INSTITUTO
UNIVERSITÁRIO
DE LISBOA

Core Capabilities of Chinese Community Health Service Centers: A Dynamic Capabilities Approach

WU Wei

Doctor of Management

Supervisors:
PhD Nelson António, Professor,
ISCTE University Institute of Lisbon

PhD Xia Weidong, Professor,
Florida International University

April, 2021

BUSINESS
SCHOOL

Marketing, Operations and General Management Department

Core Capabilities of Chinese Community Health Service Centers: A Dynamic Capabilities Approach

WU Wei

Doctor of Management

Supervisors:
PhD Nelson António, Professor,
ISCTE University Institute of Lisbon

PhD Xia Weidong, Professor,
Florida International University

April, 2021

BUSINESS
SCHOOL

Marketing, Operations and General Management Department

Core Capabilities of Chinese Community Health Service Centers: A Dynamic Capabilities Approach

WU Wei

Doctor of Management

Jury:

PhD Florinda Maria Carreira Neto Matos, Assistant Professor,
ISCTE University Institute of Lisbon
PhD Sérgio Santos, Associate Professor,
University of Algarve
PhD Leandro Ferreira Pereira, Assistant Professor with Habilitation,
ISCTE University Institute of Lisbon
PhD Wang Dong, Professor,
South Medical University
PhD Nelson António, Retired Full Professor,
ISCTE University Institute of Lisbon

April, 2021

INSTITUTO UNIVERSITÁRIO DE LISBOA

Core Capabilities of Chinese Community Health Service Centers: A Dynamic Capabilities Approach

WU Wei

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: 吴薇 Date: 26th. April, 2021

Name: WuWei

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：吴薇 日期：2021.4.26

姓名(拼音)：WuWei

[This page is deliberately left blank.]

Abstract

With China's population aging, rapid urbanization and social transformation, people's demand for multi-level and diversified medical services is growing rapidly. Insufficient allocation of CHSC medical resource and medical service lower capability still exist. Patients lack confidence in the medical service of CHSC. The service quality of community health service directly affects the accessibility, timeliness and effectiveness of residents' health management. It is necessary to strengthening the core capability building and improve the service efficiency of CHSC.

Core capability by referring to relevant literatures and combined with expert correspondence of Delphi method. We constructed the index evaluation system of CHSC core capability with 5 first level indicators, 14 secondary indicators and 60 tertiary measurable items. This study selected 64 CHSCs in the main urban area of Shenyang city as the research object. Data were collected through questionnaires and interviews. A total of 1895 valid questionnaires were collected. The structural equation model was established by AMOS software.

Several conclusions are achieved as follows: 1) the results of empirical research verify the rationality of the research model constructed in this study; 2) dynamic capability is the key influencing factor of the core capability of community health service center, and other affecting factors include management capability, service capability, organizational culture and organizational resources; 3) exploratory innovation in dynamic capability, strategic orientation in organizational culture, external electronic system integration in management capability and the training expenses spent to improve the quality and capability of employees are closely related to the core capability of community health service centers. The research results of this study are to construct the core capability index system of CHSC, to provide a basis for the standardized evaluation of CHSC service capability by health administrative governments.

Key words: Community Health Service Center (CHSC); Dynamic capability; Core capability; Shenyang City

JEL: M10; I18

[This page is deliberately left blank.]

Resumo

Com o envelhecimento da população da China, a urbanização rápida e a transformação social, a procura das pessoas por serviços médicos diversificados cresceu rapidamente. A alocação de recursos médicos aos Centros de Saúde Comunitários (CSC) é insuficiente, o problema da fraca qualidade de serviço médico persiste e os pacientes não confiam no nível médico dos centros de saúde da comunidade. A qualidade do serviço comunitário de saúde afeta diretamente a acessibilidade, a oportunidade e a eficácia da gestão da saúde dos residentes. Torna-se necessário reforçar a construção do núcleo de competência do CHSC e melhorar a eficiência dos serviços dos CSC.

Este estudo analisa a literatura relevante no país e no estrangeiro, e a aplicação do método de Delphi identificou cinco indicadores primários, 14 dimensões secundárias e 60 itens mensuráveis para a construção do sistema de avaliação do índice de competência central dos CHSC. Este estudo selecionou 64 CHSC em Shenyang como objeto de pesquisa, e recolheu um total de 1895 questionários válidos, e aplicou o modelo de equações estruturais utilizando o software AMOS.

Do estudo realizado retiramos algumas conclusões: 1) os resultados da pesquisa empírica confirmam a racionalidade do modelo que utilizamos; 2) a habilidade dinâmica é o fator que mais influencia as capacidades fulcrais dos centros comunitários de saúde, os outros fatores são a capacidade de gestão, a capacidade de serviço, a cultura organizacional e os recursos organizacionais; 3) a inovação exploratória na habilidade dinâmica, a orientação estratégica na cultura organizacional; um sistema electrónico na capacidade de gestão e as despesas em formação para melhorar a qualidade dos empregados estão fortemente relacionadas com as capacidades fulcrais dos centros de saúde comunitários. O resultado desta pesquisa consubstanciou-se na construção de um sistema de índice de competência central dos centros de saúde da comunidade, e forneceu uma base que permite aos departamentos administrativos de saúde padronizar a avaliação da competência do serviço CSC.

Palavras-chave: Centros de Saúde Comunitários; Capacidades dinâmicas; Capacidades dinâmicas; Shenyang, China

JEL: M10; I18

[This page is deliberately left blank.]

摘　要

随着我国人口老龄化、快速城市化和社会转型，人们对医疗服务的多层次、多样化需求迅速增长。CHSC医疗资源配置不足，医疗服务能力低等问题依然存在，患者对CHSC的医疗水平信心不足，较少选择去CHSC就诊，看病难的问题未得到根本解决。CHS质量直接影响居民健康管理的可及性、及时性和有效性。加强CHSC核心能力建设，提升CHSC服务效率是十分必要的。

本研究参考国内外相关文献，德尔菲法专家评价方法，确定了5个一级指标，14个二级维度和60个三级可测量项目，构建CHSC核心能力指标评价体系。本研究选取了沈阳市64家CHSC为研究对象，通过问卷调查和访谈进行数据收集，共收集有效问卷1895份，使用AMOS软件建立结构方程模型。

本研究的结论是，①实证研究的结果分析验证了本项目构建的体系模型的合理性；②DC是CHSC核心能力的关键影响因素，其余依次为管理能力、服务能力、组织文化和资源；③DC中的探索性创新，组织文化中的战略导向，管理能力中的外部电子信息系统，人力资源中的培训支出等4项指标，与CHSC核心能力关系密切。本研究的研究成果是构建了CHSC核心能力指标体系，为卫生行政服务部门规范化评估CHS能力提供依据。

关键词：社区卫生服务中心；动态能力；核心竞争力；沈阳

JEL: M10; I18

[This page is deliberately left blank.]

Acknowledgements

How time flies! The road to seek knowledge is long and winding. After completing my doctoral thesis, I am now finding myself standing at a new starting point for learning. Pursing a doctoral degree has been my long-cherish dream while the path towards that destination is full of unforeseen twists and bends. Fortunately, there are so many people sincerely supporting me through my doctoral study, including my tutors, my family and everyone around me. They are all the bright lights that illuminate the way forward for me. Although I have suffered a lot, I am hugely rewarded.

I wish first to express my deep thanks to Professor Nelson António. His rigorous scholarly attitude, profound knowledge and excelsior work style have benefited me a lot. In particular, during my three-month study in ISCTE, Lisbon University, Portugal, he offered me a lot of constructive guidance in research design and methods. I would also like to thank my mentor Professor Xia Weidong who taught me the abstruse theories in simple language and told me the truth in life. During my study in the United States, Professor Xia guided me in an easy-to-understand approach on how to collect literature scientifically and develop research thinking. With their sustained guidance and encouragement, and thanks to their teaching methods tempering strictness with kindness, I have solved many difficulties encountered in study through full discussions with them. It is the patient guidance of the two professors that constantly pushes me forward with solid progress. I would like to express my high respect and heartfelt thanks to them!

My most profound gratitude is also to Professor Virginia Trigo, whose wisdom and broad vision, rigorous scholarly attitude give me great enlightenment and inspiration. Especially at Professor Virginia Trigo's office in the University College of Lisbon, Portugal (ISCTE), she gave us a lively life class, which has inspired me to persevere unremittingly. She is my eternal example to follow.

I also want to offer my sincere thanks to Mrs. Vian Ou for her continuous encouragement and great support during my thesis writing.

I am truly grateful for the guidance, support and help of the leaders and all faculties at the School of Health Management of Southern Medical University.

I would like to thank my research team for their help in literature review, data processing

and analysis.

I am also grateful to my classmates from whom I have learnt a lot. I would not have completed my thesis without their support and encouragement

Last but not least, I would like to thank my husband for his selfless dedication and sustained understanding, support and encouragement over the years, which has propelled me to go through this period of arduous life and enabled me to complete all my studies with confidence and perseverance.

The way ahead is long; I see no ending, yet high and low I will search with my will unbending. I would like to thank all my teachers, classmates and friends who have cared, helped and supported me and reward them with more fruitful results in the future study and research.

Finally, I would like to express my sincere thanks to the experts for taking time out of their busy schedule to review my thesis, attend my doctoral defense and provide helpful guidance!

致　谢

岁月荏苒，时光飞逝。学术之路是一条漫长路，博士论文的完成才真正开启另一扇做学问的窗。攻读博士学位，是我心中的一个梦想，没想到在实现梦想的道路上充满了太多的曲折，所幸的是在我身边有太多给予我真诚帮助的人们，我的导师、家人和身边的每一个人，他们无一不是我生命中的一盏盏明灯，为我照亮前进的道路，走得辛苦却也收获满囊。

首先我想感谢我的恩师Prof. Nelson Antonio，他严谨的治学态度和渊博的知识，精益求精的工作作风使我受益匪浅。特别是我在葡萄牙里斯本大学学院（ISCTE）留学的三个月时间里，在研究设计和研究方法上给我很多有建设意义的指导。我还要特别感谢我的另一位恩师夏卫东教授，承蒙教授深入浅出地传授做学问方法的同时，亦让我明白了许多做人的道理，在美国访学期间，夏老师深入浅出的指导我如何进行科学的文献收集与科研的思维。正是他们宽严适度，鞭策有方的督导，在我研究上持续的指导和鼓励，每当我遇到困惑的问题茫然不知其解时，与他们的切磋总会使我豁然开朗。正是两位教授的耐心指导，才会有我的一步步的向前，在此，在这里学生的感激之情难以言表，谨向两位导师表示崇高的敬意和衷心的感谢!

我还要特别感谢Prof. Virginia Trigo，她的睿智与开阔的视野，严谨的作风给我以极大的启迪和激励。特别是在葡萄牙里斯本大学学院（ISCTE）Prof. Virginia Trigo的办公室中，给到访的我们上了一堂生动的人生课堂，至今激励我不断坚持，她是我永远的学习榜样。

感谢欧玮艳（Vian Ou）对我在论文写作中的鼓励、以及撰写论文时点点滴滴的支持与帮助。

感谢南方医科大学卫生管理学院各位领导、老师对我的教导！感谢学院全体老师们的照顾、指导、鼓励以及帮助。

感谢我的研究生以及课题团队成员们在文献查阅、数据整理与分析上对我的帮助。

感谢各位同学，在读期间，与大家一起相互学习，共同进步，收获了很多，没有大家的支持与鼓励，很难顺利完成论文的撰写，向同学们表示感谢。

最后，感谢我的先生多年来默默无闻的奉献和一贯的理解、支持与鼓励，使我走过

了这一段艰难的人生历程，让我有信心和毅力完成全部的学业。

路漫漫其修远兮，吾将上下而求索。我愿在未来的学习和研究过程中，以更加丰厚的成果来答谢曾经关心、帮助和支持过我的所有老师、同学和朋友。

最后，衷心感谢在百忙中对论文进行评审和答辩的各位专家对我的论文予以指导！

Contents

List of Tables

[This page is deliberately left blank.]

List of Figures

[This page is deliberately left blank.]

List of Abbreviations

1. CBT, Competence-based Theory
2. CDC, Centers for Disease Control
3. CHS, community health service
4. CHSC, community health service center
5. CCT, Core Capability Theory
6. DC, Dynamic Capability
7. DCT, Dynamic Capability Theory
8. HM, health management
9. GP, general practitioner
10. KBT, Knowledge-based Theory
11. RBT, Resource-based Theory
12. SEM, Structural Equation Model
13. TCM, Traditional Chinese Medicine

[This page is deliberately left blank.]

Chapter 1: Introduction

1.1 Research background

With China's population aging, rapid urbanization and social transformation, people's demand for multi-level and diversified medical services is growing rapidly, and the contradiction between the government's limited health resources is becoming increasingly prominent. Community health service is the key to promote reform and development in health sector. As the main providers of basic medical and health services for community residents, community health service institutions play an important role in providing comprehensive health management and health care for residents. In the *13th Five-Year Plan for Deepening the Reform of the Medical and Health System* issued by State Council of the PRC, it is proposed that the improvement of the diagnosis and treatment capacity of common and frequently-occurring diseases should be the focus of the service capacity construction of primary medical and health institutions, and such patients should be encouraged to go to primary institutions first (Wang et al., 2018). Community health service institutions improve people's health and reduce the chances of illness by providing basic health services that combine medical and public health services, as well as services such as first treatment in community and family doctor, etc.. Meantime, it shares the heavy burden of large hospitals, forms a benign medical order, promotes the rational and optimal allocation of medical resources, and solves the contradiction between supply and demand of medical resources in China, which is the original intention of promoting community health services in China. The rapid development of primary health care in the past decade, although the problem of "difficult and costly access to health care services" has been remarkably relieved, but not radically resolved. Generally speaking, the supply of medical resources in primary health institutions has been improved, especially the problem of unreasonable allocation is still prominent. For example, patients with common diseases and frequently occurring diseases still prefer distant large hospitals with abundant high-quality resources over near community health centers, which results in the waste of CHSC resources. If this trend is not curbed, the problem of "difficult and costly access to health care services" will not be effectively resolved (Shen et al., 2010; Shen & Tang, 2010). The quality of community health service directly affects the accessibility, timeliness and effectiveness of residents' health management. In the long run, the quality of primary health services has a

profound impact on the realization of the “Healthy China” strategy.

Since 2012, the construction of CHS at the grassroots level has become an important part of China's medical development. Relevant departments of the Chinese government put forward the integrated service function of combining prevention and treatment, linkage between upper and lower levels, diversified development and combination of medical care, so as to gradually realize the first diagnosis at the grassroots level, two-way referral, treating acute and chronic patients differently, and coordination between primary health institutions and upper-level hospitals”. In 2016, at the national health conference, President Xi Jinping put forward the idea of "integrating health programs into all policies to safeguard people’s health in all aspects", and stressed that "without universal health coverage for all its citizens, there will be no overall well-off society." We should give priority to people’s health from a strategic perspective". In October of the same year, the *Outline of Healthy China 2030 Plan* issued by the CPC Central Committee and the State Council put forward five strategic tasks. In order to protect people's health and promote the construction of healthy China, the primary goal is to enhance the level of primary health services. To that end, efforts should be made from the following multiple aspects: improve the CHSC management rules; clarify the basic service standards of CHSCs; increase the government investment; improve the financial subsidy policy for community health services; clearly define the responsibilities of governments at all levels with regard to investment; improve the investment methods with the government as the purchaser of public health services; strengthen the construction of community health team; strengthen the on-the-job trainings for community general practitioners and nurses; attract medical talents to work in CHSCs; explore the establishment of two-way referral system and pilot the program of “first diagnosis in community health centers”; strengthen the management of medical services and drug pricing of community health service institutions; promote the separation between health care services and drug sale, and gradually reform the mechanism of compensating the medical cost through drug sale; on top of that, the expenses of the basic health care services shall be rationally proportioned and borne among the large and medium-sized hospitals, community health centers and insured patients.

1.1.1 The connotation of community health services in China

As one of the health service modes in modern society, China's community health service is an important part of China's medical service system. Under the guidance of the government and with the active engagement of community, and in adherence to the principle of reasonable

resources allocation, the community health center is equipped with general practitioners and family doctors committed to providing the community residents with sustainable primary health services from birth to death. To ensure that every common people can get primary medical services reflects the determination and attitude of the state to social welfare undertakings and the implementation of welfare policies.

The document issued by the National Health Commission, the Ministry of Finance and the State Administration of Traditional Chinese Medicine, requires to widen the coverage of the national basic public health service and expand the service scope from 21 items in nine categories to 55 items in fourteen categories (China Ministry Of Health, 2020).

Basic medical services of CHSC service contents see Figure 1.1.

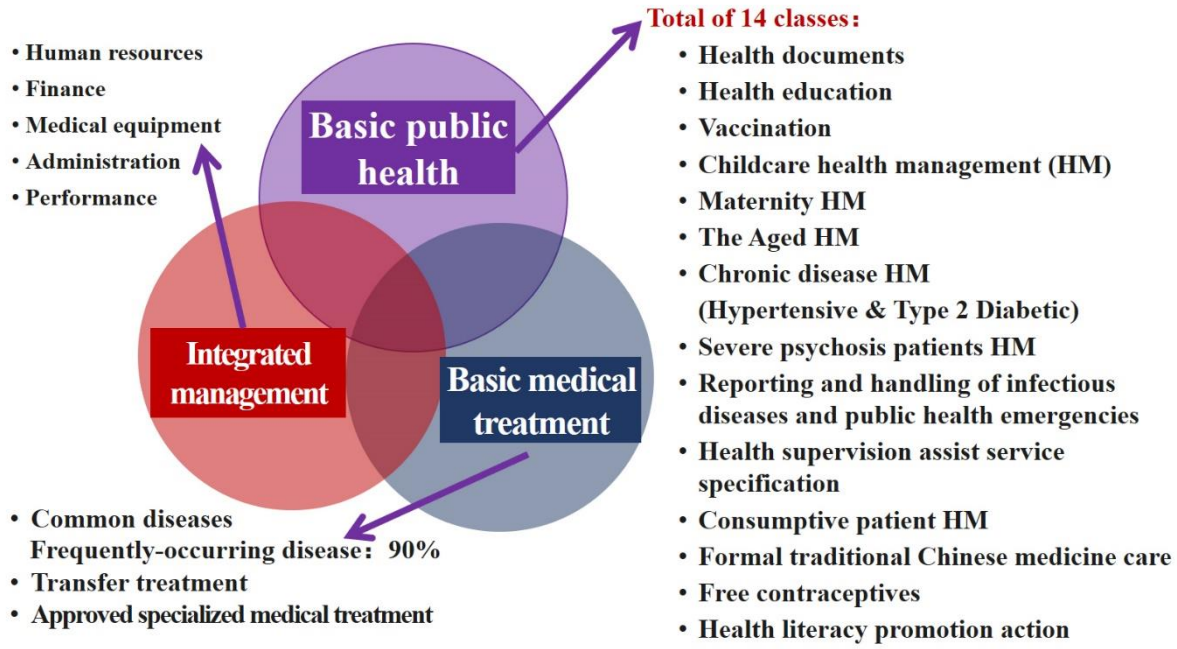

Figure 1.1 Service items of Community Health Service Center

In 2006, the State Council announced new guidelines to strengthen public participation in the construction of CHSCs in order to promote their development. Meanwhile, China's Ministry of Health has issued eight policy amendments to give community health centers a boost to effectively perform their functions and improve performance in terms of business management, service standards, human resource construction and hospital support.

Before 2009, the Chinese government set a target of diverting at least 50% of patients from overcrowded tertiary public hospitals to CHSCs. To meet these challenges, in 2009, a new round of health reform was launched nationwide, and the government clearly set the goal of strengthening primary health care (Shi et al., 2020). The purpose is to change the community medical service mode, continuously improve the service level and provide the household

visiting service, thus gradually becoming the "goalkeeper" of the community residents' health. The goal of the equalization of basic public health services is to ensure that urban and rural residents can have equal access to the basic public health services, thus freeing them from minor or critical diseases. The core goal of basic health care reform is to provide basic health services, especially free basic health services for all people (China Ministry of Health, 2020). With the deepening of the reform of urban public hospitals in China, the acceleration of urbanization, the increase of urban floating population and the promotion of hierarchical diagnosis and treatment measures such as first diagnosis and two-way referral in community health service centers, community health service centers have become an important position of hierarchical diagnosis and treatment system in China (Liu, 2018).

According to the 2021 *China Health Statistics Yearbook*, the total number of medical and health institutions in 2020 reached 1,022,922, including 97,036 primary medical and health institutions. There were 9,826 community health service centers, and 7.74 billion visits were made to medical and health institutions nationwide. Community-level medical and health institutions made 4.11 billion visits, of which 620 million were made to community health service centers (China Ministry Of Health, 2021). Primary medical institutions accounted for 95% of the total number of medical institutions and only 53.0% of the total number of patients, while secondary and tertiary hospitals which accounted for 5.0% of the total number of patients received about half of the diagnosis and treatment. In this way, large medical institutions are overcrowded, primary hospitals are still not residents' first choice for medical treatment, and medical and health resources have not been effectively utilized. This shows that since China's medical reform, the construction layout of primary medical institutions has taken initial shape, but patients do not trust the professional capability of community hospitals and seldom choose to go to primary hospitals, which leads to the "difficulty in registration" in big hospitals and the problem of difficult medical treatment has not been fundamentally solved. Therefore, it is necessary to strengthen the core capacity construction of primary medical staff to improve the level of medical service (Xu & Sun, 2019).

1.1.2 Difficulties and challenges faced by the CHSC in China

(1) The allocation of health resources between large public hospitals and community health service centers is unbalanced. The goal of the new health care reform is to effectively solve the problem of "difficult and costly access to health care services", while the underlying cause for difficult access to medical services is the unbalanced allocation of medical resources. The

government's structurally imbalanced investment in health care causes the uneven distribution of social medical resources, which is an important factor restricting the further advancement of the new health care reform in China. In order to make urban and rural residents have access to public medical resources and basic medical services, the government should intensify efforts to promote the equalization of urban and rural public medical services (Sun, Rau, & Zhong, 2019).

(2) The government's investment and compensation to the community health service centers is woefully insufficient. Community health service is mainly for public good. Although CHSCs can get some income from medical services, their public nature makes it impossible to gain high profits. Meanwhile, CHSCs have to spend their own money on the normal business operation and provision of other public services. At present, the overall service capability of community health service is still low. The shortage of staff and average quality of medical service make it impossible to cure all kinds of minor diseases. Without sufficient investments from government, CHSCs have to increase the prices of basic medical services, or provide non-public specialized medical services, or reduce the number of medical staff so as to increase income and cut down expenses for sustainable development. By doing this, CHSC has positioned itself as non-public small clinic, which runs counter to its public nature.

(3) The "six in one" function of community health service center has not been fully realized.

(i) There are some problems facing China's primary health institutions, such as unevenly distributed human resources, unreasonable professional structure, low education and professional title of health employees, poor public health service capability, and insufficient training for health personnel. In the China Health Statistics Yearbook of 2019, most health personnel education level of CHSC are Junior College and less, professional title ratio are 63%. The personnel capability and quality of basic medical institutions still remain to improve.

