the following part, we try to make recommendations from resource and capability aspects to X College in order to improve its performance of competitiveness.

5.2.1 Recommendations for resources

(1) X College should enlarge funds investment in renewing the teaching facilities, upgrading laboratory equipment in order to meet the college developmental requirements. In the meantime, the funds support should also be strengthen to learning and innovation activities of X College.

(2) X College should improve the quality of human resource and keep a high-quality teachers' team. Formulate personalized developmental plan for each teacher of the college, improve teachers' income and cultivate the belonging sense of the teachers are important policies for the management of X College to implement.

(3) X College should create a positive organizational culture of all staff learning and continuous innovation, and also advocate respect knowledge and talents within the college. The culture of private college like X College should emphasize the importance of teachers, including the importance of producing knowledge and doing research activities, stimulate teachers' positive attitude to work for the college.

(4) The college operation should follow the development law of higher education. The chairman of the board should control the overall development of the college and do not participate too much in teaching and scientific research activities of the college.

(5) X College should keep close contact with critical external stakeholders and establish good relations with the regulator, banks, alumni and other important stakeholders. The college should make good use of stakeholders' resources to promote its sustainable development.

5.2.2 Recommendations for capabilities

(1) X College should optimize its daily operation and management process in order to enhance the work efficiency and decrease employee complain. For example, strengthen the cooperation between teaching departments and administrative departments, and enhance mutual understanding between departments to reduce resistance in daily work; Formulate employee point system with reasonable rewards and punishments for employees. Establish an effective feedback mechanism, listen to the reasonable demands of employees and deal with these demands in time.

(2) X College should make clear its strategic position in Chinese private colleges, adjust its existing developmental strategy, and formulate a high-end, international and personalized developmental strategy in a long run.

(3) X College should further strengthen cooperation with local government, enterprises and other private and public universities in project incubation, joint education and vocational training. For example, X College has discipline advantage in electronic, technology and engineering. It should promote the knowledge and personnel output to society with its advantage disciplines and majors and also make contributions to the development of local economy.

(4) X College should cultivate positive learning and innovative atmosphere within the organization, adopts incentive mechanism to its employees and encourages teachers to learn and innovate constantly. For example, teacher's development center should help teachers to find their specific developmental direction and design unique learning plan for every teacher; the college should invite famous experts in industries to have lectures of cutting edge knowledge periodically; both material and spirit incentive policies should be taken in order to stimulate teachers to innovate.

(5) X College should take corresponding policies to improve its scientific research capability immediately. For example, reduce management fees and encourage teachers to introduce social projects to X College; encourage teachers to improve their scientific research capability and actively participate in scientific research activities such as thesis publication and patent application.

(6) X College should closely follow the development direction of the industry, actively optimize talents training program, push course reform and adjust talents training mode constantly. Meantime, the college should accelerate the construction of disciplines in short supply, and meet the diversified needs of society.

5.3 Research limitation

This thesis adopts single-case study and integrate relevant theories on core competitiveness with the status of X College. Although the thesis gets some valuable conclusions, the research is still not enough and some aspects need to discuss and research further. First, X College is a private college located in Chengdu, Sichuan province, China and there are regional policy differences between private colleges and universities in different part of China, and these differences might lead the different environment facing by private colleges. Second, some

respondents of the questionnaires may not pay attention to fill the questionnaire carefully and the interviewees might be unwilling to reveal their real opinions, in case that their personal interests were in conflict with organizational interests. Third, this study adopts single-case study and only considers X College as the research object, more target private colleges should be considered in order to obtain more general views and opinions. Fourth, X College is dominated by majors and disciplines in engineering, technology and computer related areas, the result of our investigation may not suitable for private colleges dominated by other majors and disciplines and related areas. Therefore, the conclusions of this thesis can only serve as reference for similar situation and background of Chinese private colleges like X College.