(ii) Difficult to put two-way referral in place. The referral from the community health service center to the high level hospital is very easy but the reversal referral from high level to grassroots is surprisingly difficult. The weak grass-roots level makes the implementation of graded diagnosis and treatment lack of foothold. Since the "new medical reform", our country has invested a large amount of financial funds to "strengthen the grassroots", but still has not achieved the desired effect. The lack of medical service capacity of primary medical and health institutions makes residents lack confidence, so even with the strict restriction mechanism of medical insurance payment, it is difficult to change the situation that residents flock to big hospitals for treatment.

(iii) Low coverage and accessibility. Residents have still not established trust in the CHSCs and therefore the CHSCs are often running at low capacity; besides, the functions and

responsibilities of CHSCs, CDC and maternal and child care service center (MCCSC) are not clearly defined, resulting in overlapping functions that weaken the role of “six in one” function;

(iv) Low efficiency. Because most CHSCs have not introduced modern management system, the "six in one" comprehensive service goal of community health service has not been fully achieved and efforts should have made to establish residents' health records, fulfill the responsibilities of family doctors and provide health education.

(4) The evaluation system of the core capability of community health service institutions has not been established. In recent years, many scholars have studied the core capability of hospitals from different perspectives, but until now, scholars at home and abroad have not achieved consensus on the definition and connotations of core capability. At present, most of the researches on community health services in China focus on the policies and strategies of community health services, analysis of current situation, human resource construction and performance evaluation, while the researches on the core capability of community health services are rarely found.

In 2008, core capability theory was introduced into the research of community health services in China. The article *"Preliminary Study on the Core capability and Cultural Construction of Community Health Service Centers*" published on *Community Health Care* by Pei Daoling, director of Jiangsu Road community health service center, Changning District, Shanghai, is the first paper on the core capability of community health service institutions in China. The author thinks that the sources of core capability of CHSCs include technical capability, driving capability and integration capability (Pei, 2008). Since then, a paper published on *Medical Innovation of China* by scholar Wu Hao, put forward the principles, basic elements, and key factors of constructing the core capability of community health centers (Wu, 2009), but he has not established an evaluation system regarding the core capability of CHSCs.

(5) The relationship between resources, capability and core capability of community health service center is not clear. In the research on the core capability in the health field, some scholars believe that capital investment, talent team, technical equipment and residents' satisfaction are all sources of the core capability (Lai, 2010; Ma, 2014). However, these elements are just resources instead of sources of competitiveness. The resources mentioned above can be imitated or even copied, while the core capability is valuable, rare, non-substitutable and imperfectly imitable. It is a unique capability to establish the sustainable competitive advantage. However, the misunderstandings lead to the fact that we are still not clear about the relationship between the resources, capabilities and core capability of community health service centers, and the influencing factors of the core capability of community health services.

1.2 Research purpose and significance

1.2.1 Research purpose

From the perspective of dynamic capability theory and combining with the current situation of the core capabilities of CHSCs, the purpose of this study is to explore the main dimensions of the core capabilities of CHSCs, through the combination of theoretical research and empirical research method, so as to build the core capability model of primary health care in China, lay theoretical foundation for the evaluation of service capabilities of basic level health institutions, and put forward the strategies of building primary medical service capability that can meet the development requirements of primary hospitals and the health needs of community residents.

1.2.2 Research significance

The new era calls for the new strategic management method. With the step of transitioning the economic development mode of human society into knowledge economy, however, at current stage, China's grass-roots medical institutions have been doing poorly in grasping social trends, cultivating enterprise strategic capability and strategic wisdom and valuing knowledge management and innovation management, thus making it difficult for them to obtain sustainable competitive advantage for long term benefits.

The research and construction of the core capability system of CHSCs in China will lay the solid theoretical foundation for further research on the core capabilities of primary health institutions. More importantly it will effectively promote the service capability of grassroots health personnel, provide basis for the health administrative departments to standardize basic health services and evaluate the knowledge and skills of health employees based on the core competence model. Besides, the core capability system defines the capability requirement for medical posts, which can help employees understand their capability and provide guidance for their own career development.

1.3 Research on core capability at home and abroad

1.3.1 Research on core capability in foreign countries

In addition to giving definition to the core capability, Prahalad and Hamel (Prahalad & Hamel, 1990) also put forward three criteria as how to identify the core capability. First, core capability enables enterprises to have potential to enter a wider market; second, core capability can create high value final products for customers; third, core capability is difficult to be imitated by

competitors. Kesler et al. believed core capability is the symbol of an organization, namely "who are we" and "what we can do best" (Kesler, Kostad, & Clarke, 1993). The above research mainly focuses on defining the concept of core capability from qualitative perspective. Besides, there are also quantitative studies by scholars such as Meyer & Utterback (1992), Patel and Pavitt (1997), Prencipe (1997) and Henderson & Cockburn (1994).

Durand divides the core capability into five dimensions: excellent assets, cognitive ability, procedure and established routines, organizational structure, behavior and culture, and proposes a framework to measure the core capability (Durand, 1996). From the perspective of end products, Meyer and Utterback (1992) evaluated the core capability of enterprises from four dimensions: product technology, understanding of customer needs, distribution channel and manufacturing capability. The common method adopted by the two scholars is to first construct the index system and then score each index and ultimately calculate the level of core capability.

Instead of using the subjective scoring method, Patel and Pavitt (1997) and Prencipe (1997) evaluated the core capability of enterprise according to the quantity and quality of the patents an enterprise owns. However, the patent index only reflects the technological capability of enterprises, but ignores other important factors such as organizational structure, culture and strategy. In order to overcome the above defects, Henderson and Cockburn (1994) combined subjective scoring method and quantitative indicators method and divide the core capability into organizational capability and component capability. Organizational capability refers to the capability of using component capability, that is, the capability to effectively integrate existing components and develop new components. Component capability refers to the unit capability and enterprise knowledge reserves that are used to solve problems in daily operation.

Foreign scholars' research on core capability has developed from qualitative analysis to quantitative analysis, and the evaluation index system has shifted from simple quantitative index to the combination of subjective scoring method and the quantitative index. These research findings not only help to statically identify the enterprises' existing capabilities and competitiveness but also provide a dynamic method to help enterprises integrate the core capabilities with strategic planning according to the changing internal and external environment. However, the research findings that mainly derived from the case studies of the international first-class enterprises are difficult to generalize to Chinese enterprises. Meanwhile the general studies on the evaluation and identification of core capability are very scant. Therefore, on the basis of foreign core capability theory and combining with the reality of China, Chinese scholars have developed China-specific core capability evaluation system and identification methods.

1.3.2 Research on core capability in China

China’s research on core capability has experienced a process from initially learning from foreign research results to constructing the core capability evaluation system that suits China's conditions. The results of the literature search suggest that there are not many studies on the evaluation of core capability by Chinese scholars, among which, scholars Du Gang, Guo Bin and Wei Jiang have made the greatest contribution.

Du Gang thinks that the core capability of enterprise should be evaluated from three dimensions, namely the market (11 indicators), the technical level (22 indicators) and the management level (17 indicators). Firstly, the AHP method is used to assign the weight of indicators in each dimension, then the weighted average of each index value is used to get the score of each dimension, and ultimately the weighted average of the three dimensions is used to get the total score of the enterprise’s core capability (Du, Cheng, & Chen, 2000).

For technology-based enterprises focusing on technological innovation, Guo and Cai established a core capability evaluation system with seven dimensions and 117 indicators: strategic management capability, core technology capability, core manufacturing capability, organization/interface management capability and core marketing capability, industry dynamics and enterprise performance. Based on the questionnaire survey of small enterprises, the core capability measurement formulas for large enterprises and small and medium-sized enterprises are obtained respectively. He believes that for large enterprises, the strategic and technological capabilities are most important, while for the small enterprises, the marketing and strategic capabilities are most important (Guo & Cai, 2001).

Based on THIO index system, Wei Jiang designed a questionnaire to evaluate the enterprise's technical capability from four dimensions and 14 indictors including personnel ability (5 indictors), information capability (3 indictors), equipment capability (3 indictors) and organization capability (3 indictors). The weight of each indicator is determined by experts' scoring (Wei & Ye, 2001).

The studies on core capability evaluation by Chinese scholars are mainly based on enterprise competitiveness research system and method. However, enterprise competitiveness and enterprise core capability are two different concepts. Enterprise competitiveness refers to concrete competitive advantages that can be perceived and felt by competitors in market competition while core capability exists in the form of abstract and intangible assets. The difference of concept connotations determines they should be studied using different research system and methods. From the research priorities, the research on observable enterprise

competitiveness should focus on evaluating the enterprise's actual competitive advantages using preset indicators and standards while the research on unnoticeable enterprise core capability should focus on finding out the most critical capabilities or activities that can bring the sustainable competitive advantage from the various kinds of capabilities of the enterprise; from the research purpose, the purpose of the core capability evaluation research is to determine whether the enterprise has the core capability and identify the sources of the core capability in business activities; from the research method, the core capability evaluation research is based on the discovery and identification method; from the research contents, the core capability evaluation research focuses on the judgment and identification of core capability, and how to reduce the influence of subjective factors in the process of judgment and identification.

If the research on core capability is simply based on the evaluation method of enterprise competitiveness, its limitations are obvious: first, the existing research method cannot help enterprises to dynamically find the method and ways to identify core capability from the perspective of enterprise growth, and also cannot effectively guide and help enterprises to identify, find out and cultivate core capability. Second, the conclusions are too broad to judge whether an enterprise has core capability and to identify the specific performance of core capability. It can only demonstrate the level of competitive capability of the enterprise compared with its competitors in some aspects. Third, the analysis results are practically irrelevant. The existing researches on the enterprise core capability mostly focus on the qualitative analysis and thus the research findings are not very helpful to guide enterprises to evaluate core capability. Therefore, it is necessary to find a practically viable method to do this especially for those enterprises that still have no core capability.

1.4 Research Questions

(1) What are the dimensions of core capabilities of community health service centers ?

From the perspective of dynamic capabilities, the core capability building of primary medical institutions in China is still in the early stage both in theoretical research and practice. In addition to the lack of theoretical support, there are many other reasons contributing to the poor capability building of grassroots medical institutions and health professionals. It cannot be ignored that although the community health service institutions in China have seen vibrant development, they still face many new challenges in a fast changing business environment, such as ambiguous strategic layout, insufficient innovation ability, shortage of grass-roots medical staff, and lack of standard capability evaluation system. Through extensive literature review on the Chinese and foreign theoretical and academic research regarding the hospital service

capability building, this study fully demonstrates the necessity of implementing primary health service capability evaluation, deeply understands the current situation of primary community health service capability and its evaluation in China, try to find out the core capability of CHSC, in an effort to provide guidance and ideas for the construction of primary medical service capability.

(2) What measures can be used to assess the dimensions of core capabilities of CHSC ?

Based on the thorough analysis of the problems confronting the primary health institutions in China, this study conducts a systematic theoretical research on the capability-building of primary health services. By introducing the concept of core capability into the research of medical field, some scholars analyze the connotation and denotation of the primary health service capability, deeply explore the key problems existing in the construction of service capability, and analyze the causes. Based on the theory of dynamic capability, this study discusses and constructs the conceptual model regarding the dynamic capability of primary health service institutions.

1.5 Research methods

1.5.1 Research methods in this study

Based on qualitative and quantitative analysis, this study adopts the research methods such as literature research, questionnaire survey, field investigation, expert consultation, expert interview (Delphi method).

(1) Literature research. After extensive review of Chinese and foreign literature regarding the relevant policies and regulations of community health centers, performance evaluation and statistical analysis methods, the researcher grasps the research methods of evaluation system and evaluation standards of Chinese and foreign community health services and puts forward the preliminary performance evaluation index system of CHSCs in China.

(2) Expert interview method. Solicit opinions from experts and health administrators in the field of community health services across China, and carefully study the framework, dimensions, and operability and evaluation standards of the index system. Based on the experts' suggestions and opinions, and under the guidance of Prof. Nelson Antonio and Prof. Weidong Xia, design the framework of the research.

(3) Delphi method is used to design the questionnaire. Based on literature review and expert interviews, this study selected experts in the field of community health services, and asked them

to give suggestions about the evaluation index of CHSC questionnaire. After several rounds of consultation, the preliminary indicators are scored by experts then different levels of indicators are modified and adjusted according to the scores. On this basis, the statistical analysis methods such as fuzzy evaluation are used to assign the weight coefficient of the finalized indicators.

(4) Case study. The managers and health practitioners of CHSC in Shenyang City were surveyed using questionnaire, and analyzed data by SPSS and Amos software.

1.5.2 Principles of designing indicators of core capability

The core capability is evaluated by the service recipients, so the questionnaire should include the indicators that reflect the market performance results; the core capability of CHSC is affected by various internal and external factors, such as resources, government policies, learning capability, organizational culture and leadership, so we should use the comprehensive evaluation method to assess the core capability.

The core capability of CHSC is a complex system consisting of multi-dimensional elements, so it should be evaluated using qualitative and quantitative analysis. The core capability of CHSC is not static but dynamic, and therefore we should study it from static and dynamic perspectives. The evaluation indictors should include both static indicators and dynamic indictors reflecting the changing trend of CHSC's core capability.

1.6 Thesis framework

This thesis falls into six parts:

Chapter 1: Introduction. Mainly introduces the research background, expounds the purpose and significance of the research, puts forward the research problems according to the current research situation at home and abroad, and elaborates the research ideas, research methods, research contents and the innovative ideas of this study.

Chapter 2: Literature review and conceptual framework. This chapter mainly builds the preliminary theoretical framework based on literature review and exploratory research, defines relevant concepts, clarifies the influencing factors of CHSC’s core competencies and constructs the conceptual model.

Chapter 3: Research design and methods. This chapter mainly statement that, the Delphi expert consultation method is used to determine the interview outline; the evaluation indicators are modified, determinate the weight of each indicator, designed the scale. Based on the questionnaire survey of 64 CHSCs in Shenyang, the data analyzed by SPSS and AMOS, finally

research model is constructed.

Chapter 4: Research results. Data analysis is conducted and the research model is verified. Based on questionnaire data, the descriptive analysis is conducted on resource allocation, service capability, management capability, organizational culture, employee satisfaction and dynamic capability and the structural equation modeling is built. Based on the questionnaire survey, exploratory factor analysis and confirmatory factor analysis, the reliability and validity of the scale is tested.

Chapter 5: Discussions. Based on the relevant conclusions of theoretical analysis and empirical research, the influencing factors of CHSC's core capability are further discussed.

Chapter 6: Conclusions and policy suggestions. Mainly expounds the research conclusions of this study, and puts forward policy suggestions.

1.7 Creative points

Based on the dynamic capability theory and with the community health service centers of Shenyang as the research object, the study defines the core capability of CHSCs and constructs the evaluation index system regarding the core capability of community health service centers, which are theoretically innovative.

This study empirically and comprehensively analyzes the competitive advantages of primary medical services. Based on the empirical research on the advantages of medical service ability and resource utilization of primary health institutions, this study puts forward purposeful optimization strategies in order to provide basis for cultivating service capabilities of primary health institutions.

[This page is deliberately left blank.]

Chapter 2: Literature Review and Conceptual Framework

2.1 Resource-based theory

The general speak of resources, includes assets, which generate lasting competitive advantage, capabilities, core capabilities, knowledge, and dynamic capabilities. Based on these core concepts, resource-based theory develops into different branches, including traditional resource-based theory (RBT), capability-based theory (CBT), core capability theory (CCT) and knowledge-based theory (KBT). Specifically, resource-based theory starts from resource-based view. With the deepening of research, people find that what can really produce lasting competitive advantage is not the resource itself, but the ability and core capability of successfully using resources (Prahalad & Hamel, 1990) .

2.1.1 Traditional Resource-based theory (RBT)

Although the Wernerfelt's paper on "*a resource-based view of the firm*" published in the Strategic Management Journal marked the emergence of the resource-based theory (Wernerfelt, 1984), it is generally believed that Barney (Barney, 1991, 1995) was the first scholar to deeply and carefully study the resource-based theory (Newbert, 2008). On this basis, Peteraf (1993) developed it into a more systematic theoretical system.

RBT believes that an enterprise is a collection of resources, and capability is one of the important resources of an enterprise, or the concepts of resource and capability are equivalent and interchangeable. Barney's paper "*Firm Resources and Sustained Competitive Advantage*" published in the Journal of Management systematically integrates the previous scholars' views about resources and develops into a comprehensive theoretical framework. He distinguishes the concepts of ordinary resources and strategic resources, and points out that the resource that can create competitive advantage is core capability. It has four characteristics: valuable, rare, imperfect imitable and non-substitutable, famously known as VRIN (Barney, 1991).

In his paper "*Looking Inside for Competitive Advantage* ", Barney constructed VRIO framework based on four resource attributes, including value, rarity, imitability and organization. The core of this theoretical framework is that sustainable competitive advantage cannot be understood by simply assessing the environment, opportunities and threats. Unique

resources and capabilities are the basis of sustainable competitive advantage and must be taken seriously by enterprises in the fierce market competition. In order to gain advantages over competitors, enterprise managers must seek valuable, rare and imperfectly imitable resources, and then develop and utilize these VRIN resources through organizational process (Barney, 1995).

(1) Valuable resources

Resources and capabilities that can help the company seize external opportunities and eliminate external pressures and implement strategies to improve its efficiency are considered to be valuable. Some scholars regard resources as a series of potential services, and even define services as the result of the use of their resources. Unless they are used effectively, they are useless (Penrose, 1995). Others believe that enterprises must have enough ability to make use of their resources (Amit & Schoemaker, 1993), In other words, when some resources are believed to be potentially valuable, they can create value only when the enterprise has the ability to utilize them (Newbert, 2008).

Valuable resources have the ability to create profits and prevent losses (Miller & Shamsie, 1996). Some words, such as "enable", "helpful for" or "certain ability" refer to the need for other supporting conditions to transform (valuable) resources into products that provide value. Based on the concept of valuable resources, Bowman & Ambrosini (2007) attempted to define resources as functions and capabilities (functions) in a broad sense. Therefore, the resource itself is the driving force to exploit opportunities or neutralize the threats (Cardeal & António, 2012).

Only valuable resources and capabilities are crucial to enterprises. If some resources and capabilities can be possessed and utilized by most competitors to create value for customers, then they cannot bring competitive advantage to the enterprise.

(2) Rare resources

Rare resources and capabilities refer to those valuable resources and capabilities owned by a firm but not possessed by some firms, or at least not possessed by large numbers of other firms. If most enterprises have such resources and capabilities, then they are not scarce resources and capabilities.

Although rare resources and capabilities can bring sustained competitive advantage to enterprises, it does not mean that non scarce resources and capabilities are not important to enterprises. Instead, non-scarce resources and capabilities can also create competitive advantage for enterprises to survive in market competition.

Scarcity does not necessarily mean that some resources or capabilities or its combination

can be possessed by only an enterprise, so how scarce the resources and capabilities depends.

(3) Imperfectly imitable resources

Resources and capabilities that are imperfectly imitable are those that other firms cannot easily obtain or develop. If valuable and scarce resources are easily imitated, they will soon be copied by competing firms, and the potential competitive advantages generated by them will soon disappear (Cardeal & António, 2012).

Firm resources can be imperfectly imitable for one or a combination of three reasons: The first is the ability of a firm to obtain a resource is dependent upon unique historic conditions; The second is the link between the resources possessed by a firm and a firm's sustained competitive advantage is causally ambiguous; The third is the resources generating a firm's advantage is socially complex. The resources are so complex that they cannot be absorbed and internalized by the organizational process of competing firms (Barney, 1991).

(4) Organization

If a firm possesses valuable, rare and costly to imitate resources and capabilities, we can say it has the potential to gain competitive advantage. However, in order to materialize the competitive advantage, the firm must establish a set of management frameworks and processes including organizational structure, management and control system, salary system to exploit and utilize these resources and capabilities.

Based on VRIO model established by Jay B. Barney, Table 2.1 shows in what conditions a firm can gain competitive advantage or cannot.

Table 2.1 VRIO Framework

Valuable?	Rare?	Costly to imitate?	Exploited by the organization?	Competitive implication
No				Competitive disadvantage
Yes	No			Competitive parity
Yes	Yes	No		Temporary competitive advantage
Yes	Yes	Yes	No	Unexploited competitive advantage
Yes	Yes	Yes	Yes	Sustained competitive advantage

Source: Barney (1995)

2.1.2 Capability-based theory (CBT)

Corporate capability refers to the ability of an enterprise to coordinate and exploit resources effectively. The resources possessed by enterprises are the prerequisite for enterprises to implement their business strategies, but it does not mean the resources possessors can use them

effectively. Therefore, how to reasonably allocate and utilize these resources so that they can be translated into actual capabilities has become critically important for enterprises to gain competitive advantages over their competitors.

In order to overcome the limitations of existing theories in exploring and identifying the core elements of competitive advantage and the connotation of core capabilities, the capability-based theory (CBT) is gradually developed. In 1973, Professor McClelland at Harvard University first put forward the concept of enterprise capability and he believed that capability refers to the knowledge, skills, capabilities, traits or motivations that are directly linked with work or work performance or other major achievements in life (McClelland, 1973). In 1994, he redefined the capability as motivation, traits, self-perception, attitude or values, specific knowledge, cognitive or behavioral skills, that is to say, capability is seen as a collection of some personal characteristics that can be accurately measured and distinguish stellar performers from mediocre (McClelland, 1973). Richardson defined capability as the knowledge, experience and skills of an enterprise. The corporate capability theory had not played a dominant role in field of strategic management until the end of 1980s. The resource-based view largely focuses on the unique resources and capabilities of enterprise that are the source of sustainable competitive advantage and how enterprise can obtain and acquire resources. These basic views have laid a theoretical foundation for the emergence of the corporate capability theory.

Cardeal and António (2012) believed that capability can be viewed as how effectively an enterprise integrates its unique and key resources so that they can serve the organization’s goal. Organizational structure refers to "O" in VRIO (Barney, 1995; Cardeal & António, 2012).

A paper on *The Core Competence of the Corporation* co-written and published by Prahalad and Hamel in Harvard Business Review Magazine marked the emergence the capability-based theory (Prahalad & Hamel, 1990). According to capability-based theory, an enterprise is an assemblage of "capability" or “competence” and resource is one of its important capabilities.

Prahalad and Hamel (1990) hold that whether a firm can achieve success lies not in the possession of valuable resources but how the firm exploit and utilize these resources. The corporate capability-based theory can be understood from three aspects:

(1) An enterprise is essentially an assemblage of capabilities

Not all the resources possessed by enterprises can be translated into enterprise performance or competitive advantages. In the fiercely competitive market, some resources even can be traded and exchanged. Actually, what really can improve enterprise performance or give it a competitive advantage is the ability of how to effectively exploit and utilize its internal

resources. In broad sense, the capabilities refer to the technical ability of employees, R&D ability, the ability of management personnel to work independently, the ability of cooperating with colleagues, the ability of inventing trademarks and patents, the ability of building brand reputation, and the ability to discover, integrate, coordinate and optimize resources, as well as the self-organizing capability to integrate assets and skills. Core competencies refer to those that can enable a firm to stand out among competing firms (Geisler & Turchetti, 2018).

(2) The key for an enterprise to maintain its sustained competitive advantage is to accumulate, maintain and strengthen various capabilities

The core competencies cannot be established in one step but gained through long term accumulation. Enterprises can gradually cultivate core capability through exploring the expertise and skills that can generate the core competence, integrating the elements that are sources of the core capability, and expanding the market share of core products. How powerful the competitive advantage of enterprises is can be tested in the market competition. However, compared with the market share of flagship products, the latter is more meaningful.

(3) The way to acquire core competencies is to constantly absorb new knowledge.

The core competencies can be obtained in many ways, such as acquisition and merger of enterprises. Continuous learning is the most fundamental and effective way to acquire core capability. No matter how brilliant an enterprise is in the past, if without continued learning, the outdated and obsolete knowledge and ability will put the enterprise at a disadvantage in market competition. Besides, no matter how enterprises acquire key technologies and skills, for example, acquiring single skills or technologies that can be translated into the overall core capability, or integrating various technologies, skills and expertise that can form the core capability, the enterprise could not have obtained the core capability without continuous learning (Foss, 1997).

Enterprises generally have a variety of capabilities, which can be categorized into three types: (1) comprehensive capabilities and professional capabilities; (2) general capabilities and core capabilities; (3) organizational capabilities, product marketing capabilities and management capabilities.

Capability is the combination of knowledge and skills. The ability represents potential knowledge reserves and skills needed for efficient action (Prahalad & Hamel, 1990; Leonard-Barton, 1992; Iansiti & Clark, 1994). Some scholars believe that the internal knowledge-based resources or capabilities may be the most important source of competitive advantage (Barney, 1995). However, many companies have not recognized the value of their existing capabilities or what capabilities they lack. Besides, senior managers need to recognize the vital role of

middle-level managers in developing and maintaining corporate core capabilities (King, Fowler, & Zeithaml, 2001).

2.1.3 Core capability theory (CCT)

In 1990, the concept of core capability was first put forward by C. K. Prahalad and G. Hamel, in their article "The Core Capability of the Corporation" published in Harvard Business Review, in which core competencies are defined as "the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies. They think that the core capability refers to the accumulated knowledge in the organization, especially the knowledge about how to coordinate different production skills and organically harmonize streams of technology, which has become the widely accepted definition in the field of strategic management. They put forward a visually vivid "tree" theory. The diversified corporation is a large tree. The trunk and major limbs are core products; the smaller branches are business units; the leaves, flowers and fruit are end products. The root system that provides nourishment, sustenance and stability is the core capability. The core capability is not only the solid rock sustaining the existing business, but also the driving force of developing new business. The "tree" theory vividly describes how important the core capability of an enterprise is. Since Prahalad and Hamel (1990) put forward the concept of core capability, the research on core capability has become a hot topic in management field (Prahalad & Hamel, 1990). Subsequently, many scholars have studied the core capability from different perspectives (see Table 2.2).

Table 2.2 Definitions of the core capability

Scholar(s)	Published time	Description of core capability
Prahalad & Hamel	1990	Core capability refers to the accumulated knowledge in an organization, or the integrated knowledge and skills within the organization, and the ability to apply specific knowledge, skills, ideas and values to deliver performance in specific environment
Fiol	1991	Core capability refers to not only the tangible assets of an enterprise, but also the invisible process of exploiting the tangible assets and transforming them into the concrete actions
Jay B. Barney	1991	In order to become the source of sustainable competitive advantage, the core capability of an enterprise should meet four conditions, that is, valuable, rare, imperfect imitable and non-substitutable

Scholar(s)	Published time	Description of core capability
Leonard-Barton	1992	Core capability is a kind of knowledge cluster that makes an enterprise stand out from other competitors and can brings competitive advantages to the enterprise. It is a kind of action ability and a long established unique ability of an organization that provides value for customers
G. Hamel and A. Heene	1994	Core capability is defined as market entry-related capability, reputation management-related capability and function-related capability
Collis	1994	Core capability is the shorthand summary of asset investment portfolio that determines the strategic position of the enterprise
Raffa and Zollo	1994	Core capability of enterprise is the organic combination of technical core capability, organizational core capability and cultural core capability
B. Eriksen & J. Mikkelsen	1996	Core capability is both organizational capital and social capital. Organizational capital reflects the technical aspects of coordinating and organizing production, while social capital shows the importance of the social environment. The former can be reflected in the organizational structure, while the latter can reflect the corporate culture and be regarded as the product of the specific organizational structure level
Teece, pisano, and shuen	1997	Core capability refers to a series of different skills, complementary assets and practices that can bring competitiveness and sustainable advantages to an enterprise
Whelan	2006	Core competencies are the defining characteristics that are unique to each organization
Damron-Rodriguez	2008	Core capability refers to the verifiable knowledge, value and skills that are linked with practice

As the research on core capability moves along, the application of core capability has moved from the field of economics, management to the health field. In 1992, the World Health Organization defined core capability as the set of minimum capabilities that all health promoters should basically have, that is, "all health practitioners are expected to work efficiently, effectively and appropriately in this field."

The upsurge of core capability research by scholars at home and abroad suggests that the enterprise managers have shifted their particular attention to the cultivation of core capabilities. Although the concepts are variously defined by different scholars, they convey the same central

idea of how much the continuous learning means to both individuals and enterprises. The core capability is the ability of enterprises to obtain sustainable competitive advantage in the market competition. It is the essential weapon that ensures the enterprises to stay ahead of competing rivals and achieve sustainable development.

In fast changing market environment, enterprises with only ordinary resources and capabilities have slim chances to stand out from the competition. Therefore, in order to establish competitive advantages, enterprises must cultivate heterogeneous resources and capabilities to gives them an edge over its competitors. The factors contributing to the success of an enterprise largely lie in how quickly the enterprise responds to the market trends and the changing needs of target consumers instead of its products and market layout. Therefore, the enterprise strategic goal should be aimed to identify and cultivate core capabilities that are costly to imitate. In addition, in order to obtain and maintain sustainable competitive advantages, enterprises must come out with unique and distinctive core capability, core products and final products. In terms of core capability, an enterprise should rush forward in front of others by developing and delivering products with special design and outstanding performance, so as to ensure its unique advantages.

Core capability is an invisible, inherent, unique ability of an enterprise that can deliver products with high value for their target audience and help the enterprise to dominate a particular market for a long time. Core capability can not only bring an enterprise distinctive competitiveness, but also reflect its unique characteristics because the core capability is the reflection of diverse knowledge and skills gradually accumulated in the process of enterprise development, which is the unique and the most valuable assets of an enterprise. Core capability is a mix of diverse kinds of capabilities rather than a particular ability, which mainly includes the development and innovation capability, strategic management capability, organization and management capability, marketing capability, production and manufacturing capability, human resource development and management capability, and enterprise culture.

To sum up, the core capability can be described as a knowledge system composed of capability elements and capability framework, which plays its role in all levels of the business operation (including environment, organization process, technology, products) and enables the enterprise to efficiently integrate resources and obtain sustainable competitive advantages.

2.1.4 Knowledge-based theory (KBT)

Knowledge-based theory (KBT) is developed from the resource-based theory, but KBT has

gone beyond the scope of strategic management. It holds that enterprise knowledge, especially the tacit knowledge hidden behind the core capability gives the enterprise sustained competitive advantages; the heterogeneous knowledge leads to the enterprise heterogeneity; the enterprise can be considered to be a unit integrating a wide variety of knowledge. The heterogeneous knowledge and its usage efficiency determine the enterprise boundary (Nonaka, 1994; Conner & Prahalad, 1996; Grant, 1996).

Knowledge-based theory regards enterprises as organizations that can integrate and absorb employees' unique knowledge (Grant, 1996). Therefore, the heterogeneity of enterprises is determined by the heterogeneity of knowledge structure, enterprise knowledge and cognitive ability. The acquisition and maintenance of competitive advantage can also be explained by the knowledge-based theory. The hidden knowledge generated by an enterprise with special organizational culture, particular growth path and unique historical events is fully embedded in a certain person, so that the enterprise can continuously acquire and maintain competitive advantage.

The basic strategic resources refer to the knowledge and skills accumulated by the organization over time. It is difficult to quickly duplicate these resources, because they are time-dependent knowledge that requires time-consuming efforts to imitate (Collis, 1991).

Capabilities can create competitive advantages that distinguish an enterprise from its competitors. Only the valuable, rare, imperfectly imitable resources or capabilities are the source of sustainable competitive advantage. In addition, there are no direct or simple alternatives to capability (Barney, 1991; King, Fowler, & Zeithaml, 2001).

(1) Absorptive capability

The most widely accepted definition of absorptive capability is the ability of an enterprise to identify, evaluate, digest and apply new external knowledge (Cohen & Levinthal, 1990). The ability of a firm to identify and absorb new valuable external information and apply it for business purposes is largely based on prior knowledge (Wang & Ahmed, 2007).

Based on Cohen and Levinthal's definition (Cohen & Levinthal, 1990) and from the perspective of dynamic capability, some scholars define absorptive capability as the practices and processes for enterprises to acquire, digest, transform and apply knowledge and thus generate dynamic capability (Zahra & George, 2002). However, whether an enterprise has the ability to apply the external knowledge it acquires remains unclear, that is what the scholars failed to consider when defining the absorptive ability (Cohen & Levinthal, 1990). Therefore, the absorptive ability is divided into the potential and actual capability. The capability to acquire and absorb the external valuable knowledge is defined as the potential absorptive capability,

while the capability to transform and apply the acquired and absorbed knowledge is defined as the actual absorptive capability.

(2) Adaptive capability:

The adaptive capability refers to the capability of an enterprise to identify and exploit the new opportunities in dynamic market. Enterprises with highly adaptive capability often keep a close watch on the market dynamics, customer needs and competitors' strategies based on which the enterprise can reasonably reconfigure their resources to quickly respond to the fast changing market environment (Wang & Ahmed, 2007).

In evaluating the importance of existing or potential capabilities, what interests the managers most is that to what extent these capabilities will bring sustained competitive advantage. However, many enterprises face internal challenges and difficulties in identifying and evaluating their capabilities and advantages. For example, a large building materials manufacturing company attempts to identify their core capabilities so as to formulate the strategic plans. However, a few weeks later, the company put the efforts on hold because the managers had difficulty identifying the company's capabilities, or even were unable to determine which capabilities are most important. Therefore, we propose four characteristics "tacit understanding, activation level, embeddedness and consensus", according to which the managers can determine whether a capability is a source of sustainable competitive advantage and identify areas where these capabilities may be particularly weak (King, Fowler, & Zeithaml, 2001).

2.2 Dynamic capabilities theory

The resource-based theory is the theoretical source of the generation of dynamic capability, and the dynamic capability theory is an extension of the resource-based theory. The integration of dynamic capability theory and resource-based theory plays a key role in how enterprises adapt to the rapidly changing external environment.

2.2.1 Concept definition of dynamic capability

Teece and Pisano were the first scholars to put forward the concept of dynamic capability and defined it as the ability of a company to cultivate, integrate and reallocate internal and external resources in order to cope with the rapidly changing environment. They also systematically elaborated the connotation and basic theoretical framework of dynamic capability (Teece, Pisano, & Shuen, 1997). The later researchers gradually enrich and improve the theory, and

have made a number of achievements in the research of the connotation, characteristics of dynamic capabilities and its relationship with competitive advantage.

In order to better understand the nature of dynamic capabilities, some scholars have made further research on the connotation and characteristics of dynamic capabilities from the angles of organizational practices and processes (Eisenhardt & Martin, 2000), existence conditions (Zollo & Winter, 2002) and organizational knowledge. Some scholars believe that dynamic capabilities are the source of competitive advantage (Teece, Pisano, & Shuen, 1997). Others opposing this view believe that dynamic capability itself is not the source of sustained competitive advantage, but the resources reconfigured by dynamic capability are the potential source of competitive advantage (Eisenhardt & Martin, 2000). Dynamic capability is a theory that studies competitive advantage in a rapidly changing environment (Denrell & Powell, 2018).

2.2.2 The characteristics of dynamic capability theory

(1) Dynamic capability theory is open to change. Based mainly on resource-based theory, the dynamic capability theory has also absorbed many viewpoints of core capability theory. Therefore, there are many similarities between dynamic capability theory and core capability theory in theoretical framework. But dynamic capability is the ability to change the enterprise's capability, and thus it is open to innovation. Although the dynamic capability theory lays stress on the importance of the unique organizational characteristics of enterprises, it keeps an open mind towards innovation and new ideas. The innovative learning that enables enterprises to renew strategic mindsets is explorative learning capability.

(2) Dynamic capabilities are complex and therefore difficult to replicate. The dynamic capabilities are based on the organizational process in changing environment. Meanwhile, the processes of enterprise at various levels are closely connected and a slight change in one part may affect the situation as a whole and therefore the dynamic capabilities are imperfectly imitable.

2.2.3 Dimensions of dynamic capability

(1) The dynamic capability is divided into several levels. Collis was the first to propose the hierarchical view of enterprise capability. He divided enterprise capability into three levels: the first level capabilities are basic capabilities that supports the basic enterprise operation including enterprise production capability, logistics transportation and distribution capability, and marketing capability; the second level capabilities consist of learning capability, R&D

capability, innovation capability, flexible and adaptive capability; the third level capabilities include enterprise culture, enterprise spirit, organizational practices, and entrepreneurship and management capability. The second and third level capabilities belong to dynamic capabilities (Collis, 1994).

Based on Collis' classification of organizational capability, Winter puts forward a hierarchical model regarding dynamic capability. He believes that the capabilities that can only guarantee the survival of enterprises is zero order capability, which is in answer to the first level capabilities in Collis' classification; the ability to adapt to the environment is the first order ability; the enterprise's ability to innovate is second order ability. The first-order ability and the second-order ability are corresponding to the second level and third level capabilities in Collis' classification. Winter thinks that they are dynamic capabilities in a narrow sense (Winter, 2003).

Cepeda and Verab (2007) thinks that enterprise capability can be classified into operation capability that guarantees the survival of enterprises and the higher-level capabilities that can improve the enterprise's operation capability. In the dynamic environment, the enterprises should focus on developing high-level capabilities in order to maintain their core capability.

Based on the classification of dynamic capability in narrow sense, Eisenhardt and Martin (2000) point out that in order to quickly adapt to the fast changing internal and external environment, enterprises should develop dynamic capabilities, including the ability of reconfiguration, acquisition, integration and discharge.

Wang and Ahmed hold that in a broad sense, enterprise dynamic capability is a hierarchically structured concept, including adaptive capability, absorptive capability and innovation capability. They think that the enterprise's resources are zero-order capability, survival ability is first-order capability, core capability is second-order capability, while the ability of renewal, adjustment, integration, reconfiguration and reengineering and environmental adaptability are third order capabilities (Wang & Ahmed, 2007).

(2) Corporate dynamic capability strategy integration model (3P model).

Some scholars believe that dynamic capabilities are capable of integrating and reconstructing the existing resources and capabilities (see Figure 2.1).

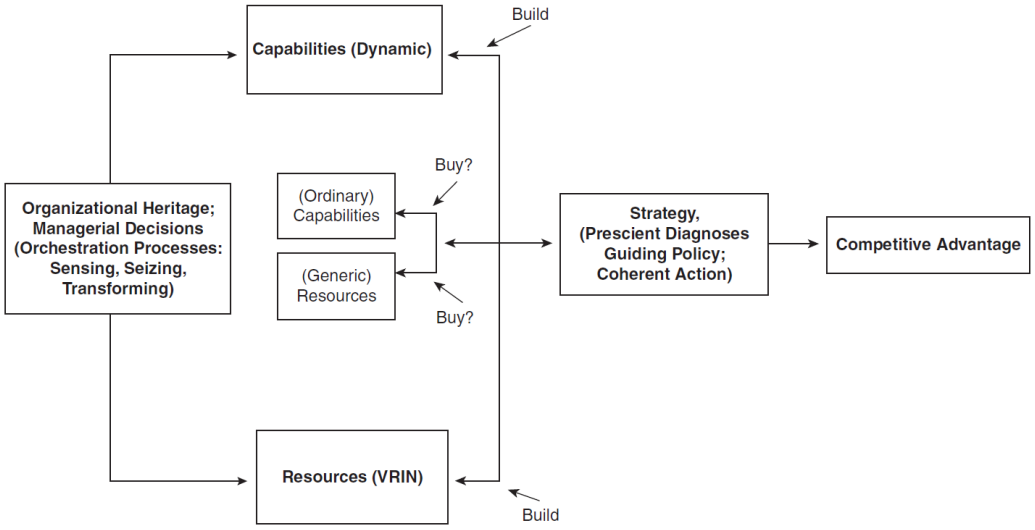

Figure 2.1 Logical structure of the dynamic capabilities paradigm

Source: Teece (2014)

Some scholars divide dynamic capability into three dimensions (Teece, Pisano, & Shuen, 1997):

①Position. It refers to the combination of various resources of an enterprise, which can be divided into internal positioning and external positioning. The internal positioning includes enterprise reputation, unique technology, organizational structure, supplementary assets, intellectual property right and customer base; the external positioning includes the industry structure, competitive environment and market position.

②Path. It refers to the process of enterprise development, including enterprise practices, path dependence, technological opportunities and organizational learning.

③Process. It refers to the organizational process related to coordination, integration, learning, creation and reconfiguration.

(3) The dual process model of enterprise dynamic capability.

Some scholars believe that the ability paradox affects the adaptability of enterprises. The ability paradox is divided into three dimensions: path dependence, structural inertia and psychological commitment analysis. The path dependence refers to the enterprise's old successful experience and routines; the structural inertia means that the enterprise obstinately follows old successful experience and rules and resists changes; psychological commitment analysis is concerned with the group collective decision-making and the assertion of organization's vanity and face. Schreyogg and Kliesch-Eberl pointed out that organizational capability should be constantly improved and elevated to core and dynamic capabilities. To add

dynamic nature to organizational capability needs two processes including capability practice and dynamic adjustment (Schreyögg & Kliesch-Eberl, 2007).

Based on system theory, Luhmann (1996) maintains that the enterprise should be aware of the potential risks that come with the old development mode. The dual process model considers that the core element of the dynamic capability of an enterprise is to keep close watch on environment changes and make adaptive adjustment according to the three dimensions of ability paradox so as to improve enterprise capability.

(4) The dynamic capability learning model

The learning model of organizational dynamic capability can be divided into double loop learning model (Argyris, 1976) and explorative learning model (March, 1991). When the internal and external environment is under dramatic changes or the market competition is exceedingly fierce, the enterprise should adopt the double loop learning model to break the old rules and regulations and explore the new development strategies (March, 1991).

The learning methods of organizational dynamic capability include planned learning and unplanned learning, or more specifically trial and error, experiment and improvisation (Miner, Bassoff, & Moorman, 2001). Zahra et al. point out that the more mature an enterprise is, the less improvised learning and the more experimental learning it will use, while the frequency of use of trial and error learning method is from high to low (Zahra, Sapienza, & Davidsson, 2006).

Zollo and Winter (2002) hold that the organizational dynamic capability can be improved through experience accumulation, knowledge representation and knowledge codification. The key factors affecting the dynamic capability of enterprises include the reconstruction of competitiveness, R&D capability, resource reallocation and process reengineering. Learning is the driving force to improve the dynamic capability while learning mechanism plays a key role in translating knowledge into dynamic capability. The learning mechanism model of enterprise dynamic capability is constructed based on phased organizational knowledge learning and the learning mechanism of dynamic capability.

2.2.4 Factors influencing of the dynamic capability

(1) Internal factors. Teece, Pisano, and Shuen (1997) thinks that three internal factors affecting the formation and development of dynamic capability include “process—potential—path". The various strategic decisions made by enterprise managers in different market environments affect the formation of dynamic capabilities of enterprises. Entrepreneurship is an important factor affecting the dynamic capability of enterprises (Subbanarasimha, 2001). Through empirical

research, Tripsas and Gavetti believe that management awareness, especially the common dominant logic of managers, plays an important role in the formation and development of enterprises' dynamic capabilities, which can limit and guide enterprises' activities in the new environment (Tripsas & Gavetti, 2000). Gavetti and Levinthal believe that managers' cognition and perceptions determine the knowledge that constitutes the dynamic capabilities of enterprises (Gavetti & Levinthal, 2000). Brown and Eisenhardt found that when the external environment changes, the enterprises that depend more on organizational inertia usually do not have strong competitiveness (Brown & Eisenhardt, 1995). Christensen found that when engaging in casually ambiguous business activities, enterprises often cannot quickly respond to the changes of external environment (Christensen, Bohmer, & Kenagy, 2000). Many scholars (Galunic & Rodan, 1998; Eisenhardt & Martin, 2000; Zollo & Winter, 2002) believe that the important influencing factor of organizational dynamic capability is organizational knowledge and how quickly it is updated.

(2) External factors. The external factors affecting enterprises' dynamic capability include ecological environment and social environment. Environmental changes can result in enterprises reallocating their resources, leading to the performance differences among enterprises (Cockburn, Henderson, & Stern, 2000). When the external environment is under drastic changes, enterprises need to adjust their business strategies and produce better products and services to meet market needs. Therefore, harsh environment helps enterprises to form dynamic capability (Zahra, Sapienza, & Davidsson, 2006; Wang & Ahmed, 2007; Barreto, 2009). When the external institutional environment changes, the enterprise needs to adjust its economic behaviors, which more or less restricts or changes the enterprise’s dynamic capabilities of enterprises.

2.2.5 Measurement of dynamic capability

(1) Single dimension measurement is to measure dynamic capability from single variable. Deeds, Decarolis, and Coombs (2000) measure the dynamic capability according to how many types of new products an enterprise has developed and produced. Griffith and Harvey (2001) think that the factors influencing dynamic capability also include the decision-making capability of partners. Some scholars argue that apart from learning capability, resource integration capability and environmental adaptability, resource reconfiguration capability is also influencing factor of dynamic capability (Wu, 2007). Cepeda and Verab (2007) consider that from the angle of knowledge management, knowledge restructuring ability can be used to

measure enterprise dynamic capability.

(2) Multi-dimensional measurement is to measure dynamic capability from multiple variables. Some scholars propose that the enterprise dynamic capability can be measured from five aspects including organizational reform, organizational flexibility, market potential, organizational learning and strategic isolation. Easterby-Smith and Prieto (2008) measure dynamic capability from three aspects including knowledge synthesis, knowledge generation and knowledge restructuring. Danneels (2008) believes that the ability of enterprises to identify and enter new markets and the ability of enterprises to identify and acquire new technologies are two dimensions used to measure dynamic capabilities. Liao, Kickul, and Ma (2009) believe that the enterprise dynamic capability should be measured from opportunity recognition capability and opportunity exploitation capability. Some scholars regard the capabilities of new product development, new process development, creativity and market disruption as the dynamic capabilities of enterprises (Chandler, McKelvie, & Davidsson, 2009).

2.2.6 Relationship between dynamic capability and competitive advantage

Teece, Pisano, and Shuen (1997) studied the attributes of dynamic capability from replicability and imitability and concluded that it is difficult to imitate capabilities with tacit knowledge and history-dependent nature. On this basis, they put forward that the history-dependent and path-dependent dynamic capabilities are the source of competitive advantage.

Eisenhardt and Martin (2000) believe that although the dynamic capabilities of each enterprise are largely unique, they share some common features. Each enterprise has its own means and historical path to cultivate dynamic capability, but the industry may formulate the standards for some dynamic capabilities so that all enterprises strive to meet these standards. When the dynamic capabilities of all enterprises are without much difference, they will be no longer the source of sustained competitive advantages.