5.4 Future research

Experiencing nearly thirty years rapid development, private college plays an important role and makes contributions in pushing Chinese higher education popularization, cultivating applied talents and serving local economy. Along with the competition become fiercer among private colleges in China, the competitiveness need to be improved for private colleges. This thesis aims to help X College to improve its core competitiveness by analyzing from resource and capability perspectives in order to become the first-class Chinese private college in electronic information, telecommunication and computer related fields. The research in the thesis only plays a role that throws away a brick in order to get a gem, and more contents are needed to improve and deepen. For example, the pattern, vision and capability of the founder of X College will affect the strategic position, management mode, and even the development of X College in a long run. Because the founder of private college plays an important role in private college governing, this content need to be further studied in following research. Moreover, the indicators of the core competitiveness questionnaire survey can be improved further and external factors like environment, life circle and organizational scale should be added into the scale.

By applying multi-case study instead of single-case study and select target private colleges with different location and different dominate disciplines, the more valuable conclusion will be drawn. All conclusions of further research will push the core competitiveness study of Chinese private colleges forward.

Bibliography

Alfred, R. (1999). Distinctive colleges create competitive advantage through maverick behavior. *Community College Journal*, *69*, 8-13.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99-120.

Barreto, I. (2010). Dynamic capabilities: a review of past research and an agenda for the future. *Journal of Management*, *36*(1), 256-280.

Bie, D. R., & Tian, E. S. (2004). 论大学核心竞争力及其提升路径[On the core competitiveness of universities and its promotion path]. *Fudan Education Forum*, *25*(1), 55-60.

Cai, Y. Y. (2008). *Research on the theory and application of enterprise position* [Doctoral dissertation]. Beijing Jiaotong University.

Cao, Y., Chen, X. H., & Wang, F. Q. (2009). 我国企业不同生命周期阶段竞争力演化模式实证研究[The empirical research of the evolution of firm competitiveness of China at different life cycle stages]. *Statistical Research*, *26*(1), 87-95.

Cardeal, N., & Antonio, N. (2012). Valuable, rare, inimitable resources and organization (VRIO) resources or valuable, rare, inimitable resources (VRI) capabilities: What leads to competitive advantage. *African Journal of Business Management*, *6*(37), 10159-10170.

Chai, H. (2010). 调查问卷设计中信度及效度检验方法研究[The reliability and validity test methods in questionnaire design]. *World Sci-Tech R&D*, *32*(04), 548-550.

Chandler, A. D. (1992). Organizational capabilities and the economic history of the industrial enterprise. *The Journal of Economic Perspectives*, *6*(3), 79-100.

Cheng, C. C. (2005a). 以知识为基础的高校核心竞争力特性分析[Knowledge-based analysis on the characteristics of core competitiveness of universities]. *Higher Education Management*, *21*(3), 33-36.

Cheng, C. C. (2005b). *The analysis model of university core competitiveness* [Doctoral dissertation]. Hehai University.

Chi, T. (1994). Trading in strategic resources: conditions, transaction cost problems, and choice of exchange structure. *Strategic Management Journal*, *15*, 271-290.

Coombs, R. (1996). Core competencies and the strategic management of R&D. *R&D Management*, *26*(4), 345-355.

Coyne, K. P., Hall, S. J. D., & Clifford, P. G. (1997). Is your core competence a mirage? *The McKinsey Quarterly*, *1*, 40-54.

Curran, P. G. (2016). Methods for the detection of carelessly invalid responses in survey data. *Journal of Experimental Social Psychology*, *66*, 4-19.

Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business School Press.

Ding, J. D., Liu, Y., & Qiu, J. P. (2013). 基于知识的大学核心竞争力评价框架研究[Research on evaluation framework of university core competence based on knowledge]. *Journal of Chongqing University (Social Science Edition)*, *19*(2), 98-102.

Dobni, D. (1996). Canadian business schools: going out of business? *Jounal of Education for Business*, *72*(1), 9.