With the development of the times, it is no longer applicable to obtain lasting competitive advantages only through the establishment of key resources, and the importance of dynamic capabilities is becoming more and more prominent. Based on the current changes and development, the imitability and irreplaceability of the resources are generally weakened. If the community health service centers want to obtain lasting competitive advantage, it must give up the established static competitive advantage acquisition mode based on some resources, and obtain a sustainable competitive advantage from a dynamic perspective. The establishment and application of the core capability has become an important way to obtain the competitiveness

of the community health service center.

To successfully manage their own dynamic capabilities, community health service centers must first identify the resources and capabilities needed, and then update the existing resources to improve performance (Lin & Tsai, 2016). Dynamic capabilities can be a useful strategic framework for hospitals to seek competitive advantage in a competitively challenging and uncertain business environment. One of the key differences between ordinary and dynamic capabilities is that ordinary capabilities are relatively easy to imitate and therefore generally do not convey lasting competitive advantage. Taking an example in the hospital, training medical staff, routines, processes and techniques employed in the emergency department to achieve "home visit doctor" in a short time. It is a repetitive operational process, leading to a clearly defined task that can confer competitive advantage in weak competition, but in the long run will not save a hospital in a highly competitive market. It's too easy for others to copy. Therefore, hospitals must learn how to capture, process and understand their internal and external data (Agwunobi & Osborne, 2016).

2.3 Analysis on relevant concepts

The resource-based theory and the dynamic capability theory have been influential in the development of relevant theories in the strategic field and therefore are often cited (Lockett, Thompson, & Morgenstern, 2009; Kraaijenbrink, Spender, & Groen, 2010), but few studies have investigated how the resources or capabilities develop over time (Newbert, 2008; Laamanen & Wallin, 2009), especially the resources or capabilities in the traditional industrial enterprises with different conditions and constraints (Easterby-Smith & Prieto, 2008). The resources that can generate competitive advantage are usually difficult to identify. The resources analyzed by some empirical researches are the most identifiable, but may not be the most important (Lockett, Thompson, & Morgenstern, 2009).

Some qualitative studies focus on understanding where the capabilities come from (Felin & Foss, 2009). These studies try to understand why enterprises choose a certain development path (Laamanen & Wallin, 2009), how enterprises introduce dynamic nature into existing capabilities (Shamsie, 2009), and how organizations develop capabilities or resources that can generate competitive advantage (Smith & Prieto, 2008; Ambrosini, Bowman, & Collier, 2009). This is particularly important for enterprises operating in slow changing environment with few external shocks (Vergne & Durand, 2011). It is particularly important to examine how capabilities are developed and to what extent they belong to VRIO. For example, based on the

resource-based theory, is capability a contributing factor of competitive advantage (Arend & Bromiley, 2009; Cardeal & António, 2012)?

We adopt the definition of corporate competitive advantage, that is, the marginal competitors who can achieve balance between income and expenditure (Peteraf & Barney, 2003) can make more profits. If an enterprise can make net profits in a systematic and organized way, it has competitive advantage. Resource is defined as income, and capability is defined as the intermediate product between resource and competitive advantage. Therefore, to answer the researcher's research questions, we need to identify what kind of resources or capabilities the enterprise has, how the capabilities develop over time, and provide a more complex view. In terms of capability, understanding how enterprises develop it will enable us to better understand the resources developed by these enterprises (Cardeal & António, 2012).

Researches on dynamic capabilities (Teece, Pisano, & Shuen, 1997; Eisenhardt & Martin, 2000; Makadok, 2001; Zollo & Winter, 2002; Adner & Helfat, 2003; Helfat et al., 2007) attempts to explain how enterprises innovate their existing capabilities and resources to adapt to the changing business environment (Cardeal & António, 2012).

So far, the existing literature on dynamic capabilities mainly focuses on conceptual research, however the empirical analyses for these studies are rarely found (Ambrosini, Bowman, & Collier, 2009; Barreto, 2009; Wu, 2010). Even these rare empirical analyses usually do not point out the source of capability (Felin & Foss, 2009). The scarcity of researches on dynamic capabilities (Arend & Bromiley, 2009; Prieto, Revilla, & Rodríguez-Prado, 2009) has led to inconsistent definitions (Teece, Pisano, & Shuen, 1997; Eisenhardt & Martin, 2000; Winter, 2003; Zahra, Sapienza, & Davidsson, 2006; Wang & Ahmed, 2007; Døving & Gooderham, 2008; Barreto, 2009).

The dynamic capability theory and resource-based theory treat resources and capabilities differently. The dynamic capability theory (DCT) emphasizes the dynamic capabilities that can generate competitive advantage rather than resources because the value of resources tends to depreciate rapidly in the dynamic market environment (Collis & Montgomery, 2008). Resources are still important based on the premise that the owner of these resources has the capabilities to exploit and utilize them. However, it is still not clear whether all enterprises will use their resources in the same way. Enterprises can find solutions and achieve strategic goals by integrating these resources with internal knowledge. How to combine the existing resources efficiently is closely related to dynamic capabilities (Kay, 2010; Cardeal & António, 2012).

Possession of resources is important, but equally important is whether and how these resources can be exploited (Barney & Wright, 1998; Newbert, 2008). Capability is regarded as

"organizational structure (O)" in "VIRO", that is, how an enterprise exploit and utilize its resources (Cardeal & António, 2012).

2.3.1 Resources and competitiveness

(1) Resources are a collection of different kinds of elements that are necessary for enterprise operation and can bring profits to the enterprise. Some scholars believe that resources include assets, capabilities, organizational processes, enterprise characteristics (attributes), information resources and knowledge, which can be divided into three types: tangible (physical) capital resources, human capital resources and organizational capital resources (Barney, 1991).

(2) Competitiveness refers to the knowledge and skills that can effectively integrate and utilize resources to achieve the organizational goal.

(3) The relationship between resources and competitiveness. The material resources, financial resources, human resources, knowledge and intellectual resources, and social resources are collectively known as resource, which is static; capability is a resource-based dynamic factor that affects people's work efficiency. For the development of an organization, resources play a basic role while capability plays a pivotal role; resources and competitiveness are two different things and resources are not equal to competitiveness (Huang & Cao, 2016).

2.3.2 Competitiveness and competitive advantage

(1) Competitive advantage refers to factors that allow a company to stand out from its rivals. Competitiveness can be understood as a comprehensive capability or strength of competing with rivals. The competitive advantage actually reflects how strong the enterprise’s competitiveness is.

(2) Sustainable competitive advantage: Barney established the VRIO model regarding sustainable competitive advantage (Barney & Stewart, 2002). Different from Barney’s view of static resource characteristics, Rumelt, Schendel, and Teece (1991) believes that the isolation mechanism generated from some unique resources of an enterprise gives the enterprise competitive advantage, which makes it difficult for competitors to imitate or neutralize the advantage, Peteraf thinks that enterprises can adopt four kinds of strategies to gain competitive advantage, namely static resources strategy; heterogeneous resources strategy, ex ante competitive strategy; ex post competitive strategy.

2.3.3 The relationship between resources, capabilities and advantages

Resources can be transformed into unique capabilities; resources are not mobile among enterprises and difficult to imitate by competitors; these unique resources and capabilities are the source of sustainable competitive advantage of enterprises. Only the sustained competitive advantage constitutes the core capability.

If an enterprise can generate superior margins compared to its market rivals, we say it has a competitive advantage (Peteraf & Barney, 2003). Barney (1991) repeatedly emphasizes the concept of “resources package” (a collection of resources) in his VRIN theory, while VRIO theory focuses on whether and how the VRI resources can be effectively exploited. Therefore, although resources are valuable, rare and costly to imitate, if enterprises only possess small numbers of such resources, they cannot become source of competitive advantage (Barney & Stewart, 2002).

Compared with VRIN, Peteraf and Barney (2003) proposed that VRIO emphasizes how to transform resources into competitive advantage. If the owner of VRIN resources cannot effectively evaluate how exploitable these resources are or reasonably utilize them, they will not bring benefits to enterprises (Katkalo, Pitelis, & Teece, 2010). According to VRIO theory, resources can be transformed into competitive advantage through organizational structure (Barney, 1995, 1997). But what is "organizational structure"? The resource-based theory (RBT) does not propose and answer this question and thinks “organizational structure" is something else (Cardeal & António, 2012).

2.4 Research on the core capability with Chinese characteristics

2.4.1 The core capability of Chinese hospitals

The competitiveness of medical service, scientific research and financial management is the ordinary competitiveness of a hospital while core capability plays a crucial role and controls the whole situation. The core capability of the hospital refers to the distinctive and unique core capabilities developed by a hospital after long-term operation, which can give the hospital a sustained competitive advantage and distinguish the hospital from other competitors in the fierce market competition. Prahalad and Hamel (1990) believe that the core capability comes from the "accumulated knowledge in the organization". Any hospital with core capability must have a wealth of knowledge. The knowledge accumulated for a long time has formed a unique and manageable knowledge system.

Joseph Eugene Stiglitz, delivered a speech entitled "*Public Policy in Knowledge Economy*" in the Department of Trade and Industry and Economic Policy Research Center in London. He argued that "Some unwritten knowledge or tacit knowledge imperceptibly embedded in the minds of the employees of a firm is difficult to imitate by other firms, thus bringing the competitive advantage to the firm.

Therefore, people should be fully aware that the source of the hospital's competitiveness is not the number of beds or a particular technology, but a wealth of high quality and tacit knowledge. The hospitals with core capability can provide patients with more desirable and valuable services. The large public hospitals have strong core capability not only because of their high medical skills and first-class equipment, but because they can provide patients with high-value medical services with prices lower than competitors, which are unique and non-substitutable competitive advantage.

The rare and inimitable resources of a hospital are gradually developed from the hospital's unique path through history and particular technological reserves, which include the hospital culture, hospital management, and business operation. According to the equilibrium theory, the new medical entrants tend to duplicate all the resources and capabilities of the current hospitals in order to take their places. However, the hospitals with unique core capability are imperfectly imitable and irreplaceable.

Although the hospital can maintain its core capability for a long time, knowledge and skills will become outdated and obsolete if not updated. The core capability of hospitals is highly related to the development of medical science and technology. With the passage of time, the core capability of hospitals will experience dynamic changing process from creation, growth, maturation and decline.

Once the core capability is established, efforts must be made to consolidate and improve it. Otherwise it will be eroded and weakened by the fierce market competition and rapid development of technology. In order to maintain the sustainable competitive advantage, the hospitals must keep learning and innovation and reasonably configure the resources and capabilities according to the medical development trend and market needs, so as to improve the core capability and expand the competitive advantage (Nichani et al., 2017).

2.4.2 Core capability of community health service centers in China

What is the core capability of a hospital? It refers to the unique advantages that of a hospital. The core resources and capabilities that are unique or relatively monopolistic, have been

accumulated by the hospital for a long time, are integrated into the hospital's essence, and can create sustainable competitive advantages for the hospital. This advantage can be slightly different due to the different functions undertaken by the hospital.

(1) Basic principles of establishing core capability of community health service centers

Community health service centers are defined as public welfare institutions, which are not enterprises in the market. On the basis of realizing the goal of everyone that has access to primary health care process, CHSC shoulders the major mission of ensuring the health of the people and the country's primary medical care. Therefore, the model of complete marketization and complete welfare cannot be adopted in the reform of the medical system. The construction principle of its core capability cannot be equated with the "core capability of the company" under the market economy system.

(2) The basic elements of core capability of community health service centers

The academic community and managers have not reached a consensus on what constitutes core capability. As a matter of fact, all the elements that are unique to community health service centers and can defeat competitors constitute the core capabilities of the hospital.

Resources Including human resources, material resources, capital resources. Human resources which include the personal knowledge and skill level, overall quality, and structure of knowledge and skill of CHSC employees are the basis for the formation of core competitiveness. Core capability are also the category of knowledge. Its essence is the specialized knowledge accumulated in the hospital organization. And knowledge is a special resource, and people are its important carrier. Core capability can only be obtained through the learning and innovation of hospital staff. Therefore, the hospital's human resource is the foundation of forming the hospital's core capability. Material resources include the configuration of medical facilities and equipment, etc.

Service capability Including basic medical services and public health services.

The main embodiment of service capability is technical capability and service capability, including explicit technology in the form of core medical technology and general medical technology, which is the key to the formation of core capabilities.

Organizational culture Including spiritual culture and team culture. Hospital culture is the ideal belief, value orientation, moral standard and code of conduct shared by the hospital and its staff in medical work and hospital operation. It is the most precious spiritual wealth and intangible asset of the hospital, and it injects vitality into the construction of the core capability of the hospital. The renewal of value concept is the driving force for the continuous innovation of the core capability of the hospital. Only when hospital value concept keeps pace with the

development of medical science and technology, or even ahead of the current trend of medical science and technology, the core capability could maintain competitive advantages.

Management capability Including institutional policies, information technology and employee satisfaction. CHSC organize, motivate and control the operation management and research & development activities of the hospitals by implementing various regulations, policies and organizational systems. A good management system can effectively centralize all kinds of scattered human and technical resources to give play to the overall advantages of the hospital. Whether the information system is perfect or not directly affects the renewal of CHSC's core capabilities and the maintenance of competitive advantages. With the intensification of medical competition and the rapid development of science and technology, the life cycle of medical technology and methods is greatly shortened. Whether the hospital can timely obtain the latest medical technology and medical market information, and transmit and process it quickly and accurately within the organization is the premise of keeping the core capability of the hospital. Therefore, the improvement of hospital information system is an important guarantee to form core capability.

Dynamic capability It includes learning capability, innovation capability, integration capability and absorption capability. Community health service centers are a whole. In the face of fierce competition, in order to maintain their advantages, they must always maintain the coordination of various links and departments, such as medical care, operation and management should be maintained. The cultivation of core capability is a dynamic process, which is not static and will also be metabolized. If a hospital wants to maintain its core capability forever, it must build a "learning hospital". In such a hospital, members have abundant learning capability, so that they will constantly update the existing technology and develop more competitive new technology.

The cultivation of core capability reflects in the service efficiency of community health service centers, which is equivalent to the productivity of enterprises. It is reflected in the orderly and smooth development of normal work, effective response to emergencies, timely elimination of risk and failures, coordination of human and material resources, and the quality and quantity of "six-in-one" services. The strength of core capability of a community health service center mainly depends on its efficiency under the premise of medical operation and whether it can continue to run with high quality, high efficiency and low consumption. The inspection is based on whether it can provide residents with safe, effective, convenient and economic public health services and basic medical services, and can be recognized by the majority of residents.

Chinese unique social system and the organization mode determines the core capability of CHSCs, which is gradually developed in the process of providing public basic medical and public health services to residents, in order to fully realize the government's social management functions and win the recognition of community residents.

(1) Conceptual model of core capability of CHSCs based on dynamic capability

Chinese medical system is characterized by urban-rural dual structure. In rural areas, there are three-level medical system (county, township, village), while in urban areas, there are two-level medical system including high level large hospitals and community health centers. As the cornerstone of China's medical system in the past, the primary health system has been deeply eroded and disrupted by Chinese market-oriented system. In response, the Chinese central government has vigorously carried out health system reform and significantly increased investment in CHSCs in order to improve the access, quality and efficiency of primary health services (Bhattacharyya et al., 2011).

In order to make profits in fiercely competitive medical market, hospitals try every means to attract patients including upgrading facilities and equipment, expanding scale and taking good service attitudes towards customers and meanwhile provide flexible wages and benefits to recruit excellent medical talents. The advantages of doing this are to greatly shorten the patients' waiting time and improve the overall efficiency of health services. However, when the urban tertiary hospitals with sufficient high-quality medical resources are flooded by patients, the resource-strapped primary health centers are rarely visited, which exposes the problem of fairness, especially for patients who do not have high income and cannot afford to pay the medical services. Therefore, the Chinese government has stepped efforts to reform the primary health centers and some secondary hospitals established in the late 1990s in order to provide convenient and affordable primary health services for urban residents (Chinese City Community Health Service Beijing, 2007).

Patients' choice of community health services is mainly affected by the following factors: ①social demographic factors of patients, namely age, education background, medical insurance and the surveyed area; ②patients' evaluation of CHSC service: the convenience of medical service, the rationality of service pricing and the attitude of doctors towards patients. The survey shows that patients are satisfied with the convenience, waiting time and communication with doctors, but less satisfied with the medical costs, drug costs and medical equipment of CHSC. So it is suggested that the government and CHSCs should concentrate efforts to constantly improve the convenience, accessibility and doctors' attitude, and meanwhile ensure the

reasonable charge and reduce the medical costs (especially the drug costs) (Tang, 2013).

The main influencing factors of the core capability of CHSCs include: ①national policies; ②regional characteristics; ③resources, including tangible and intangible resources, capital, medical equipment, business area and medical environment, technological innovation, human resources, learning capability, management level, brand and culture; ④service capability, including technical capability and resident's satisfaction, integration capability. Technical capability can basically guarantee the provision of basic medical and public health services; residents' satisfaction includes the patients' evaluation of medical services, to what extent the medical services meet residents' needs and to what extent the medical policy benefits the people; integration capability includes two-way referral, outpatient expert consultation, family doctor; ⑤organizational structure; The reasonable organizational structure and scientific management are also important factors affecting the core competitiveness. Conceptual model of core capability of CHSC based on dynamic capability.

Figure 2.2 showed that, in order to meet the medical needs of community residents, it is necessary to properly use medical technology and knowledge, effectively communicate with patients, and constantly adapt to the changes of external environment (such as market-oriented medical service or medical reform) and internal environment and provide efficient and high quality medical service. CHSC's dynamic capability refers to whether the community health service centers have the ability to respond to the dynamic needs of the medical market and provide appropriate and effective medical services in a timely manner. The acquisition of CHSC's dynamic capability means that in a dynamic environment, CHSC can effectively acquire (absorb) and efficiently allocate (integrate) limited medical resources, establish a unique service brand, maintain and expand its competitive advantages and provide high-quality medical services. In the process of obtaining and allocating limited medical resources, it is necessary to use proper development model to provide suitable medical services. From the perspective of dynamic capability theory, this study constructs the dynamic capability model of CHSC.

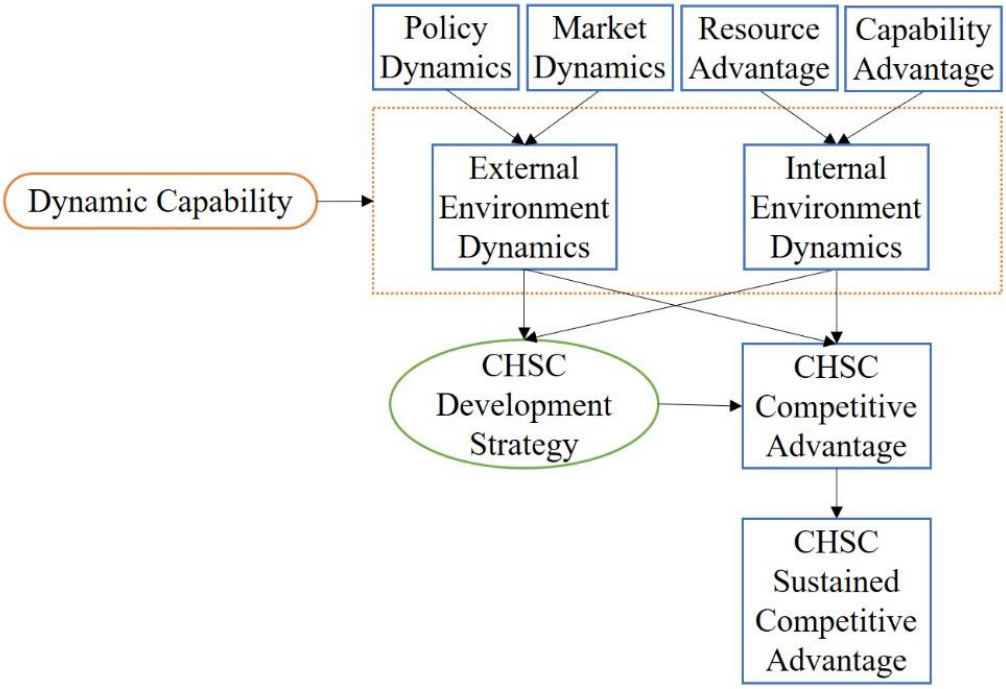

Figure 2.2 Conceptual model of core capability of CHSC based on dynamic capability

(2) Analysis on the elements of core capability of community health service centers in China

① CHSC environment. The CHSC environment is an external factor affecting the competitiveness of community health service centers, and the ability to adapt to the environment is an important element of the CHSC competitiveness. According to the analysis framework of organizational environment, environmental factors mainly include government policies, and use of health resources, social culture and education system.

②CHSC resources. It refers to the tangible resources such as human resources, financial resources, information equipment, medical equipment and other infrastructure and intangible resources such as customer resources, social relationship resources. The differentiated services and heterogeneous resources are key factors affecting the competitive advantage and core capability of CHSC.

③CHSC transformation tool. Transformation tool refers to the strategy and management capability of CHSC such as strategic internal management relationship, external cooperation relationship, marketing capability and its security system, as well as the hospital brand and culture. Transformation tools are used to integrate the CHSC resources and environmental factors to generate potential core capability and improve business performance. The performance of transformation tools is evaluated based on the transformation efficiency of

resources and environmental factors into competitive advantage and hospital performance.

④ CHSC potential competitiveness. Potential competitiveness refers to the technical potential, operation cost, medical quality of community health service center, and the competitive resources (funds, high-quality human resources, raw materials). These capability resources form the potential competitiveness of CHSC and the heterogeneous capability resources can bring competitive advantages to the community health service centers.

⑤CHSC performance. Competitive performance refers to the operating profits, market share, consumer satisfaction, profit and sales changes of community health service centers. Competitive performance is the ultimate goal of CHSC competition, the reflection of CHSC's competitive advantage, and the resource elements of a new round of competition. Therefore, it is an important part of the CHSC competitiveness.

⑥ Transformation process. It refers to the business process and management process through which the resources and environmental factors are transformed into potential competitiveness and competitive performance of community health service centers. In this process, multiple transformation processes possibly take place, which serve as the virtual carrier of transformation tools.

[This page is deliberately left blank.]

Chapter 3: Research Design and Methods

3.1 Research objects

This study used Cluster Sampling principle, 64 community health service centers in five administrative divisions (13 in Heping District, 19 in Tiexi District, 10 in Huanggu District, 12 in Shenhe District and 10 in Dadong District) were selected as the research objects.

All employees of each CHSC were selected, inclusion criteria as followed, ①the payroll employees by government & NOT by government, who sign a labor contract relationship with the CHSC; ② director of CHSC, practicing physician, practicing nurse, practitioner in preventive medicine, whose carrier in this position longer than 6 months; ③other workers who are able and willing to participate in this study.

3.2 Technical route

The technical route refers to the research plan that guides this research from topic selection, conceptualization to research conclusion. The research approach of this study is to find out the influencing factors relating to the research topic, and construct the conceptual model of CHSC core capability by extensively reviewing relevant literature and theories. Based on the Delphi expert consultation method, this study constructs the evaluation index system of CHSC's core capability. By designing questionnaire, collecting data, conducting statistical analysis, and using Amos software to establish the structural equation model, this study puts forward suggestions for how to develop CHSC's core capability.

The technical route of this study is shown in Figure 3.1.

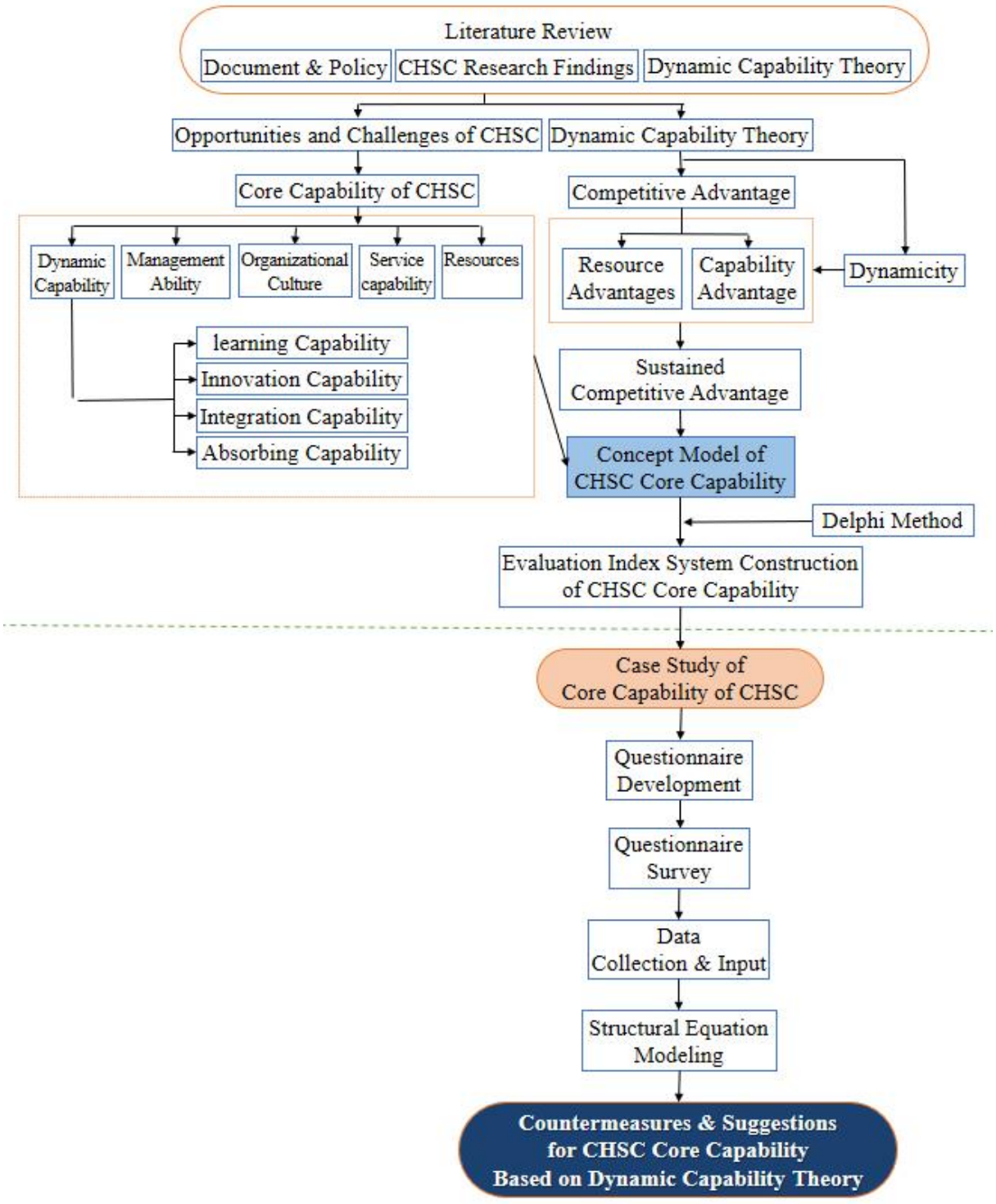

Figure 3.1 Technical route

3.3 Screening of evaluation index

The core capability and resource utilization are critically crucial for the survival and development of CHSC. Meanwhile, from the perspective of dynamic capability theory, medical

service ability and resource utilization can be considered as the measure of CHSC's competitive advantage. Under the background of healthy China strategy and primary health care reform, this study selects CHSC as the research objects. Based on the dynamic capability theory, core capability indicators of medical services could reflect the dynamic changes of external environment and internal resources. Meanwhile, considering the actual development of CHSC, this study should select the representative, operational indicators that can reflect the CHSC's value orientation.

The general idea of index selection is， based on the results of literature analysis, in-depth interviews with experts in related fields and group discussion for topic selection, to conduct the research from five dimensions, including resources allocation, service capability, organizational culture, management capability and dynamic capability based on the conceptual model regarding core capability of CHSCs in an attempt to establish the preliminary framework of evaluation index system for CHSC's core capability.

3.3.1 First round of expert consultation

(1) Make interview outline (see Annex A): after reading the relevant literature on resource-based theory, dynamic capability theory and core capability, we roughly put forward the influencing factors of core capability of community health service centers and make the interview outline. Five community health service centers were randomly selected and 8 managers and 12 medical and nursing staff were reviewed. The main questions include:

①Basic information of the community health service center includes: the population in the community, the scope of service; the current situation of community health service; personnel allocation and professional quality; equipment configuration; is there any special medical care service?

②Operation of community health service center: Has it become a national or provincial model community health center? What is the biggest achievement since its establishment? What do you think is the key to this achievement? Do you think the successful experience can be generalized to other regions? What is your vision for the development of the community health service center?

③The distinctiveness of the community health service center: What knowledge and skills should the core employees possess? Can employees use other resources instead?

④Difficulties and solutions in the operation of community health service center: What is the biggest problem encountered in the operation?

⑤The interviewees are asked to list the factors that may affect the core capability of community health service centers.

(2) Record of interview data: each new idea of the interviewees is encoded as an indicator, and those with different wording but similar meaning will be viewed as the same idea; those that have been mentioned only once by one or few interviewees will not be counted in.

3.3.2 Second round of Delphi expert consultation

(1) General information of experts

Forty health policy administrators, medical researchers and community health center managers are selected by random sampling. The selection criteria of experts are as follows: ① holder of vice-senior professional title or above, with at least eight years of experience in clinical medicine, preventive medicine, community management, health management, social medicine and health decision-making or nursing; ②having rich theoretical knowledge and practical experience in the professional field; ③Show willingness to complete two rounds of Delphi expert consultation. First, some experts are asked to report their knowledge about the core capability of community health service centers. Those who are unfamiliar with or have no knowledge about the core capability are excluded. Finally, 25 experts are selected as the participants of the study, including 12 experts in clinical medicine, 8 in preventive medicine, 2 in community health center management and 3 in community nursing (Table 3.1).

Table 3.1 General information of experts participating in Delphi consultation

Item		N	Ratio (%)
Age	40~45 Yrs	9	36.0
	46~50 Yrs	7	28.0
	51~60 Yrs	9	36.0
How long with this carrier?	10~20 Yrs	10	40.0
	>20~30 Yrs	12	48.0
	>30~40 Yrs	3	12.0
Education level	Doctor degree	10	40.0
	Master degree	9	36.0
	Bachelor degree	6	24.0
Professional title	Chief physician	6	24.0
	Professor	5	20.0
	Associate chief physician	5	20.0
	Associate professor	8	32.0
	professor of nursing	1	4.0
Administrative position	President	3	12.0
	Vice-president	2	8.0
	Director	9	36.0
	Member	4	16.0
	Others	7	28.0

(2) Delphi expert consultation

With "core capability", "dynamic capability", "community health services center" both in Chinese and in English as the key words, we searched Chinese and foreign database such as MEDLINE, Web of Science, SinoMed, CNKI, VIP and WanFang to collect, identify and sort out the literatures related to this research topic. On the basis of literature review and the results of the first round of interviews, combined with the national policy and meanwhile considering the actual situation of Shenyang city, the final consultation questionnaire for experts is determined (see Annex B).

The questionnaire was submitted to the selected experts by letter, face-to-face hand-delivery or e-mail and two rounds of consultation were conducted. After the first round of consultation, the opinions and suggestions given by experts will be sorted out and revised, then the second round of consultation will be conducted after data cleansing.

The questionnaire is divided into three parts: ①Introduction: introduce the research background, research purpose and significance of the study; ②expert information; ③all indicators evaluating core capability of community health service center, including organizational resources, service ability, organizational culture, management capability, dynamic capability (innovation capability, learning capability, integration capability, absorptive capability), as well as the second level indicators and third level observable indicators. The importance of each indicator is rated by a 5-point Likert scale, with “5” to “1” representing extremely important, important, neutral, unimportant and extremely unimportant respectively. A semi-closed questionnaire is used so that experts can give their opinions or suggestions in comment column besides each item; Indicators whose importance is rated as neutral or above are included. The collected data were input into EpiData, SPSS, AMOS for statistical analysis, and the measured variables are described using mean ± standard deviation. The recovery rate of the questionnaire is used to measure the participation enthusiasm of experts; the authority coefficient (Cr) is used to measure the authority degree of the experts, and the variation coefficient and Kendall's coefficient of concordance are used to describe the consensus degree of experts on various indicators. In case of $P < 0.05$, the difference is statistically significant.

(3) Construction of evaluation index system for core capability of community health service centers

On the basis of the first round of expert consultation, the same or similar indicators will be merged, and the indicators that are not important and extremely unimportant to the core capability will be deleted. The questionnaire will be redesigned for the second round of expert consultation. All the indicators are rated according to their importance, operability and sensitivity and the fuzzy expert evaluation matrix is used to calculate score and assign weight for each indicator, construct the evaluation index system for core capability of CHSC.

(4) Enthusiasm and authority of experts

The experts' enthusiasm is measured by the recovery rate of the questionnaire, and the effective recovery rates of the two rounds of questionnaires are 100%, both more than 70%, indicating that the experts have high enthusiasm to participate in the research and answer the questions earnestly; the experts’ familiarity coefficient (Cs) is 0.852, the coefficient of determination (Ca) is 0.960, and the authority coefficient (Cr) is 0.906 (when $Cr \geq 0.7$, the authority coefficient is considered to be acceptable). It can be seen that the experts in this study show high authority and the results are reliable.

(5) Consensus degree of experts’ opinions

The consensus degree of experts' opinions reflects the extent to which the experts participating in the consultation are divided over the rating of indicators, which is usually measured by the coefficient of variation (Cv) and the Kandall coefficient of concordace (W). In this study, the coefficient of variation of each indicator in the second round of consultation ranges from 0.000 to 0.218 (see Table 3.2), all less than 0.250, indicating that experts' opinions are concordant. The Kandall coefficient of concordance (W) is 0.264, $P < 0.001$, meaning the difference is statistically significant.

(6) Weight of all levels of indicators

This study uses weight to reflect the importance of the index. The superiority chart method is used to calculate the weight of the first, second and third-level indicators, and the continued product method is used to calculate the combined weight of indicators. After the index grading, the weight assignment of the superior indicator will have an impact on its subordinate indicator. This study uses the product of the weight of each index and the weight of the superior index to eliminate the impact. Meanwhile the weight and combined weight are affected by the number of indicators at the same level. In order to easily compare the weight of all indicators, the product of the combined weight and the number of indicators at the same level is used to balance the weight of each index. The importance, coefficient of variation, weight and combined weight of all levels of indicators are shown in Table 3.2.

Table 3.2 Coefficient of variation, weight of index

index			weight of index significance ($\bar{x}\pm s$, score)	Coefficient of Variation	weight	Weight Optimization Combination
A Resources			4.60±0.50	0.109	0.080	0.080
	A1 Human Resource		4.84±0.37	0.077	0.333	0.080
		A11 % of Staffs with Bachelor Degree and up	4.84±0.47	0.098	0.333	0.333
		A12 % of Staffs with Intermediate Title and up	4.76±0.44	0.092	0.111	0.111
		A13 Doctor-Nurse Ratio	4.96±0.20	0.040	0.556	0.555
	A2 Material resources		4.72±0.46	0.097	0.111	0.027
		A21 High-value equipment Number	4.28±0.54	0.127	0.040	0.022
		A22 Equipment of clinical diagnosis and treatment	4.88±0.44	0.090	0.360	0.200
		A23 Auxiliary examination equipment	4.64±0.57	0.123	0.120	0.067
		A24 Public health infrastructure	4.80±0.41	0.085	0.200	0.111
		A25 Business premises areas & Property right	4.84±0.37.	0.077	0.280	0.155
	A3 Capital resources		4.92±0.28	0.056	0.556	0.133
		A31 Are training expenses spent to improve the quality and ability of employees?	4.68±0.48	0.102	0.111	0.185
		A32 Is there any investment in technological innovation?	5.00±0.00	0.000	0.445	0.742
		A33 The proportion of CHSC's special fund input in the total income	5.00±0.00	0.000	0.445	0.742
B Service Capability			4.96±0.20	0.040	0.360	0.360
	B1 Public Health Service		4.80±0.41	0.085	0.250	0.180
		B11 Residents' Health Records Establishment	4.60±0.58	0.126	0.172	0.344
		B12 Immunization And Vaccination	4.16±0.62	0.149	0.047	0.094

		B13 Childcare	4.52±0.71	0.158	0.110	0.220
		B14 Maternity Care	4.48±0.71	0.159	0.078	0.156
		B15 Reporting And Handling of Infectious Diseases and Public Health Emergencies	4.64±0.49	0.105	0.203	0.406
		B16 Healthcare Education	4.56±0.71	0.156	0.141	0.282
		B17 Health Management of the Aged	4.96±0.20	0.040	0.234	0.468
		B18 Management of Severe Psychosis Patients	4.04±0.68	0.168	0.156	0.312
	B2 Basic Medical Service		4.92±0.28	0.056	0.750	0.540
		B21 Diagnosis and treatment of common and frequently occurring diseases	5.00±0.00	0.000	0.310	1.395
		B22 Community emergency rescue	4.60±0.70	0.153	0.083	0.374
		B23 Chronic disease treatment	4.96±0.20	0.040	0.250	1.125
		B24 Home visit, referral service	4.56±0.71	0.156	0.028	0.126
		B25 Rehabilitation Services	4.92±0.40	0.081	0.167	0.752
		B26 Formal Traditional Chinese Medicine Care	4.92±0.28	0.056	0.167	0.752
C Organizational Culture			4.60±0.50	0.108	0.080	0.080
	C1 Spiritual Culture		4.12±0.44	0.106	0.250	0.040
		C11 Core Values	4.72±0.54	0.114	0.250	0.125
		C12 Mission and Vision	4.84±0.47	0.097	0.750	0.375
	C2 Group Culture		4.80±0.41	0.085	0.750	0.120
		C21 Strategic Orientation	4.52±0.60	0.129	0.250	0.375
		C22 Coordination and Integration	4.68±0.56	0.118	0.750	1.125
D Management Capability			4.80±0.41	0.085	0.200	0.200
	D1 Institutional Policy		4.88±0.33	0.067	0.445	0.267

		D11 Institutional Policy	4.88±0.33	0.067	1.000	0.445
	D2 Information Technology Application		4.88±0.33	0.067	0.445	0.267
		D21 IT Infrastructure	4.92±0.28	0.056	0.313	0.557
		D22 Internal Electronic Integration	4.92±0.28	0.056	0.313	0.557
		D23 External Electronic Integration	4.92±0.28	0.056	0.313	0.557
		D24 Development of Information Technology	4.84±0.37	0.077	0.063	0.112
	D3 Employee Satisfaction		4.76±0.44	0.092	0.111	0.067
		D31 Satisfaction with The Overall Development Prospect of CHSC	5.00±0.00	0.000	0.310	0.206
		D32 Satisfaction with The Working Atmosphere of CHSC	4.64±0.49	0.106	0.139	0.093
		D33 Satisfaction with Personal Development Prospects	4.72±0.46	0.097	0.250	0.167
		D34 Satisfaction with the Communication Channels of CHSC	4.60±0.58	0.125	0.083	0.055
		D35 Satisfaction with Performance and Pay of CHSC	4.52±0.82	0.182	0.028	0.019
		D36 Satisfaction with Job Stress	4.68±0.48	0.102	0.194	0.129
E Dynamic Capability			4.92±0.28	0.056	0.280	0.280
	E1 Learning Capability		4.96±0.20	0.040	0.438	0.491
		E11 Discovery capability	4.44±0.77	0.173	0.078	0.273
		E12 Invention capability	4.00±0.87	0.217	0.016	0.056
		E13 Selecting capability	4.52±0.59	0.130	0.110	0.385
		E14 Executive capability	4.80±0.50	0.104	0.172	0.603
		E15 Reflective capability	4.40±0.58	0.131	0.047	0.165
		E16 Knowledge acquiring capability	4.92±0.40	0.081	0.234	0.820
		E17 Knowledge output capability	4.84±0.47	0.098	0.203	0.711

	E18 Knowledge base building capability	4.64±0.57	0.123	0.141	0.494
E2 Innovation Capability		4.76±0.60	0.125	0.313	0.351
	E21 Market Innovativeness	4.12±0.73	0.176	0.020	0.044
	E22 Process Innovativeness	4.76±0.52	0.110	0.224	0.491
	E2-3 Behavioral Innovativeness	4.72±0.54	0.115	0.184	0.403
	E24 Strategic Innovativeness	4.84±0.47	0.098	0.265	0.581
	E25 Technology Innovativeness	4.68±0.56	0.119	0.143	0.313
	E26 Exploitative Innovation	4.48±0.82	0.184	0.082	0.180
	E27 Exploratory Innovation	4.48±0.82	0.184	0.082	0.180
E3 Integration Capability		4.64±0.49	0.105	0.188	0.211
	Integrated Care Organization	4.88±0.44	0.090	0.102	0.134
	Remote Consultation	4.72±0.54	0.114	0.061	0.080
	Human Resource Integration	4.92±0.40	0.081	0.204	0.268
	Item Resource Integration	4.92±0.40	0.081	0.204	0.268
	Information Resource Integration	4.92±0.40	0.081	0.204	0.268
	Service Process Integration	4.92±0.40	0.081	0.204	0.268
	Resource Reconstruction	4.60±0.58	0.125	0.020	0.026
E4 Absorptive Capacity		4.36±0.49	0.112	0.063	0.071
	Potential Absorptive Capacity	4.24±0.52	0.123	0.250	0.032
	Realized Absorptive Capacity	4.88±0.44	0.090	0.750	0.095

3.4 Questionnaire design

Based on the index system constructed for CHSC's core capability, and according to the suggestions of experts and the classic questionnaire retrieved from relevant literature, we design the survey questions and observed variables to form the questionnaire (see Annex C).

The questionnaire is divided into eight parts.

The “Introduction” includes informed consent form and instructions on how to fill in the questionnaire.

The first part presents the general information. (1) Basic information of the respondents (Q.1-Q.10), including age, gender, occupation, working years, job department, education level, professional title, administrative position, monthly income; (3) basic information of CHSC (Q.11-Q.14), including sponsor of the CHSC, whether it is included in the designated institutions of medical insurance, the total population of registered residence in surveyed community, the actual number of community residents served by CHSC (including the flowing population).

The second part describes the current situation of CHSC’s organizational resources. (1) human resources (Q.15-Q.18) mainly include CHSC’s staff composition, professional title, education level, and whether to share human resources with Grade 3 first class hospitals; (2) material resources (Q.19-Q.28) mainly include the service area of CHSC (excluding affiliated hospitals), the ownership of service building, number of large equipment in service, clinical diagnosis and treatment equipment configuration, auxiliary examination equipment, the configuration of the public health service equipment, the architecture of clinical departments, the setting of prevention and health departments, current situation of medical technology and other departments, whether medical resources are shared with the Grade 3 first class hospitals; (3) capital resources (Q.29-Q.36): the total income of CHSC every year, the special subsidy from the local government, the proportion of special financial funds to the total income, training expenses spent to improve the quality and ability of employees, scale of investment in equipment to improve service quality and efficiency, whether to invest in information network construction to realize hospital digitalization, whether to invest in infrastructure for strategic assets such as marketing, and whether to invest in technological innovation.

The third part is about service capability (Q.37-Q.63).

The fourth part is about organizational culture (Q.64-Q.69).

The fifth part is about management capability: (1) medical policy (Q.70-Q.79); (2)

application of information technology (Q.80-Q.87).

The sixth part is about dynamic capability. (1) learning capability (Q.88-Q.103); (2) innovation capability (Q.104- Q.129); (3) integration capability (Q.130-Q.149); (4) absorption capability (Q.150- Q.155).

The seventh part is about employee satisfaction (Q.156-Q.173).

3.5 Empirical study on the community health service center in Shenyang

3.5.1 Training for research team

Four groups tasked with questionnaire survey are established, each consisting of one teacher and two graduate students. I am responsible for training investigators and implementing the survey procedures. During the training, I clearly explain the instructions on how to fill the questionnaire and how to accurately understand the meaning of each question designed for the questionnaire.

3.5.2 Field questionnaire survey

Through cluster sampling, 64 community health services centers in five districts of Shenyang city are selected as the research objects.

In the first round, 1895 questionnaires were sent out and 1865 valid questionnaires were retrieved for data analysis and exploratory factor analysis. Specifically, the number of valid questionnaires recovered 457 (13 CHSCs in Heping District), 538 (19 CHSCs in Tiexi District), 274 (10 CHSCs in Huanggu District), 367 (12 CHSCs in Shenhe District) and 229 (10 CHSCs in Dadong District) respectively (see Table 3.3).

In the second round, 400 questionnaires were sent out, 381 were recovered, and 358 valid questionnaires were used for confirmatory factor analysis.

From November 2020 to February 2021, four survey groups conducted field investigations in 64 CSHCs, each with two tasks: ① conducting a separate interview between the leader of survey team and the director of CSHC; ② all CSHC's staff is asked to finish the questionnaire.