Dong, J. W., Huang, J. Z., & Chen, Z. H. (2004). 基于知识的动态能力演化模型研究[Research on knowledge-based dynamic capability evolution model]. *Chinese Industrial*

Economics, *22*(2), 77-85.
Dosi, G., & Teece, D. J. (1998). Organizational competencies and the boundaries of the firm. *Market and Organization*, *23*(5), 281-302.
Drucker, P. F. (1985). The discipline of innovation. *Harvard business review*, *63*(3), 67-72.
Duan, Y. D., & Che, W. H. (2014). 国外李嘉图比较优势理论实证研究之评述[A review of empirical studies on Ricardo's comparative advantage theory abroad]. *Journal of International Trade*, *40*(4), 164-172.
Duan, Y. (2014). 民办高职院校核心竞争力研究[The core competitiveness analysis of private vocational colleges]. *Social Scientist*, *29*(9), 49-53.
Duan, Y. (2015). *On the core competence of China's private universities with the establishment of dynamic equity incentive system* [Doctoral dissertation]. Donghua University.
Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they. *Strategic Management Journal*, *21*, 1105-1121.
Foss, N. J. (1996). Knowledge-based approaches to the theory of the firm: some critical comments, *7*(5), 470-476.
Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, *17*, 109-122.
Gui, P., & Xie, K. F. (2002). 企业核心竞争力的生命周期[The life cycle of enterprises' core competitveness]. *Science Research Management*, *23*(3), 20-24.
Haire, M. (1959). Biological models and empirical histories of the growth of organizations. *Modern organization theory*, *10*, 272-306.
Ham, L., & Hayduk, S. (2003). Gaining competitive advantages in higher education: analyzing the gap between expectations and perceptions of service quality. *International Journal of Value-Based Management*, *16*(3), 223-242.
Han, J. B. (2011). *The university core competence analysis based on knowledge management* [Doctoral dissertation]. China University of Mining & Technology.
Hanks, S. H. (1990). The organization life cycle: integrating content and process. *Journal of Small Business Strategy*, *24*(1), 1-12.
Hofer, W., & Schendel, D. (1978). *Strategy formulation: analytical concepts*. West Publishing Company.
Homels, G., & Hooper, N. (2000). Core competence and education. *Higher Education*, *40*(3), 247-258.
Huang, J. L., Curran, P. G., Keeney, J., Poposki, E., & DeShon, R. (2012). Detecting and deterring insufficient effort responding to surveys. *Journal of Business and Psychology*, *27*(1), 99-114.
Jablecka, J. (2001). Entrepreneurship, innovation, and quality: the successful strategy of a newly established institution: the example of Wysza Szko a Biznesu-National Louis University in Nowy Sacz. *Higher Education in Europe*, *26*(3), 367-379.
Jacobson, D. L. (2005). The new core competence of community college. *The Magazine of Higher Learning*, *37*(4), 52.
Jian, S. D., Zou, S. L., Yang, L. J., & Yang, T. (2010). 高校核心竞争力研究综述与前瞻[Review and prospects on university core competence]. *Journal of Technology College Education*, *29*(4), 20-23.
Jiang, S. M., Meng, J., Zhang, Y. Y., Li, X. C., & Liu, F. (2017). 知识型员工管理模式——华为案例研究[Knowledge-based employee management model - a case study of Huawei company]. *Technology Economics*, *36*(5), 43-50.
Jin, B. (2001). 论企业竞争力的性质[On nature of enterprises competitiveness]. *China Industrial Economy*, *19*(10), 5-10.

Jonathan, W. P. G. (2003). The resource advantage theory of competition: implications for higher education institutions in Singapore. *Education research for policy and practice*, *2*(2), 93-106.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31-36.

Kaplan, R. S., & Norton, D. P. (1996). Using the balanced scorecard as a strategic management system. *Harvard Business review*, *74*(7), 150-161.

Keller, G. (1983). *Academic strategy: The management revolution in American higher education*. JHU press.

Kerlinger, F. N. (1986). *Foundations of behavioral research (3rd ed.)*. Holt, Rinehart & Winston.

Kotler, P., & Murphy, P. E. (1981). Strategic planning for higher education. *The journal of higher education*, *52*(5), 470-489.

Kotter, J. P., & Heskett, J. L. (1992). *Corporate culture and performance*. The Free Press.

Lai, D. S., & Wu, X. R. (2002). 论大学的核心竞争力[On the core competitiveness of universities]. *Educational Research*, *24*(7), 42-46.