Table 3.3 Number of recovered questionnaires

District (Code, Num. of CHSC)	Abbr.	Name of CHSC	Questionnaires	
			Hand out	Withdraw valid
Heping District (H,13)	SSWS	ShenShuiWan CHSC	25	25
	CBS	ChangBai CHSC	31	31
	XTS	XiTa CHSC	45	45
	BSS	BeiShi CHSC	54	54
	XHS	XinHua CHSC	57	57
	NHS	NanHu CHSC	29	27
	NZS	NanZhan CHSC	35	34
	NSCS	NanShiChang CHSC	14	14
	HHXZS	HunHeZhanXi CHSC	12	12
	TYJS	TaiYuanJie CHSC	37	37
	JXS	JiXian CHSC	35	35
	HHWS	HunHeWan CHSC	51	51
	MLWS	MaLuWan CHSC	35	35
	Subtotal		460	457
Tiexi District (T,19)	XSS	XingShun CHSC	20	20
	LGS	LuGuan CHSC	24	24
	WGS	WeiGong CHSC	28	27
	JHS	QiHong CHSC	30	29
	QGS	QingGong CHSC	49	49
	GRCS	GongRenChun CHSC	29	29
	LKS	LingKong CHSC	32	32
	DQS	DaQing CHSC	19	19
	QXS	QiXian CHSC	26	26
	DGS	DuGong CHSC	34	34
	XHS	XingHua CHSC	18	18
	KMHS	KunMingHu CHSC	29	29
	QLS	QiLu CHSC	15	15
	QGSS	QiGong CHSC	25	25
	ZGS	ZhongGong CHSC	20	19
	ZJS	ZhaiJia CHSC	39	39
	YFS	YunFeng CHSC	58	58
	XGS	XingGong CHSC	20	20
	BYXCS	BeiYiXinChun CHSC	26	26
	Subtotal		541	538

Huanggu District (G,10)	MLS	MingLian CHSC	20	20
	TWS	TaWan CHSC	14	12
	LJS	LongJiang CHSC	41	41
	BTS	BeiTa CHSC	40	30
	YMS	YaMing CHSC	58	58
	KSS	KunShan CHSC	25	25
	HHS	HuaiHe CHSC	21	20
	SDQS	SanDongQiao CHSC	15	15
	SQS	ShouQuan CHSC	23	23
	XGS	XiangGong CHSC	30	30
	Subtotal		287	274
Shenhe District(S,12)	DLS	DongLing CHSC	38	38
	ZJLS	ZhuJianLu CHSC	25	25
	FYTS	FengYuTan CHSC	42	42
	FLS	FengLe CHSC	49	41
	DNS	DaNan CHSC	21	21
	QYS	QuanYuan CHSC	19	19
	SDMS	ShanDongMiao CHSC	32	32
	NTS	NanTa CHSC	31	29
	DXS	DaXi CHSC	12	12
	HCS	HuangCheng CHSC	58	58
	XBZS	XinBeiZhan CHSC	33	33
	Subtotal		377	367
Dadong District (D,10)	ETS	ErTaiZi CHSC	21	21
	QJS	QianJin CHSC	16	16
	LSS	LiaoShen CHSC	38	38
	WQS	WanQuan CHSC	12	12
	DBS	DaBei CHSC	32	32
	WGS	WenGuan CHSC	31	31
	DZS	DongZhan CHSC	20	20
	CAS	ChangAn CHSC	19	19
	JQS	JinQiao CHSC	25	24
	XDS	XinDong CHSC	16	16
	Subtotal		230	229

3.5.3 Data input and processing

Each survey group is required to input and process their own collected data. According to double blind rule, two members in each group input the same whole set of data into EpiData 3.1, and then the leader of each group checks whether there are any errors or mismatch between the two set of input data. After the errors are corrected, if any, the original data is sealed.

3.5.4 Quality Control

In the stage of research design, the relevant literature is systematically reviewed and studied to clarify the concepts and research methods involved in the research. In the stage of data collection, the data shall be checked on the spot in strict accordance with the data inclusion and exclusion criteria, and those questionnaires with omissions and errors shall be filled in again. In the data entry and analysis stage, all data are input into EpiData3.1 software and cross-checked by two persons.

3.6 Statistical analysis - structural equation model

SPSS 21.0 software is used to analyze the research data and conduct exploratory factor analysis. Based on the dynamic capability theory, the latent variables and observed variables are shown in Table 3.4, and conceptualization and measurement of CHSC core capability is shown in Figure 3.2. AMOS 22.0 software is used to construct the structural equation model for the confirmatory factor analysis, and the statistical significance level is $\alpha = 0.05$. The path coefficient of the structural equation is estimated and tested, and the model fitting index is used to evaluate the fitting degree of the actual data structure and the theoretical structure.

Table 3.4 Labels of latent and explicit variables

Latent Variables		Label	Explicit Variables	Assignment Method for Explicit Variables (Q.X means Issues Number)
Resource	Human Resource	A11	% of Staffs with Bachelor Degree and up	[Q.17(1)+ Q.17(2)+ Q.17(3)]/ Q.15(1)
		A12	% of Staffs with Intermediate Title and up	[Q.16(1)+ Q.16(2)+ Q.16(3)]/ Q.15(1)
		A13	Doctor-Nurse Ratio	Q.15(2)/ Q.15(3)
	Material resources	A21	High-value equipment Number	Q.21 ("Blank" is assigned with "0" credits; "Ultra-Sound" is assigned with "1" credits; "CT" is assigned with "2" credits; "Others" is assigned with "3" credits)
		A22	Equipment of clinical diagnosis & treatment	Q.22 ("perfect" is assigned with "1" credits; "NOT perfect" is assigned with "0" credits)
		A23	Auxiliary examination equipment	Q.23 ("perfect" is assigned with "1" credits; "NOT perfect" is assigned with "0" credits)
		A24	Public health infrastructure	Q.24 ("perfect" is assigned with "1" credits; "NOT perfect" is assigned with "0" credits)
		A25	Share medical resources with 3A grade hospital or not	Q.28 ("Y" is assigned with "0" credits; "N" is assigned with "1" credits)
	Capital Resource	A31	Are training expenses spent to improve the quality and ability of employees?	Q.32 ("Y" is assigned with "0" credits; "N" is assigned with "1" credits)
		A32	Is there any investment in technological innovation?	Q.36 ("Y" is assigned with "0" credits; "N" is assigned with "1" credits)
		A33	The proportion of CHSC's special fund input in the total income	Q.31
Service capability	Public Health	B11	Residents' Health Records Establishment	Q.37
		B12	Immunization And Vaccination	(Q.40+ Q.41)/2
		B13	Childcare	Q.42
		B14	Maternity Care	(Q.43+ Q.44+ Q.45)/3
		B15	Reporting And Handling of Infectious Diseases and Public Health Emergencies	(Q.48+ Q.49+Q.50)/3
		B16	Healthcare Education	(Q.38+ Q.39)/2
		B17	Health Management of The Aged	Q.46
		B18	Management of Severe Psychosis Patients	Q.47
	Basic Medical	B21	Rehabilitation Services	(Q.53+ Q.54)/2
		B22	Formal Traditional Chinese Medicine Care	Q.51
Organizational Culture	Spiritual Culture	C11	Core Values	(Q.64+ Q.67)/2
		C12	Mission and Vision	Q.66
	Group Culture	C21	Strategic Orientation	Q.68
		C22	Coordination and Integration	(Q.65+Q.69)/2

(Continued on Next Page)

Latent Variables		Label	Explicit Variables	Assignment Method for Explicit Variables (Q.X means Issues Number)
Management Capability	Institutional Policy	D11	Institutional Policy	(Q.70+Q.71+Q.72+Q.73+Q.74+Q.75+ Q.76+Q.78+Q.79)/9
	Information Technology Application	D21	IT Infrastructure	Q.80
		D22	Internal Electronic Integration	(Q.81+ Q.82)/2
		D23	External Electronic Integration	(Q.83+ Q.84)/2
		D24	Development of Information Technology	(Q.85+Q.86+Q.87)/3
	Employee Satisfaction	D31	Satisfaction with The Overall Development Prospect of the Center	Q.77
		D32	Satisfaction with The Working Atmosphere of The Center	(Q.158+Q.159)/2
		D33	Satisfaction with Personal Development Prospects	(Q.160+Q.161+Q.162)/3
		D34	Satisfaction with the Communication Channels of the Center	(Q.163+Q.164)/2
		D35	Satisfaction with Performance and Pay of the Center	(Q.165+Q.166+Q.167+Q.168)/4
		D36	Satisfaction with Job Stress	(Q.169+Q.170+Q.171+Q.172+ Q.173)/5
Dynamic Capability	Learning Capability	E11	Discovery Capability	(Q.88+Q.89)/2
		E12	Invention Capability	Q.90
		E13	Selecting Capability	Q.91
		E14	Executive Capability	(Q.92+Q.93+Q.94)/3
		E15	Reflective Capability	Q.95
		E16	Knowledge Acquiring Capability	(Q.96+Q.97)/2
		E17	Knowledge Output Capability	(Q.98+Q.99+Q.100)/3
		E18	Knowledge Base Building Capability	(Q.101+ Q.102+ Q.103)/3
	Innovation Capability	E21	Market Innovativeness	(Q.104+ Q.105+ Q.106)/3
		E22	Process Innovativeness	Q.107
		E23	Behavioral Innovativeness	(Q.108+Q.109)/2
		E24	Strategic Innovativeness	(Q.110+Q.111+Q.112)/3
		E25	Technology Innovativeness	(Q.118+Q.119+Q.120+Q.121)/4
		E26	Exploitative Innovation	Q. (115+116+117+127+128+129)/6
		E27	Exploratory Innovation	Q.(113+114+122+123+124+125+126)/7
	Integration Capability	E31	Integrated Care Organization	(Q.130+Q.131+Q.132)/3
		E32	Remote Consultation	(Q.133+Q.134)/2
		E33	Human Resource Integration	Q.135
		E34	Item Resource Integration	(Q.136+Q.137+Q.138+Q.139)/4
		E35	Information Resource Integration	(Q.140+Q.141+Q.142+Q.143)/4
		E36	Service Process Integration	(Q.144+Q.145+Q.146)/3
		E37	Resource Reconstruction	(Q.147+Q.148+Q.149)/3
	Absorptive Capacity	E41	Potential Absorptive Capacity	(Q.150+Q.151)/2
		E42	Realized Absorptive Capacity	(Q.152+Q.153+Q.154+Q.155)/4

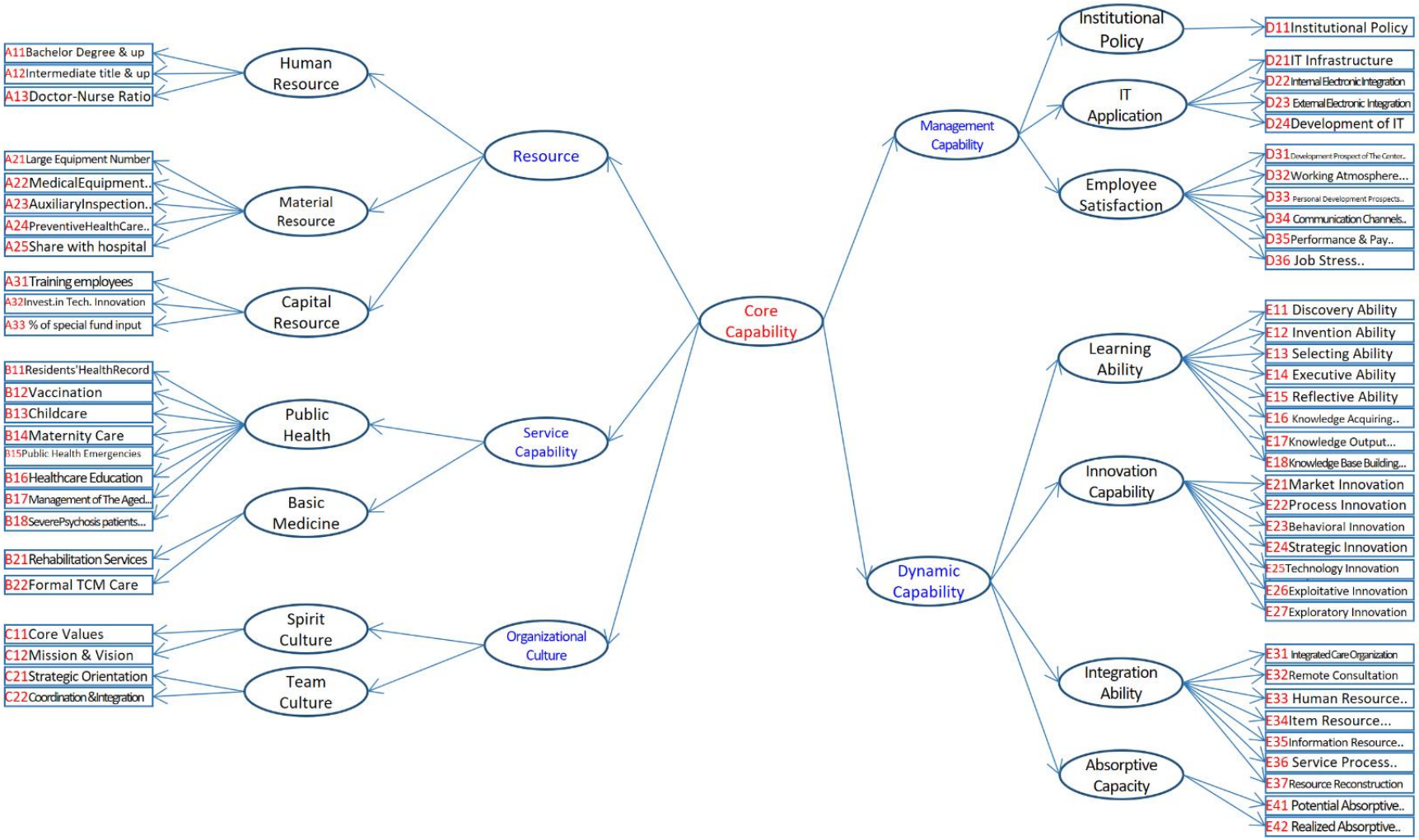

Figure 3.2 Conceptualization and Measurement of CHSC Core Capability

[This page is deliberately left blank.]

Chapter 4: Results

4.1 The CHS Abroad

4.1.1 British management model

The British National Health Service (NHS) system is a typical national medical treatment system. The British health fund mainly comes from state tax revenue, the Gatekeeper system is the key of the success in British CHS (Callaghan & Wistow, 2006). In recent 30 years, the British health service system has experienced many reforms. From the white paper titled Service for patients in 1989, Major government introduced the internal market mechanism in 1991, Blair government established the Primary Care Groups (PCGs) in 1999, Cameron healthcare reform in 2011, to the Minister of Health launched a new Health and Care System (HCS) in April 2013, the British health service system has been completed step by step (Fan, 2013).

The British health service system provide free health service for all residents, meanwhile, it is regulated that except emergency treatment, all patients must go to community general clinics or family doctor for primary diagnosis and treatment first, and accept its continuous service. The general practitioners working in CHSC and national health department belongs to contractual relationship, and their incomes depend on the quantity of register residents, years of working, and workload of prevention and health care, etc. It is clear that British health service systems limit the patients in CHS system, effectively shunt the patients and improve the utilization of community health service. Moreover, seeing a doctor in community clinic but do not take medicine there, patients buy medicine in pharmacy shop approved by states, they implement medical management system of the separation of clinic from pharmacy.

4.1.2 Germany management model

Most of the developed countries adopt this model. Its main feature is that, the investment of government on health care mainly buying health insurance for residents or act as the chief financer of the community health insurance. Because of high coverage of people health insurance, the community residents can choose medical treatment freely. So, needed investment make the patients get the buying initiative, general practitioners can only improve their service

quality to win more patients (Han, Park, & Kim, 2016). Private practice general practitioners sign the service contract with state health insurance department to provide community health service. Since the general practitioners interested in high profit medical service, state and local health department cannot but set up some CHS institutions to make up the sufficient of community prevention and healthcare work (Karen, Alejandra, & Juan, 2019).

4.1.3 American management model

The CHS system of U.S. is relatively complete, the allocation of community health resource mainly concentrates on the market regulation, the presentation of the value of community medical chiefly oriented to the needs of CHS, which emphasis family centered service mode.

American CHS institutions are managed by board of directors, the degree of community and social participation is very high, meanwhile, they have close relations with nearby general hospital, which transverse and longitudinal mixed into reticular structure of community health service institutions in the United States. ① Community hospital, is invested by local governments and charity organization and chiefly service the local community residents; ② Community health center (CHC), is complex community health service institution, mainly provide nursing oriented and relatively detailing family nursing service for community residents; ③Long-term nursing institutions, is a kind of sites to provide physiotherapy, health care, and specialty treatment for long-term care needed patients with chronic diseases, the elderly and people who cannot take care of themselves, in which most are the elderly. These institutions divided into skilled nursing facility, intermediate-care facility, assisted living facility and custodial and shelter care according to differences of medical service provided, and some institution provide many kinds of service. Some institutions belong to profitability chain, the biggest of which are Manor Care Beverly Enterprises, Kindred Healthcare and so on (Cashman et al., 2008).

America as the representative of developed countries, mastering powerful control measure on CHS and community health management, maintains the operation of the health service system by demand oriented mode. At beginning, the differences of resource allocation in different states caused non-comprehensive coverage of CHS. However, the implement of effective management and public health care system in CHSS has balanced the demand side and supply side in order to make the community health demander who is original passive accept medical health service actively, which maintains the benign development of health resource market.

4.1.4 Norway and Sweden management model

Norway and Sweden, once belonging to the same country and speaking similar languages, both have per capita GDP of over 30,000 dollars. Due to the fairness of health industry, their residents are enjoying world-class health condition. At the same time, these two countries still have individual characteristics in CHS. According to the laws in the two countries, citizens are entitled to CHS. The governments in all levels are obliged to finance it. The CHS system in Sweden revolves around public community health centers which are the major providers of CHS and the medical personnel of which are government employees. The nurses' salary is equal to provincial civil servants and physicians' salary doubles the former. Community health centers are mainly funded by the government budget, with social health insurance and medical fees paid by patients as complement. Patients do not pay the part of the medical fees that surpass the annual capping. With the development of CHS, residents' needs for hospitals decline, thus the number of sickbeds nationwide has been deducted by 45%, from 5.5 sickbeds per thousand people in 1993 to 3.0 sickbeds per thousand people in 2003. The community health centers in Norway are initiated by private investors while their services are paid by the government. Before 1990, half of the general practitioners were government employees and half were the ones practicing privately. Since 1990s, due to the government's encouragement, 80% of the general practitioners have participated privately. Under this system, though general practitioners are more motivated to perform their duty, prevention and healthcare are under challenges. Meanwhile, preventing induced demand and excessive medical services has been put on the agenda of CHS management. In recent years, in order to avoid the risks of system, Norwegian laws have stipulated that every citizen is required to select only one general practitioner as family doctor in his/her community or nearby. Only those who have selected their own family doctors are entitled to enjoy the policy of deductible medical fees. Meanwhile, every citizen is eligible to choose family doctor twice a year.

4.2 General descriptive analysis of CHSC

4.2.1 General analysis of resource allocation

The data analysis is based on 1865 valid questionnaires and the analysis results of the current situation of CHSC human resources in the surveyed districts of Shenyang City are shown in the following table (see Table 4.1). The questionnaire survey is conducted among the medical employees of CHSCs in five districts, with 457 respondents from 13 CHSCs in Heping District,

538 respondents from 19 CHSCs in Tiexi District, 274 respondents from 10 CHSCs in Huanggu District, 367 participants from 12 CHSCs in Shenhe District and 229 participants from 10 CHSCs in Dadong District. In this survey, the directors of the CHSCs in each district think that according to the current requirements of national basic public health services, there is a serious shortage of medical staff, especially general practitioners and public health professionals. Of the 1865 respondents surveyed, only 32 (1.71%) are public health professionals. According to the survey data, among the 64 CHSCs, the proportion of female employees is significantly higher than that of male ones (86.97% vs 13.02%); among all age groups, the proportion of medical staff between 41-50 years old is as high as 35.49% (662/1865); the proportion of those with 21-30 years of relevant work experience is 30.88%. In terms of professional title, employees with primary title account for 36.99% (690/1865), medical staff with intermediate title make up 35.81% (668/1865), and employees with senior title account for only 2.89% (54/1865). The survey found that most of the grassroots health workers are undergraduates, accounting for 55.33% (1032/1865); staff with college degree or below accounts for 40.8% (761/1865), which indicates that the grassroots medical personnel generally has low levels of education. Only 3.86% (72/1865) have a master degree or above. According to this survey, among 64 directors of CHSCs in five districts, 59.37% have senior title, 26.56% have intermediate title and 14.0% have primary title. There are only 6 directors with master degree or above, accounting for 0.93%, and 14 directors with college degree or below, accounting for 21.87%. The research shows that the educational level of managers in CHSCs is generally lower. According to the interviews, the directors of all CHSCs admit that due to the lack of budgeted posts and incentive mechanism, it is difficult to retain excellent talents, resulting in the quick loss of highly educated talents.

Table 4.1 General information of research objects (n=1865)

Item		Number	Ratio (%)
Age	20~30 Yrs	326	17.47
	31~40 Yrs	545	29.22
	41~50 Yrs	662	35.49
	51~60 Yrs	293	15.71
	>60 Yrs	39	2.0
Gender	Male	243	13.02
	Female	1622	86.97
Career	Doctor	663	35.54
	Nurse	744	39.89
	Practitioner in preventive medicine	32	1.71
	Administrator	82	4.39
	Technician	163	8.73

	Others	181	9.7
How long with this career?	1~5Yrs	320	17.15
	6~10 Yrs	346	18.55
	11~20 Yrs	362	19.41
	>21~30 Yrs	576	30.88
	>31~40 Yrs	237	12.7
	>41Yrs	24	1.28
Department	General Practice	332	17.8
	Prevention & health care section	305	16.3
	Other clinical section	471	25.2
	Medical imaging	52	2.7
	Medical Laboratory	64	3.4
	Administration	236	12.6
	Others	405	21.71
Education level	Master degree	72	3.86
	Bachelor degree	1032	55.33
	Junior College	548	29.38
	technical secondary school	213	11.42
Professional title	Senior Title	54	2.89
	Associate senior title	267	14.31
	Intermediate title	668	35.81
	Junior title	690	36.99
	Others	186	9.97
Administrative position	Leader	80	4.2
	Director of clinical	106	5.6
	Director of medical technology	55	2.9
	Director of public health section	47	2.5
	Head nurse	75	4.0
	Director of general affairs section	114	6.1
	Others	1388	74.4
Payroll employee by government	Yes	1063	56.99
	No	802	43.0

The analysis results of organizational resources of 64 CHSCs in five districts of Shenyang are shown in Table 4.2.