Lee, J. S., & Hsieh, C. J. (2010). A research in relating entrepreneurship, marketing capability, innovative capability and sustained competitive advantage. *Journal of Business & Economics Research*, *8*(9), 109-119.

Legard, R., Keegan, J., & Ward, K. (2003). In-depth interviews. *Qualitative research practice: A guide for social science students and researchers*, *6*(1), 138-169.

Leonard-Barton, D. (1992). Core capabilities and core rigidities: a paradox in managing new product development. *Strategic management journal*, *13*, 111-125.

Li, J. (2012). *The constituent elements analysis of core competitiveness of SCTY Colleges* [Master's thesis]. University of Electronic Science and Technology of China.

Liao, X. Z., & Tan, X. (2018). “一流专业”群：争创“双一流”的核心竞争力["First class specialty" group: striving for the core competitiveness of "double first class" universtiy]. *China Higher Education*, *54*(9), 43-45.

Lin, L., & Liu, Y. F. (2003). 知识管理与大学核心竞争力[Knowledge management and university core competitiveness]. *Science and Technology Guide*, *24*(5), 51-53.

Liu, F., Liang, Y. M., & Wang, H. (2014). 企业家能力、关键资源获取与新创企业成长关系研究[The relationship analysis among entrepreneurial ability, key resources acquisition and the growth of new enterprises]. *Science & Technology Progress and Policy*, *31*(08), 85-90.

Liu, S. (2008). 民办高校治理机制研究-基于利益相关者的视角[Research on governance mechanism of private colleges: from the perspective of stakeholders]. *Journal of Yangzhou University(Higher Education Study Edition)*, *12*(03), 18-21.

Liu, X. B. (2019). 双一流建设背景下行业特色高校的核心竞争力培育[Cultivation of core competitiveness of universities with industry characteristics under the background of “Double First-Class”]. *Chinese Higher Educantion Research*, *35*(8), 19-24.

Luo, H. T. (2007). 民办高校核心竞争力构成要素探析[The constituent elements of the core competitiveness of private colleges]. *Journal of Changchun University of Technology (Higher Education Study Edition)*, *28*(02), 77-80.

Luo, L. M. (2015). *Research on the changes of Chinese Non-governmental higher education policy* [Doctoral dissertation]. Southwest University.

Lynch, R., & Baines, P. (2004). Strategy development in UK higher education: towards resource - based competitive advantages. *Journal of Higher Education Policy and Management*, *26*(2), 171-185.

Ma, S. B. (2000). "战国时代": 高校核心竞争力的提升["The warring states period": improvement of core competitiveness of colleges and universities]. *Academia Bimestris*,