Table 4.2 Analysis results of CHSC's resource allocation in Shenyang

District	CHSC	Number of registered general practitioners per 10000 service population (general practitioners /service population)	Proportion of doctors (doctors Num./ Total number of personnel on duty)	Proportion of general practitioners (general practitioners / Total number of personnel on duty)	Proportion of public health doctors (public health doctors / Total number of personnel on duty)	Proportion of nurses (nurses Num./ Total number of personnel on duty)	Proportion of senior title doctors (senior title doctors Num./ Total number of personnel on duty)	Proportion of doctors with Intermediate Title and up (doctors with Intermediate Title and up / Total number of personnel on duty)	Proportion of doctors with master and up (doctors with master and up / Total number of personnel on duty)	Proportion of doctors with bachelor and up (doctors with bachelor and up / Total number of personnel on duty)	business premises areas per 10000 service population	Per capita operating income	The proportion of special fund input from Government's annual special investment fund in the total income
	SSWS	0.73	30.43%	8.70%	4.35%	39.13%	8.70%	28.26%	6.52%	54.35%	487.91	12.57	48.00%
	CBS	2.23	31.94%	23.61%	1.39%	31.94%	16.67%	36.11%	2.78%	23.61%	479.75	23.65	36.00%
	XTS	2.06	38.71%	20.97%	12.90%	24.19%	22.58%	48.39%	11.29%	54.84%	350.79	12.69	65.00%
	BSS	1.89	40.52%	16.38%	0.00%	44.83%	11.21%	44.83%	4.31%	44.83%	705.22	89.44	75.00%
	XHS	1.60	24.14%	13.79%	1.72%	41.38%	15.52%	31.03%	0.00%	41.38%	273.22	18.88	61.00%
Heping	NHS	0.46	29.41%	11.76%	1.96%	37.25%	7.84%	27.45%	5.88%	39.22%	248.10	8.37	59.00%
	NZS	2.96	40.79%	19.74%	0.00%	30.26%	22.37%	63.16%	10.53%	63.16%	444.38	21.87	65.80%
	NSCS	2.75	48.94%	34.04%	0.00%	31.91%	12.77%	42.55%	6.38%	70.21%	292.10	18.48	68.00%
	HHXZS	2.97	25.64%	15.38%	0.00%	28.21%	5.13%	20.51%	0.00%	43.59%	546.53	2.54	78.00%
	TYJS	12.55	36.17%	18.09%	5.32%	36.70%	18.62%	50.53%	1.06%	48.40%	2287.82	22.70	36.54%
	JXS	1.17	28.95%	15.79%	0.00%	47.37%	10.53%	26.32%	5.26%	55.26%	463.01	10.53	40.00%

Tiexi	HHWS	3.22	35.80%	24.69%	0.00%	38.27%	18.52%	51.85%	3.70%	53.09%	522.51	19.75	56.25%
	MLWS	1.55	33.85%	16.92%	64.62%	47.69%	20.00%	66.15%	3.08%	58.46%	278.73	20.55	62.05%
	Subtotal	**2.97**	**34.59%**	**18.28%**	**7.87%**	**38.26%**	**15.95%**	**44.48%**	**4.66%**	**50.87%**	**597.71**	**26.21**	**53.06%**
	XSS	1.26	36.90%	15.48%	0.00%	35.71%	5.95%	26.19%	0.00%	33.33%	157.33	16.83	47.33%
	LGS	0.76	32.69%	13.46%	17.31%	34.62%	13.46%	34.62%	3.85%	36.54%	178.16	16.33	66.50%
	WGS	1.43	23.40%	19.15%	42.55%	31.91%	6.38%	29.79%	0.00%	21.28%	233.42	17.43	61.00%
	JHS	0.79	33.33%	11.54%	1.28%	32.05%	7.69%	34.62%	7.69%	47.44%	520.79	20.94	31.05%
	QGS	1.60	34.88%	12.79%	36.05%	25.58%	16.28%	44.19%	1.16%	48.84%	310.90	19.23	71.00%
	GRCS	0.70	27.59%	12.07%	96.55%	34.48%	6.90%	34.48%	0.00%	36.21%	161.50	0.00	35.00%
	LKS	0.91	24.49%	12.24%	12.24%	32.65%	6.12%	16.33%	0.00%	22.45%	161.24	24.12	60.00%
	DQS	0.67	27.91%	18.60%	39.53%	41.86%	9.30%	27.91%	0.00%	34.88%	480.27	14.98	63.19%
	QXS	0.67	20.51%	10.26%	35.90%	35.90%	7.69%	20.51%	2.56%	17.95%	323.11	25.36	48.00%
	DGS	0.33	38.46%	9.62%	78.85%	48.08%	9.62%	26.92%	1.92%	36.54%	306.89	13.84	54.00%
	XHS	1.50	27.78%	16.67%	2.78%	50.00%	16.67%	72.22%	0.00%	38.89%	289.14	8.33	66.00%
	KMHS	0.25	13.64%	9.09%	2.27%	20.45%	6.82%	27.27%	0.00%	13.64%	681.82	15.91	17.00%
	QLS	1.20	33.33%	26.67%	0.00%	22.22%	17.78%	31.11%	0.00%	31.11%	206.87	28.58	37.80%
	QGSS	1.73	33.33%	15.38%	35.90%	41.03%	7.69%	28.21%	0.00%	53.85%	617.83	25.85	53.00%
	ZGS	1.82	29.41%	8.24%	2.35%	41.18%	3.53%	62.35%	2.35%	23.53%	1805.37	9.42	31.00%
	ZJS	1.68	36.05%	18.60%	1.16%	24.42%	10.47%	39.53%	1.16%	37.21%	768.49	20.19	0.00%
	YFS	2.31	46.67%	40.00%	28.89%	35.56%	26.67%	68.89%	4.44%	66.67%	164.23	106.09	16.00%
	XGS	1.17	40.00%	11.43%	5.71%	34.29%	2.86%	14.29%	0.00%	37.14%	729.60	6.92	91.50%

	BYXCS	0.59	41.18%	8.82%	2.94%	32.35%	11.76%	32.35%	0.00%	11.76%	623.11	4.17	10.00%
	Subtotal	**1.22**	**32.04%**	**16.79%**	**27.98%**	**33.78%**	**11.48%**	**37.72%**	**1.73%**	**38.10%**	**427.97**	**27.46**	**49.16%**
	MLS	1.96	36.46%	17.71%	2.08%	42.71%	13.54%	33.33%	1.04%	27.08%	797.32	3.13	80.00%
	TWS	1.45	16.00%	16.00%	0.00%	40.00%	20.00%	64.00%	0.00%	80.00%	290.47	15.00	89.00%
	LJS	2.05	39.24%	26.58%	1.27%	37.97%	20.25%	44.30%	1.27%	43.04%	202.03	24.05	32.00%
	BTS	1.66	52.38%	40.48%	0.00%	57.14%	26.19%	73.81%	4.76%	76.19%	234.09	29.05	0.00%
	YMS	0.00	14.91%	0.00%	0.88%	16.67%	15.79%	52.63%	3.51%	71.93%	504.64	11.63	55.00%
huanggu	KSS	0.59	48.28%	6.90%	0.00%	55.17%	20.69%	72.41%	6.90%	62.07%	480.03	266.04	50.34%
	HHS	1.55	25.00%	18.18%	0.00%	31.82%	18.18%	45.45%	2.27%	40.91%	450.17	20.89	34.16%
	SDQS	1.20	22.22%	11.11%	20.37%	46.30%	12.96%	40.74%	0.00%	33.33%	393.64	16.26	55.60%
	SQS	0.98	13.89%	13.89%	0.00%	50.00%	13.89%	36.11%	8.33%	25.00%	162.26	25.69	51.00%
	XGS	1.76	25.58%	13.95%	4.65%	46.51%	13.95%	53.49%	4.65%	46.51%	265.02	15.68	67.73%
	Subtotal	**1.07**	**29.46%**	**15.71%**	**1.84%**	**38.35%**	**18.56%**	**53.54%**	**3.60%**	**56.20%**	**352.94**	**47.06**	**37.73%**
	DXZXS	2.98	28.57%	20.41%	0.00%	44.90%	16.33%	38.78%	0.00%	38.78%	431.09	14.03	34.04%
	DLS	2.27	24.58%	13.41%	22.35%	44.13%	11.17%	32.40%	0.00%	37.43%	478.24	11.17	37.00%
	ZJLS	9.30	34.66%	14.77%	0.00%	25.57%	20.45%	36.36%	2.27%	43.75%	1158.30	35.32	3.66%
	FYTS	3.04	40.63%	28.13%	1.56%	42.19%	15.63%	51.56%	7.81%	56.25%	329.12	20.27	31.90%
Shenhe	FLS	1.82	36.54%	17.31%	1.92%	32.69%	9.62%	26.92%	0.00%	44.23%	587.81	15.73	42.29%
	DNS	1.59	38.20%	19.10%	0.00%	33.71%	8.99%	40.45%	3.37%	40.45%	223.74	20.20	3.58%
	QYS	1.42	36.96%	15.22%	2.17%	34.78%	10.87%	32.61%	6.52%	50.00%	246.78	14.09	0.00%
	SDMS	1.87	29.33%	17.33%	0.00%	41.33%	6.67%	45.33%	1.33%	32.00%	280.25	17.91	42.88%

	NTS	2.56	45.24%	22.22%	0.00%	25.40%	16.67%	51.59%	4.76%	59.52%	292.08	12.70	4.00%
	DXS	2.00	34.04%	17.02%	0.00%	36.17%	23.40%	51.06%	4.26%	57.45%	327.69	15.86	41.75%
	HCS	9.25	39.44%	21.60%	0.47%	37.56%	26.76%	52.58%	2.35%	51.17%	2787.59	25.21	7.00%
	XBZS	2.93	35.19%	14.81%	0.00%	38.89%	29.63%	70.37%	1.85%	57.41%	493.95	17.85	2.00%
	Subtotal	**4.02**	**36.11%**	**19.28%**	**3.33%**	**36.22%**	**15.54%**	**42.62%**	**2.98%**	**47.01%**	**872.78**	**19.19**	**17.58%**
	ETS	0.46	30.61%	12.24%	6.12%	44.90%	2.04%	28.57%	0.00%	46.94%	102.99	15.37	47.00%
	QJS	1.01	30.77%	17.95%	0.00%	46.15%	7.69%	30.77%	0.00%	38.46%	427.29	12.77	0.00%
	LSS	1.92	32.69%	24.04%	1.92%	44.23%	3.85%	23.08%	2.88%	12.50%	76.92	3.70	70.00%
	WQS	1.67	31.91%	21.28%	0.00%	34.04%	4.26%	46.81%	0.00%	36.17%	477.83	13.57	88.00%
	DBS	1.56	31.25%	18.75%	3.13%	54.69%	7.81%	53.13%	1.56%	60.94%	428.83	16.61	90.00%
Dadong	WGS	1.87	46.55%	24.14%	0.00%	25.86%	3.45%	22.41%	1.72%	37.93%	601.95	12.41	27.00%
	DZS	1.92	37.21%	20.93%	2.33%	32.56%	4.65%	25.58%	4.65%	30.23%	157.03	20.56	50.90%
	CAS	1.34	28.57%	18.37%	2.04%	38.78%	4.08%	32.65%	0.00%	36.73%	364.17	11.88	79.22%
	JQS	2.12	46.03%	26.98%	1.59%	25.40%	6.35%	25.40%	1.59%	23.81%	205.09	15.08	65.26%
	XDS	1.30	40.00%	8.57%	0.00%	25.71%	5.71%	37.14%	2.86%	54.29%	116.73	11.89	90.00%
	Subtotal	**1.72**	**36.28%**	**21.88%**	**1.54%**	**38.24%**	**5.17%**	**31.46%**	**1.79%**	**34.03%**	**326.04**	**12.61**	**58.58%**

(1) Number of CHSC registered general practitioners per 10,000 population

According to the data comparison among administrative divisions, Shenhe District has 4.02 GPs per 10,000 residents, followed by Heping District (2.97), Dadong District (1.72), Tiexi District (1.22) and Huanggu District (1.07). A further comparison among 64 surveyed CHSCs shows that the Taiyuan Street CHSC in Heping District has the most general practitioners (12.55 GPs per 10,000 residents), followed by Zhujianlu CHSC in Shenhe District (9.3), Huangcheng CHSC in Shenhe District (9.25), and for the rest 61 CHSCs, each has less than four GPs per 10,000.

(2) Proportion of doctors to the whole staff in CHSC

There is no much difference in terms of proportion of doctors between administrative divisions, with Dadong District (36.28%) > Shenhe District (36.11%) > Heping District (34.59%) > Tiexi District (32.04%) > Huanggu District (29.46%). Dongzhan CHSC in Dadong District enjoys the highest proportion of doctors (37.21%), while Kunming Lake CHSC in Tiexi District has the lowest proportion (13.64%).

4.2.2 General analysis of service capability

According to the analysis of the survey data, due to the shortage of public health professionals in CHSCs, other doctors or nurses have to take on work that should have been done by public health professionals. In terms of the public health service, 68.4% (1277/1865) of the employees think that the CHSCs have established a perfect health record management system, 66.86% (1247/1685) say that they are satisfied with the health education work, and 79.19% (1499/1865) think that the CHSCs have established a perfect vaccination environment,76% (1282/1685) of the employees think that the CHSCs have the capability of child health management, 71.4% (1333/1865) of the staff think that the CHSCs have the capability of maternal health management, and 63.3% (1181/1865) of the staff think that the CHSCs are very satisfied with the health management of the elderly every year, 63.8% (1191/1865) of the employees think that the CHSCs have a perfect capability to report and deal with infectious diseases and public health emergencies. 61.1% (1141/1865) of the employees think that the CHSCs have the capability of the management of patients with severe mental diseases. In terms of the basic medical services, 51.6% (964/1865) of the employees think that the CHSCs could provide a complete set of rehabilitation medical services, and 66.8% (1247/1865) of the staff think that the CHSCs could provide complete traditional Chinese medicine services. The analysis results of the service capacity of 64 CHSCs in five districts of Shenyang are shown in Table 4.3.

(1) Overall score of CHSC services.

Averaging the scores of ten services provided by each CHSC and according to the aggregate score shown in the last column, Huanggu District scores the highest (6.75), followed by Shenhe District (6.53), Heping District (6.46), Tiexi District (6.41) and Dadong District (6.06). The average score is 6.44, with 36 CHSCs above the average level and 28 CHSCs below the average.

(2) Average score of services provided by CHSCs in Shenyang city

By averaging the score of each service of 64 CHSCs we get the average score of ten services respectively as follows: B16(6.60) > B11(6.56) > B13(6.54) > B14(6.53) > B12(6.52) > B17(6.50) > B18(6.45) > B22(6.44) > B15(6.41) > B21(5.87).

Table 4.3 Analysis results of CHSC's service capacity in Shenyang

District	CHSC	Residents' Health Records Establishment	Immunization and Vaccination	Child care	Maternity Care	Reporting and Handling of Infectious Diseases and Public Health Emergencies	Healthcare Education	Health Management of The Aged	Management of Severe Psychosis Patients	Rehabilitation Services	Formal Traditional Chinese Medicine Care	Total
Heping	SSWS	6.84	6.34	6.40	6.49	6.19	6.82	6.36	6.20	5.14	6.64	6.34
	CBS	6.58	6.23	6.65	6.44	6.19	6.69	6.23	6.23	6.11	6.55	6.39
	XTS	6.78	6.81	6.91	6.79	6.75	6.71	6.80	6.76	6.53	6.78	6.76
	BSS	6.54	6.23	6.84	6.90	6.80	6.91	6.88	6.83	6.71	6.90	6.75
	XHS	6.47	6.30	6.41	6.37	6.33	6.39	6.27	6.20	6.00	6.11	6.29
	NHS	6.52	6.61	6.78	6.74	6.60	6.61	6.70	6.74	6.33	6.59	6.62
	NZS	6.82	6.76	6.85	6.87	6.70	6.81	6.79	6.85	6.62	6.76	6.78
	NSCS	6.57	6.79	6.79	6.83	6.93	6.68	6.93	6.93	6.79	6.93	6.82
	HHXZS	6.75	6.75	6.83	6.78	6.72	6.67	6.75	6.75	6.42	6.83	6.73
	TYJS	6.08	3.01	2.86	3.28	6.26	6.14	6.00	5.92	5.49	6.41	5.15
	JXS	6.74	6.73	6.74	4.79	5.95	6.73	6.60	6.51	5.91	6.57	6.33
	HHWS	5.98	6.31	6.31	6.34	6.14	6.22	6.10	5.92	6.02	6.41	6.18
	MLWS	6.86	6.76	6.91	6.69	6.90	6.89	6.86	6.94	6.86	6.97	6.86

Tiexi	Subtotal	**6.58**	**6.28**	**6.41**	**6.25**	**6.50**	**6.64**	**6.56**	**6.52**	**6.23**	**6.65**	**6.46**
	XSS	6.60	6.53	6.50	6.65	6.53	6.60	6.75	6.30	6.08	6.75	6.53
	LGS	6.50	6.23	6.17	6.33	6.01	6.27	5.96	5.96	5.54	5.92	6.09
	WGS	6.70	6.63	6.74	6.72	6.48	6.72	6.56	6.48	6.28	6.67	6.60
	JHS	6.72	6.52	6.62	6.79	6.62	6.64	6.55	6.52	6.53	6.76	6.63
	QGS	6.29	6.35	6.35	6.31	5.82	6.35	6.14	6.10	5.40	6.18	6.13
	GRCS	7	7	7	7	7	7	7	7	4	7	6.70
	LKS	6.50	6.11	6.56	6.49	6.33	6.56	6.44	6.53	5.45	6.56	6.35
	DQS	6.37	6.42	6.58	6.56	6.28	6.45	6.47	6.53	5.53	6.47	6.37
	QXS	6.65	6.67	6.77	6.65	6.36	6.67	6.46	6.58	6.10	6.19	6.51
	DGS	6.62	6.63	6.76	6.58	6.53	6.81	6.62	6.56	5.57	6.56	6.52
	XHS	6.44	6.58	6.67	6.78	6.07	6.50	6.28	6.61	5.22	6.11	6.33
	KMHS	6.59	6.67	6.59	6.67	6.56	6.57	6.31	6.07	6.29	6.52	6.48
	QLS	6.33	6.37	6.47	6.44	6.33	6.17	5.87	6.13	5.13	6.27	6.15
	QGSS	6.84	6.32	6.28	6.39	5.91	6.68	6.32	6.04	5.54	6.56	6.29
	ZGS	6.47	6.95	6.74	6.84	5.77	6.55	5.89	6.05	5.53	6.47	6.33
	ZJS	6.08	6.50	6.28	6.46	6.21	6.28	6.03	5.95	5.73	6.44	6.19
	YFS	6.60	6.54	6.45	6.59	6.53	6.64	6.47	6.33	6.29	6.69	6.51
	XGS	6.40	6.18	6.35	6.17	6.28	6.40	6.30	6.05	6.08	6.40	6.26

	BYXCS	6.62	6.71	6.81	6.85	6.85	6.58	6.85	6.85	6.77	6.88	6.78
	Subtotal	**6.54**	**6.52**	**6.56**	**6.59**	**6.34**	**6.55**	**6.38**	**6.35**	**5.74**	**6.49**	**6.41**
	MLS	6.70	6.80	6.80	6.78	6.63	6.80	6.70	6.65	6.70	6.70	6.73
	TWS	6.67	6.67	6.67	6.72	6.72	6.67	6.75	6.75	5.83	6.17	6.56
	LJS	6.82	6.94	7.00	6.98	6.88	6.76	7.00	6.71	6.12	6.88	6.81
	BTS	6.71	6.88	6.48	6.84	6.30	6.69	6.48	6.76	6.69	6.57	6.64
	YMS	6.60	6.65	6.57	6.66	6.57	6.66	6.67	6.60	6.52	6.67	6.62
Huanggu	KSS	6.56	6.86	6.80	6.80	6.81	6.80	6.80	6.80	6.78	6.80	6.78
	HHS	6.85	7.00	6.85	6.93	6.95	6.83	7.00	6.90	5.68	6.95	6.79
	SDQS	6.93	7.00	6.93	6.51	6.98	7.00	7.00	7.00	7.00	7.00	6.94
	SQS	7.00	6.98	6.96	6.96	6.91	7.00	6.96	6.96	6.98	6.78	6.95
	XGS	6.63	6.93	6.83	6.93	6.89	6.90	6.40	6.77	5.93	6.90	6.71
	Subtotal	**6.75**	**6.87**	**6.79**	**6.81**	**6.76**	**6.81**	**6.78**	**6.79**	**6.42**	**6.74**	**6.75**
	DXZXS	6.82	6.68	6.82	6.94	6.65	6.85	6.94	6.82	6.35	6.82	6.77
	DLS	6.39	6.64	6.53	6.51	6.43	6.49	6.42	6.37	6.17	6.53	6.45
	ZJLS	6.96	6.50	7.00	6.95	7.00	6.98	7.00	7.00	6.52	7.00	6.89
Shenhe	FYTS	6.69	6.46	6.38	6.51	6.40	6.55	6.52	6.33	6.06	6.64	6.45
	FLS	6.39	6.11	6.22	6.24	6.11	6.32	6.22	6.00	5.90	6.56	6.21
	DNS	6.76	6.86	6.86	6.89	6.70	6.74	6.71	6.52	6.38	6.95	6.74

	QYS	6.32	6.61	6.21	6.51	6.32	6.45	6.68	6.16	5.74	6.74	6.37
	SDMS	6.44	6.66	6.59	6.69	6.51	6.59	6.66	6.56	5.86	6.69	6.52
	NTS	6.62	6.83	6.72	6.66	6.62	6.52	6.66	6.62	6.45	6.76	6.64
	DXS	6.42	6.25	6.00	6.39	6.19	6.33	6.17	6.42	6.04	6.75	6.30
	HCS	6.38	6.71	6.66	6.57	6.55	6.55	6.59	6.59	6.52	6.71	6.58
	XBZS	6.39	6.44	6.45	6.40	6.36	6.48	6.42	6.42	6.02	6.61	6.40
	Subtotal	**6.55**	**6.56**	**6.54**	**6.61**	**6.49**	**6.57**	**6.58**	**6.48**	**6.17**	**6.73**	**6.53**
	ETS	6.90	6.83	6.76	6.81	6.75	6.86	6.71	6.86	5.79	6.48	6.67
	QJS	6.56	5.84	6.50	6.33	6.46	6.38	6.50	6.25	5.44	5.13	6.14
	LSS	6.45	6.63	6.53	6.62	6.45	6.54	6.50	6.61	6.03	6.58	6.49
	WQS	6.83	6.46	6.67	6.50	6.36	6.71	6.67	6.58	4.00	5.92	6.27
	DBS	5.97	6.18	5.87	5.76	5.12	5.98	5.32	5.26	4.66	4.90	5.50
Dadong	WGS	5.94	6.50	6.19	6.41	5.64	6.39	5.94	5.78	4.41	3.25	5.64
	DZS	5.95	6.23	6.10	6.22	5.90	6.38	6.05	5.95	4.53	6.15	5.94
	CAS	6.53	6.55	6.32	6.30	5.89	6.42	6.16	5.79	3.87	6.05	5.99
	JQS	6.17	6.25	6.50	6.29	5.69	6.35	6.25	6.04	3.90	5.38	5.88
	XDS	6.56	6.56	6.81	6.65	5.79	6.69	6.56	6.25	4.56	4.69	6.11
	Subtotal	**6.39**	**6.40**	**6.43**	**6.39**	**6.01**	**6.47**	**6.27**	**6.14**	**4.72**	**5.45**	**6.06**

4.2.3 General analysis of organizational culture

In terms of organizational culture, 49.2% (918/1865) of the employees believe that the medical employees of the CHSCs have consistent organizational values and enjoy a high degree of tacit understanding in the process of diagnosis and treatment. 53.7% (1002/1865) of the employees could cooperate well for the common goal of CHSCs and successfully complete the work despite the boundaries between departments, 56.6% (1056/1865) of the employees think that all the CHSC employees could work together with one heart and one mind to achieve the CHSC's strategic objectives and major tasks, and 52.8% (986/1865) of the employees think that their CHSCs have clear and workable specific objectives to guide their work. According to the data analysis, half of CHSC employees have a strong sense of mission and responsibility. The analysis results of organizational culture of 64 CHSCs in five districts of Shenyang are shown in Table 4.4.