11(5), 163-166.
McDonough, P. M. (1997). *Choosing colleges: How social class and schools structure opportunity.* Suny Press.
Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods*, *17*(3), 437.
Meng, L. J. (2002). 大学核心竞争力的含义及概念塑型[The meaning and conceptual modeling of university core competitiveness]. *Education Science*, *18*(3), 59-60.
Miao, C. L. (2010). 基于"文化观"的企业核心竞争力形成机理及实现路径[Formation mechanism and implementation of enterprise core competitiveness based on cultural conception]. *Journal of Hefei University of Technology (Social Sciences)*, *24*(4), 19-23.
Nelson, R. (1992). Recent writing on competitiveness: Boxing the compass. *California management review*, *34*, 127-137.
Penrose, E. T. (1959). *The theory of the growth of the firm*. John Wiley.
Peteraf, M. A. (1993). The cornerstones of competitive advantage: a resource based view. *Strategic Management Journal*, *14*, 179-191.
Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, *24*(4), 309-323.
Porter, M. E. (1980). *Competitive strategy*. The Free Press.
Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. Free Press.
Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, *68*(3), 275-292.
Priem, R. L., & Butler, J. E. (2001). Is the resource-based "view" a useful perspective for strategic management research? *The Academy of Management Review*, *26*(1), 22.
Richardson III, T. R. (2006). *Competitive advantage: The effect of market competition on the formation of strategy in small business school higher education*. University of Pennsylvania.
Rothwell, R. (1992). Successful industrial innovation: critical factors for the 1990s. *R&D Management*, *22*(3), 221-240.
Rowley, D. J., & Sherman, H. (2004). *From strategy to change: implementing the plan in higher education*. John Wiley & Sons.
Schumpeter, J. A. (1934). *The theory of economic development*. Harvard University Press.
Sheng, Z. W. (2015). *The sustainable development analysis of private colleges based on sustainable competitive advantage theory* [Doctoral dissertation]. Tianjin University.
Smith, A. (2012). *The wealth of nations*. Central Compilation & Translation Press.
Snyder, A., & Ebeling, W. H. (1992). Targeting a company's real core competencies. *Journal of Business Strategy*, *13*(6), 26-32.
Sporn, B. (2001). Building adaptive universities: emerging organisational forms based on experiences of European and US universities. *Tertiary Education & Management*, *7*(2), 121-134.
Stake, R. E. (1995). *The art of case study research.* Sage.
Stalk, G., Evans, P., & Shulman, L. E. (1992). Competing on capabilities: the new rules of corporate strategy. *Harvard Business Review*, *70*(2), 57-69.
Steckler, A., McLeroy, K. R., Goodman, R. M., Bird, S. T., & McCormick, L. (1992). Toward integrating qualitative and quantitative methods: an introduction. *Health education quarterly*, *19*(1), 1-8.
Strauss, A., & Corbin, J. (1990). *Basics of qualitative research.* Sage publications.
Subba, & Narasimha, P. N. (2001). Strategy in turbulence environments: The role of dynamic competence. *Managerial & Decision Economics*, *22*, 201-213.
Sun, J. (2009). *The formation mechanism and enhancement of university competitive*

advantage [Doctoral dissertation]. Zhejiang University.
Sun, X. E. (2012). 深度访谈研究方法的实证论析[Empirical analysis of in-depth interview research methods]. *Journal of Xi'an Jiaotong University (Social Science Edition)*, *32*(03), 101-106.
Tan, L. (2010). *Formation, measurement and evaluation of enterprise core competitiveness* [Doctoral dissertation]. Chongqing University.
Tan, Y. F. (2021). 双一流建设背景下普通高校核心竞争力的培育[Cultivation of core competitiveness of colleges and universities under the background of "double first-class" construction]. *Policy & Scientific Consult*, *22*(15), 1-2.
Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319-1350.
Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(5), 509-533.
Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, *9*, 31-51.
Wang, F. (2003). 主成分分析与因子分析的异同比较及应用[Comparison and application of principal component analysis & factor analysis]. *Statistical Education*, *11*(5), 14-17.
Wang, H. C. (2005). *Enterprise competitiveness and its evolution based on dynamic capability view* [Doctoral dissertation]. Zhejiang University.
Wang, J. S. (2005). 大学文化的科学内涵[The scientific connotation of university culture]. *Higher Education Research*, *26*(10), 9-14.
Wang, X. L. (2006). *Research on analysis and evaluation system of enterprise core competitiveness* [Doctoral dissertation]. University of International Business and Economics.
Wernerfelt, B. (1984). A resource based view of the firm. *Strategic Management Journal*, *5*, 171-180.
Xu, M., & Li, M. (2005). 关于高校核心竞争力的思考[Thoughts on the core competitiveness of colleges and universities]. *Jiangsu Higher Education*, *21*(3), 37-39.
Xu, Z. J. (2010). 企业核心竞争力知识观的评述[Review the knowledge based view of enterprise core competitiveness]. *Science and Technology Management Research*, *30*(9), 163-164.
Yang, M. M. (2011). *The core competitiveness analysis and its promoting apporaches of Chinese private colleges* [Master's thesis]. Qingdao University.
Yang, S. B. (2007). *The strategies and policies for promoting the core competitiveness of private colleges* [Doctoral dissertation]. Suzhou University.
Yazan, B. (2015). Three approaches to case study methods in education: Yin, Merriam, and Stake. *Qualitative Report*, *20*(2), 134-152.
Yin, R. K. (1994). Discovering the future of the case study: method in evaluation research. *Evaluation practice*, *15*(3), 283-290.
Yin, R. K., Bateman, P. G., & Moore, G. B. (1985). Case Studies and Organizational Innovation: Strengthening the Connection. *Knowledge*, *6*(3), 249-260.
Yu, C. J. (2015). 高校核心竞争力的构成要素及其作用机理[The elements of university core competence and its mechanism]. *Contemporary Educational Science*, *30*(1), 27-30.
Yu, F. Y. (2006). 企业文化与核心竞争力[Corporate culture and core competitiveness]. *Business & Economy*, *25*(1), 123-127.
Zhang, H. Y. (2007). *The relationship analysis between entrepreneur capability and enterprise growth* [Doctoral dissertation]. Fudan University.
Zhang, L. X. (2007). *The relationship between organizational learning ability and enterprise performance: empirical study of Shenzhen enterprises* [Master's thesis]. Zhejiang

University.
Zhao, S. M. (2002). 人力资源与核心竞争力关系论[Exploration on the human resources and the core competitiveness]. *Modern Economic Research*, *21*(12), 16-19, 73.
Zheng, J. C. (2004). 大学核心竞争力本质论[On the essence of university core competitiveness]. *Tsinghua Journal of Education*, *25*(6), 16-19.
Zhou, Q. (2009). *Research on sustainable development of construction enterprises based on core competitiveness* [Doctoral dissertation]. Wuhan University of Technology.
Zhou, Y. F. (2006). 大学文化与高校核心竞争力[University culture and core competitiveness]. *Jiangsu Higher Education*, *22*(4), 46-48.
Zhu, G. X. (2015). 基于知识管理的大学核心竞争力研究[The university core competence study based on knowledge management]. *Human Resource Management*, *10*(7), 277-278.
Zhu, J. S., Wang, J. N., & Song, Y. D. (2003). 基于核心竞争力的中国高校发展战略研究[The development strategy analysis of chinese universities based on core competitiveness]. *Modern Management Science*, *22*(12), 15-17.
Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, *13*(3), 339-351.
Zou, C. C. (2005). 社会公信力——中国民办高校的核心竞争力[Social credibility -- the core competitiveness of Chinese private colleges]. *Chuanshan Journal*, *91*(02), 179-182.

Other References

Ministry of Education. (2001). *Statistical bulletin of national education development*.
Ministry of Education. (2003). *Statistical bulletin of national education development*.
Ministry of Education. (2007). *Statistical bulletin of national education development*.
Ministry of Education. (2011). *Statistical bulletin of national education development*.
Ministry of Education. (1997). *China education statistics yearbook*.
Ministry of Education. (1999). *National education work conference 1999*.
Ministry of Education. (2015). *Statistical bulletin of national education development*.
Ministry of Education. (2022). *Statistical bulletin of national education development 1998-2021*.
National Bureau of Statistics. (2001). *Bulletin of the fourth national census*.
National Bureau of Statistics. (2019). *Statistical bulletin of national economic and social development 2019*.
The State Council. (1993). *The outline of China's education reform and development*.
The State Council. (1995). *Decision on accelerating the progress of science and technology*.
The State Council. (1997). *The regulations on running schools by social forces*.
The State Council. (2010). *The national medium and long-term education reform and development plan outline (2010-2020)*.
The State Council. (2019). *China's education modernization 2035*.

[This page is deliberately left blank.]

Annexe A: Questionnaire Survey

Dear Sir/Madam:

Thank you for helping us fill out this academic questionnaire. The main purpose of this questionnaire is to investigate the performance of resources and capabilities on core competitiveness of X College. Your support will be the key factor for the research. Thank you very much for your cooperation.

Best Regards!

Part I: Basic information of individual

1. Gender:

☐ Male ☐ Female

2. Age:

☐ Younger than 35 years old ☐ 36-50 years old ☐ Older than 51 years old

3. Level of Education:

☐ Undergraduate or below ☐ Post graduate ☐ Doctor Degree

4. Current position:

☐ Administrative staff ☐ Teachers ☐ Management staff

5. Working Years:

☐ Below 5 years ☐ 5-10 years ☐ 10 -15 years ☐ 15 years above

6. Life cycle stage for X College:

☐ Start-up stage ☐ Growth stage ☐ Mature stage ☐ Degenerating stage

Part II Resource factors of X College

Please choose the number that represents the degree of your agreement or disagreement with the statements about the resources that X College own. The relevant evaluation criteria are as follows: 1 = very disagree; 2 = disagree; 3 = uncertain; 4 =agree; 5 = very agree.

7. X College has mature running concept

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

8. X College has strong cohesion and employee professionalism

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

9. All employees have a common vision

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

10. X College has a perfect cultural system

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

11. The management has rich management experience

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

12. X College has perfect channels to access information

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

13. The use of information system is mature

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

14. X College has high-quality employees

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

15. The college has a scientific salary incentive systems

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

16. The college has a reasonable post promotion system

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

17. X College have sufficient internal funds for operation

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

18. X College has access to financing

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

19. X College has advanced teaching and experimental equipment

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

20. X College has suitable fixed assets for development

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

21. X College has good relationship with government regulators

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Part III Capability factors of X College

Please choose the number that represents the degree of your agreement or disagreement with the statements about the capabilities that X College have. The relevant evaluation criteria are as follows: 1 = very disagree; 2 = disagree; 3 = uncertain; 4 =agree; 5 = very agree.

22. The college can obtain external knowledge through various channels

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

23. Be able to integrate new and old knowledge well

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

24. Can quickly and effectively apply new knowledge to teaching, scientific research and talent training

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

25. The college has a strong sense of innovation and a good innovation atmosphere

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

26. X College provides good incentives for employees' innovation

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

27. X College encourages inter departmental communication and cooperation

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

28. X College has great investment in innovation activities

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

29. X College encourages employees to try and experiment in innovation

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

30. College leaders have a high sense of mission and social responsibility

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

31. College leaders have a strong sense of risk

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

32. College leaders have strong ability of development and innovation

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

33. College leaders have strong professionalism

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

34. College leaders can coordinate the relationship in all aspects

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

35. X College has complete strategic planning

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

36. X College can reasonably allocate and integrate various existing resources and capabilities

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

37. X College can make strategic adjustments to environmental changes in time

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

38. The organization of X College is flexible and constantly changing

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

39. X College has a perfect governance structure and rules and regulations

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

40. X College has advanced management concepts and innovative management methods

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

41. College culture strongly supports the realization of the college's vision and strategic objectives

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

42. Teachers of X College are good at publishing papers in core journals and above

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

43. Teachers of X College are good at publishing academic monographs and teaching materials

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

44. Teachers of X College are good at applying for and obtaining patent authorization

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

45. X College is good at obtaining and completing scientific research projects at all levels

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

46. X College has maintained a high employment rate of fresh graduates

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

47. Employers are satisfied with graduates of X College as a whole

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

48. X College has high-quality national or provincial characteristic specialty

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

49. X College has high-quality national or provincial quality courses

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

50. X College is good at cooperating with enterprises to jointly establish laboratories

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Annexe B: In-depth Interview Outline

Interviewees: experts of Chinese private higher education, middle and senior management personnel of private colleges in Chengdu

Interviewer: the author and his research team

Interview time: May, 2022

Interview questions:

1. Based on your understanding, what is the core competitiveness of private colleges?
2. What elements constitute the core competitiveness of private colleges? Which of these elements are more important? Can you order these elements based on their importance to core competitiveness?
3. How do you understand the learning capability and innovation capability of private colleges? Are they important for the development of private colleges? Can you give some examples?
4. How do you understand the entrepreneurial capability in Chinese private colleges?
5. Before this interview, we conducted an investigation on the core competitiveness of X College and the result shows that the core competitiveness of X College can be summarized into 4 categories as below. What do you think of this?

Constituent factors of core competitiveness contribution of X College

No.	Description	Contribution to Core competitiveness
1	University organizational resource and capability	28%
2	Entrepreneurial capability	18%
3	University functional capability	17%
4	Human resource	8%

6. What policies should private colleges adopt to improve core competitiveness?
7. Please talk about the advantages and disadvantages of your own college (The advantages and disadvantages of resources and capabilities). What specific policy has your college taken to improve the core competitiveness? How about the effect after implement these policies?