Table 4.4 Analysis results of CHSC's organizational culture in Shenyang

District	CHSC	Core Values	Mission and Vision	Strategic Orientation	Coordination and Integration	Total
Heping	SSWS	6.32	6.48	6.56	6.48	6.46
	CBS	6.00	6.23	6.13	6.03	6.10
	XTS	6.53	6.67	6.64	6.64	6.62
	BSS	6.66	6.69	6.64	6.67	6.67
	XHS	6.13	6.21	6.21	6.24	6.20
	NHS	6.54	6.63	6.52	6.60	6.57
	NZS	6.63	6.65	6.68	6.60	6.64
	NSCS	6.93	6.86	6.93	6.89	6.90
	HHXZS	6.46	6.58	6.25	6.67	6.49
	TYJS	5.59	5.62	5.62	5.61	5.61
	JXS	6.21	6.63	6.17	6.10	6.28
	HHWS	5.88	6.06	6.04	5.92	5.98
	MLWS	6.76	6.86	6.77	6.77	6.79
	Subtotal	**6.36**	**6.47**	**6.40**	**6.40**	**6.41**
Tiexi	XSS	6.23	6.60	6.35	6.35	6.38
	LGS	5.56	5.63	5.71	5.90	5.70
	WGS	6.67	6.63	6.74	6.56	6.65
	JHS	6.40	6.45	6.52	6.60	6.49
	QGS	5.86	5.78	5.94	5.91	5.87
	GRCS	6.74	6.83	6.79	6.78	6.78
	LKS	6.05	6.25	6.09	6.02	6.10
	DQS	6.42	6.42	6.42	6.32	6.39

	QXS	5.85	6.08	6.00	5.77	5.92
	DGS	6.31	6.32	6.18	6.19	6.25
	XHS	6.03	6.22	6.06	6.14	6.11
	KMHS	6.38	6.31	6.34	6.36	6.35
	QLS	5.67	5.80	5.93	5.83	5.81
	QGSS	6.08	6.20	6.28	6.14	6.18
	ZGS	5.74	5.95	5.26	5.58	5.63
	ZJS	6.10	6.38	6.31	6.15	6.24
	YFS	6.49	6.64	6.48	6.37	6.50
	XGS	6.18	6.35	6.25	6.03	6.20
	BYXCS	6.83	6.81	6.85	6.71	6.80
	Subtotal	**6.19**	**6.30**	**6.24**	**6.20**	**6.23**
Huanggu	MLS	6.60	6.65	6.75	6.65	6.66
	TWS	6.83	6.83	6.92	6.83	6.85
	LJS	6.73	6.90	6.85	6.73	6.80
	BTS	6.58	6.50	6.60	6.53	6.55
	YMS	6.34	6.45	6.38	6.44	6.40
	KSS	6.76	6.80	6.88	6.78	6.81
	HHS	6.53	6.75	6.55	6.65	6.62
	SDQS	6.17	6.33	6.20	6.13	6.21
	SQS	6.70	6.78	6.70	6.65	6.71
	XGS	6.45	6.70	6.50	6.68	6.58
	Subtotal	**6.57**	**6.67**	**6.63**	**6.61**	**6.62**
Shenhe	DXZXS	6.53	6.65	6.47	6.62	6.57
	DLS	6.25	6.34	6.26	6.28	6.28
	ZJLS	6.24	7.00	7.00	6.94	6.80
	FYTS	6.35	6.55	6.50	6.46	6.46
	FLS	5.85	6.12	6.10	5.99	6.02
	DNS	6.55	6.67	6.52	6.67	6.60
	QYS	6.24	6.47	6.47	6.21	6.35
	SDMS	6.36	6.44	6.34	6.42	6.39
	NTS	6.31	6.31	6.28	6.57	6.37
	DXS	5.92	6.33	6.08	6.13	6.11
	HCS	6.41	6.41	6.36	6.47	6.41
	XBZS	6.41	6.58	6.55	6.58	6.53
	Subtotal	**6.29**	**6.49**	**6.41**	**6.45**	**6.41**
Dadong	ETS	6.62	6.67	6.62	6.55	6.61
	QJS	5.69	6.00	5.38	5.22	5.57
	LSS	6.28	6.34	6.24	6.33	6.30
	WQS	6.25	6.50	6.33	6.33	6.35
	DBS	4.68	4.97	4.55	4.89	4.77

WGS	5.50	5.66	5.66	5.58	5.60
DZS	5.23	5.15	5.05	4.80	5.06
CAS	5.26	5.53	5.21	5.45	5.36
JQS	5.54	5.63	5.33	5.69	5.55
XDS	6.41	6.56	6.50	6.56	6.51
Subtotal	**5.75**	**5.90**	**5.69**	**5.74**	**5.77**

(1) Overall score of organizational culture of CHSC

Averaging the scores of four items of organizational culture in each CHSC and according to the aggregate score shown in the last column, Huanggu District scores the highest (6.62), followed by Heping District (6.41), Shenhe District (6.41), Tiexi District (6.23), and Dadong District (5.77).

(2) Score of strategic orientation of CHSC

The score of strategic orientation of CHSC is ranked as follows: Huanggu District scores the highest (6.63), followed by Shenhe District (6.41), Heping District (6.40), Tiexi District (6.24), and Dadong District (5.69).

4.2.4 General analysis of employee satisfaction

In terms of employee satisfaction, 46.4% (866/1865) of the employees are very satisfied with the prospects of their CHSCs, 46.9% (875/1865) of the employees are very satisfied with the working atmosphere, 40.8% (761/1865) of the employees have a strong desire for further study or learning, and 33.8% (632/1865) of the employees believe that the work they are engaging in is helpful to the improvement of their professional capability, 39.7% (742/1865) of the employees are very satisfied with their personal career prospects, 47.2% (881/1865) of the employees are very satisfied with the communication channels between leaders and subordinates, only 18.2% (340/1865) of the employees are very satisfied with the performance-based distribution and salary, and 8.5% (159/1865) of the employees think that their work pressure is very high. According to the data analysis, most employees are very dissatisfied with the current performance-based distribution and salary and hope that the performance-based distribution should be flexible so as to raise employees' work enthusiasm. The analysis results of employee satisfaction of 64 CHSCs in five districts of Shenyang are shown in Table 4.5.

(1) Overall score of CHSC employee satisfaction

Averaging the scores of six items of employee satisfaction in each CHSC and according to the aggregate score shown in the last column, Huanggu District scores the highest (5.62), followed by Tiexi District (5.43), Heping District (5.40), Shenhe District (5.38), and Dadong

District (4.90).

(2) Satisfaction with the overall development prospect of CHSC.

The score of satisfaction with the overall development prospect of CHSC is ranked as follows: Huanggu District (6.42) > Heping District (6.22) > Shenhe District (6.21) > Tiexi District (6.15) > Dadong District (5.46).

(3) Satisfaction with CHSC's working atmosphere.

The score of satisfaction with CHSC's working atmosphere is ranked as follows: Huanggu District (6.22) > Heping District (6.08) > Tiexi District (6.08) > Shenhe District (6.03) > Dadong District (5.58).

(4) Satisfaction with CHSC's employee career development prospect

The score of satisfaction with CHSC's employee career development prospect is ranked as follows: Huanggu District (6.03) > Heping District (5.90) > Tiexi District (5.90) > Shenhe District (5.73) > Dadong District (5.29).

(5) Satisfaction with CHSC's superior-subordinate communication

The score of satisfaction with CHSC's superior-subordinate communication is ranked as follows: Huanggu District (6.24) > Heping District (6.18) > Tiexi District (6.10) > Shenhe District (6.03) > Dadong District (5.46).

(6) Satisfaction with CHSC's performance and salary.

The score of satisfaction with CHSC's performance and salary is ranked as follows: Huanggu District (5.20) > Tiexi District (5.03) > Heping District (4.80) > Shenhe District (4.80) > Dadong District (3.75).

(7) Satisfaction with the occupational stress in CHSC

The score of satisfaction with the occupational stress in CHSC is ranked as follows: Dadong District (3.87) > Huanggu District (3.62) > Shenhe District (3.48) > Tiexi District (3.34) > Heping District (3.30).

Table 4.5 Analysis results of CHSC's employees' satisfaction in Shenyang

District	CHSC	Satisfaction with the Overall Development Prospect of the Center	Satisfaction With the Working Atmosphere of CHSC	Satisfaction With Personal Development Prospects	Satisfaction with the Communication Channels of CHSC	Satisfaction with Performance and Pay of CHSC	Satisfaction With Job Stress	Total
Heping	SSWS	6.32	6.50	5.84	6.64	5.41	2.60	5.55
	CBS	5.77	5.27	5.33	5.61	4.00	3.75	4.96
	XTS	6.36	6.33	6.13	6.43	5.67	2.37	5.55
	BSS	6.60	6.30	6.01	6.36	4.71	2.58	5.43
	XHS	6.18	6.19	6.13	6.14	4.41	3.94	5.50
	NHS	6.56	6.31	6.49	6.50	5.54	3.64	5.84
	NZS	6.53	6.18	5.83	6.40	4.85	3.71	5.58
	NSCS	6.50	6.57	6.55	6.21	4.57	3.07	5.58
	HHXZS	6.17	5.96	5.92	6.25	5.21	2.63	5.36
	TYJS	5.32	5.24	5.05	5.54	3.34	3.73	4.70
	JXS	6.03	5.97	5.75	6.03	5.13	2.85	5.29
	HHWS	5.80	5.96	5.47	5.86	4.36	3.47	5.16
	MLWS	6.66	6.31	6.18	6.34	5.19	4.58	5.88
	Subtotal	**6.22**	**6.08**	**5.90**	**6.18**	**4.80**	**3.30**	**5.40**
Tiexi	XSS	6.35	5.63	5.82	5.65	5.08	3.51	5.34
	LGS	5.83	5.63	5.51	5.81	4.92	3.09	5.13
	WGS	6.44	6.48	5.81	6.31	4.56	3.96	5.60

	JHS	6.62	6.26	6.34	6.33	5.50	3.12	5.70
	QGS	5.57	5.51	5.58	5.74	4.98	2.40	4.97
	GRCS	6.76	6.62	6.30	6.72	6.02	2.78	5.87
	LKS	5.97	5.97	5.73	5.75	5.01	3.23	5.27
	DQS	6.37	6.16	5.98	6.16	4.72	4.22	5.60
	QXS	5.96	5.50	5.44	5.88	4.64	2.91	5.06
	DGS	6.21	5.99	5.84	6.13	5.53	3.20	5.48
	XHS	5.94	5.61	5.91	6.25	4.17	3.58	5.24
	KMHS	6.24	6.45	6.23	6.36	5.61	2.57	5.58
	QLS	5.93	6.30	6.07	6.20	5.67	3.80	5.66
	QGSS	6.08	6.18	5.56	6.10	4.11	3.48	5.25
	ZGS	5.47	6.21	5.77	5.82	4.33	4.52	5.35
	ZJS	6.13	6.08	5.77	6.14	5.11	3.16	5.40
	YFS	6.12	6.46	6.14	6.38	4.88	2.91	5.48
	XGS	6.05	6.00	5.72	5.65	4.91	2.41	5.12
	BYXCS	6.77	6.54	6.53	6.58	5.83	4.59	6.14
	Subtotal	**6.15**	**6.08**	**5.90**	**6.10**	**5.03**	**3.34**	**5.43**
Huanggu	MLS	6.75	6.48	6.05	6.23	5.05	3.76	5.72
	TWS	5.67	6.46	6.25	6.42	4.75	3.35	5.48
	LJS	6.46	6.37	5.98	6.28	4.96	3.33	5.56
	BTS	6.60	5.97	5.72	5.78	5.36	3.25	5.45

	YMS	6.16	6.22	6.13	6.32	5.69	2.96	5.58
	KSS	6.76	6.36	6.45	6.36	5.98	5.22	6.19
	HHS	6.55	5.70	5.65	6.00	5.13	4.02	5.51
	SDQS	5.93	5.63	5.24	5.87	4.27	3.45	5.07
	SQS	6.96	6.89	6.52	6.78	6.28	2.45	5.98
	XGS	6.40	6.13	6.32	6.37	4.52	4.37	5.69
	Subtotal	**6.42**	**6.22**	**6.03**	**6.24**	**5.20**	**3.62**	**5.62**
	DXZXS	5.94	6.24	5.53	5.79	4.15	3.61	5.21
	DLS	5.89	5.64	5.14	5.76	4.44	3.71	5.10
	ZJLS	6.80	6.20	5.87	6.20	6.42	3.37	5.81
	FYTS	6.52	5.96	5.95	6.11	5.24	4.18	5.66
	FLS	6.07	6.20	5.84	6.04	5.09	3.21	5.41
	DNS	6.52	6.40	6.21	6.62	4.88	1.84	5.41
Shenhe	QYS	6.21	5.92	5.54	5.71	4.34	3.19	5.15
	SDMS	6.28	5.72	5.58	6.02	4.27	4.24	5.35
	NTS	6.03	6.05	5.85	5.84	4.66	3.04	5.25
	DXS	5.83	5.92	5.86	6.13	5.04	3.22	5.33
	HCS	6.00	6.05	5.52	6.02	4.38	4.50	5.41
	XBZS	6.48	6.00	5.84	6.14	4.66	3.62	5.46
	Subtotal	**6.21**	**6.03**	**5.73**	**6.03**	**4.80**	**3.48**	**5.38**
Dadong	ETS	6.76	6.48	6.06	6.36	5.23	4.04	5.82

QJS	5.13	6.00	5.81	5.69	3.94	4.39	5.16
LSS	5.82	5.97	5.83	6.07	3.94	3.67	5.22
WQS	5.50	5.96	5.39	5.75	3.50	3.82	4.99
DBS	4.52	4.47	4.57	4.42	3.27	3.72	4.16
WGS	5.50	5.23	5.16	5.13	3.21	3.86	4.68
DZS	4.55	5.28	4.85	5.20	3.41	3.80	4.51
CAS	5.32	5.16	4.96	4.79	3.70	3.14	4.51
JQS	5.21	5.17	4.76	5.17	3.89	4.28	4.75
XDS	6.25	6.06	5.52	5.97	3.42	3.94	5.19
Subtotal	**5.46**	**5.58**	**5.29**	**5.46**	**3.75**	**3.87**	**4.90**

4.2.5 General analysis of management capability

In terms of management capability, 51.3% (958/1865) of the employees think that in accordance with the national legal system and industry standard system, their CHSCs have established a complete set of performance management system, assessment system, financial management system, social publicity system, hospital infection management system and medical accident prevention system. In terms of the application of information technology, 46.8% (873/1865) of the employees think that their CHSCs have a perfect electronic information system, which can accurately input patient data and generate electronic medical records in accordance with standard data management policies and procedures, and 29.9% (558/1865) of the employees think that the information system of the CHSC could enable the exchange of patient's information among outpatient, emergency, inpatient and other departments, 34.7% (649/1865) of employees think that their CHSCs could use professional knowledge to create new service items such as family bed care and family visit.

4.2.6 General analysis of dynamic capability

According to the analysis of survey data, in terms of learning capability, 37.9% (708/1865) of the employees in CHSCs can accurately and promptly identify various new changes and trends inside and outside CHSCs. 38.6% (720/1865) of the employees can come up with new countermeasures and put forward innovative ideas to deal with various changes inside and outside the CHSCs, 39% (729/1865) of the employees can make correct choices from a couple of alternative schemes, and 47.8% (893/1865) of the employees can effectively implement the work plan, 39.1% (731/1865) of employees are good at summarizing the law from past events,40.6% (759/1865) of employees are good at acquiring new knowledge and experience from outside the CHSCs, 38.7% (723/1865) of employees can effectively use the ideas, knowledge and experience of CHSCs to influence others, and 39.5% (738/1865) of employees can manage their knowledge and experience in written or electronic forms and establish a knowledge base.

In terms of innovation capability, 27.3% (510/1865) of employees believe that their service plan is more distinctive and unique than that of other similar institutions. 40.9% (764/1865) of employees think that their CHSCs are very successful in continuously optimizing the service process. 38.3% (716/1865) of the employees think that they would get strong support from the management for trying to do things in a new way. 33% (616/1865) of employees believe that

leaders are willing to take risks and explore high-risk development opportunities. 41.5% (774/1865) of the employees think that their CHSCs continue to make innovations in continuously improving the efficiency of existing services, constantly developing new services and expanding the scale of existing services. 28.7% (537/1865) of the employees believe that their CHSCs could provide telemedicine services and seek social network-based cooperation and make exploratory innovation in medical process and services.

In terms of the integration capability, 30.9% (578/1865) of the employees think that the mode of medical association could play a positive role in the hierarchical medical pattern, and 27.3% (510/1865) of the employees believe that the establishment of remote consultation system based on the internet platform, could improve the diagnosis rate. 35% (654/1865) of the employees appreciate the initiative that the doctors in CHSCs could study free of charge in medical alliance hospital. 36.6% (684/1865) of the employees believe that a two-way referral green channel has been established between the high level hospitals and the CHSCs. 34.6% (647/1865) of the employees think that their CHSCs have the capability to share information resources in the network information system comprising CHSC, hospital and health administrative department. 27.8% (519/1865) of the employees think that the leaders of their CHSCs could quickly manage various conflicts in the process of strategic decision-making, quickly identify external changes, and put forward response measures (e.g. resources and strategies). 32% (598/1865) of employees can quickly analyze and understand the changes in patient needs, and strive to grasp the opportunity to absorb external knowledge. 30.9% (577/1865) of employees believe that they could interact frequently with other CHSCs or hospitals to acquire new knowledge, and regularly participate in meetings or trainings in related field to discuss industry development trends and the provision of new services. The analysis results of dynamic capability of 64 CHSCs in five districts of Shenyang are shown in Table 4.6.

Table 4.6 Analysis results of CHSC's dynamic capability in Shenyang

District	CHSC	Learning Capability	Innovation Capability	Integration Capability	Absorptive Capacity	Total
Heping	SSWS	6.27	5.56	5.40	5.77	5.75
	CBS	5.49	4.77	4.75	5.02	5.01
	XTS	6.49	6.20	6.16	6.31	6.29
	BSS	6.36	5.52	5.59	6.10	5.89
	XHS	6.15	5.85	5.72	5.89	5.90
	NHS	6.40	6.33	6.12	6.20	6.26
	NZS	5.96	4.96	4.95	5.60	5.37
	NSCS	6.74	6.53	6.35	6.63	6.56
	HHXZS	6.28	5.27	5.31	5.21	5.52

	TYJS	5.20	4.44	4.70	4.79	4.78
	JXS	5.91	5.54	5.35	5.60	5.60
	HHWS	5.60	5.03	5.01	5.36	5.25
	MLWS	6.58	5.93	5.93	6.06	6.13
	Subtotal	**6.11**	**5.53**	**5.49**	**5.73**	**5.72**
	XSS	5.69	5.14	4.64	5.24	5.18
	LGS	5.30	4.07	3.84	4.87	4.52
	WGS	6.18	5.24	5.01	5.54	5.49
	JHS	6.34	5.67	5.26	6.32	5.90
	QGS	5.40	4.65	4.47	5.03	4.89
	GRCS	6.50	5.43	5.58	6.07	5.89
	LKS	5.95	4.98	4.79	5.44	5.29
	DQS	6.03	5.30	4.80	5.61	5.43
	QXS	5.15	4.47	4.25	4.59	4.62
Tiexi	DGS	5.76	5.27	4.89	5.35	5.32
	XHS	5.62	5.10	4.54	4.76	5.00
	KMHS	6.33	6.01	5.75	6.26	6.09
	QLS	5.88	4.99	5.34	5.69	5.47
	QGSS	5.70	4.92	4.74	5.37	5.18
	ZGS	5.39	5.03	5.54	5.78	5.44
	ZJS	5.95	5.40	5.46	5.43	5.56
	YFS	6.14	5.82	5.65	6.03	5.91
	XGS	6.11	6.06	5.99	6.10	6.06
	BYXCS	6.73	6.30	6.42	6.65	6.52
	Subtotal	**5.90**	**5.26**	**5.10**	**5.59**	**5.46**
	MLS	6.51	5.79	5.16	6.01	5.87
	TWS	6.34	4.96	4.61	5.92	5.46
	LJS	6.26	4.99	5.02	6.01	5.57
	BTS	6.39	5.55	5.83	5.94	5.93
	YMS	6.15	5.63	5.64	6.01	5.86
Huanggu	KSS	6.72	6.20	6.14	6.34	6.35
	HHS	6.07	4.49	4.37	4.88	4.95
	SDQS	4.97	3.54	3.16	4.12	3.95
	SQS	6.88	6.17	4.39	6.82	6.07
	XGS	5.86	4.97	4.12	5.63	5.14
	Subtotal	**6.22**	**5.23**	**4.84**	**5.77**	**5.52**
	DXZXS	6.07	5.05	4.91	5.19	5.31
	DLS	5.71	4.94	4.81	5.35	5.20
Shenhe	ZJLS	5.33	4.07	3.76	5.40	4.64
	FYTS	6.08	5.67	5.74	5.88	5.84
	FLS	6.00	5.41	5.47	5.62	5.62

	DNS	6.55	6.31	6.07	6.29	6.30
	QYS	5.47	4.36	3.85	4.78	4.62
	SDMS	6.05	5.05	4.31	5.34	5.19
	NTS	5.96	5.23	5.28	5.81	5.57
	DXS	5.80	5.09	4.70	5.49	5.27
	HCS	6.15	5.33	5.10	5.48	5.52
	XBZS	6.23	5.27	5.07	5.63	5.55
	Subtotal	**5.95**	**5.15**	**4.92**	**5.52**	**5.39**
	ETS	6.36	5.59	5.41	5.56	5.73
	QJS	5.57	5.06	4.36	4.94	4.98
	LSS	5.84	5.35	5.03	5.14	5.34
	WQS	5.40	4.29	3.82	3.92	4.35
	DBS	4.45	3.83	3.50	3.78	3.89
Dadong	WGS	5.24	3.99	3.80	4.64	4.42
	DZS	4.62	3.57	3.49	3.74	3.85
	CAS	4.76	3.95	3.62	4.55	4.22
	JQS	4.96	3.16	2.59	3.76	3.61
	XDS	6.11	4.12	3.17	4.16	4.39
	Subtotal	**5.33**	**4.29**	**3.88**	**4.42**	**4.48**

(1) Overall score of CHSC's dynamic capability

Averaging the scores of four items of dynamic capability in each CHSC and according to the aggregate score shown in the last column, Heping District scores the highest (5.72), followed by Huanggu District (5.52), Tiexi District (5.46), Shenhe District (5.39), and Dadong District (4.48).

(2) Overall score of CHSC's learning capability

The score of learning capability of CHSC is ranked as follows: Huanggu District (6.22) > Heping District (6.11) > Shenhe District (5.95) > Tiexi District (5.90) > Dadong District (5.33).

(3) Overall score of CHSC's innovation capability

The score of innovation capability of CHSC is ranked as follows: Heping District (5.53) > Tiexi District (5.26) > Huanggu District (5.23) > Shenhe District (5.15) > Dadong District (4.29).

(4) Overall score of CHSC's integration capability

The score of integration capability of CHSC is ranked as follows: Heping District (5.49) > Tiexi District (5.10) > Shenhe District (4.92) > Huanggu District (4.84) > Dadong District (3.88).

(5) Overall score of CHSC's absorptive capacity

The score of absorptive capacity of CHSC is ranked as follows: Huanggu District (5.77) > Heping District (5.73) > Tiexi District (5.59) > Shenhe District (5.52) > Dadong District (4.42).

4.3 Analysis of structural equation model

4.3.1 Item analysis

Item analysis is used to test the appropriateness of question items. According to the total score of the respondents from high to low, the top 27% of the respondents are labeled as "high-score group"; then ranking the total score of the respondents from low to high, the top 27% of the respondents are flagged as "low-score group". Independent sample T-test is used to compare the average score of each question between the high-score and low-score group. The items whose significance value is greater than critical ratio (3.00) are included in the study.

As can be seen from Table 4.7, the CR value of all items is greater than 3.00, and the item differences are statistically significant ($P < 0.05$).

Table 4.7 Analysis results of item analysis (Differentiation)

Dimension index	Group		*t*(critical ratio)	*p*
	low score group (*n*=504)	high score group (*n*=504)		
A23 Auxiliary examination equipment	0.74±0.44	0.90±0.30	-6.543	0.000**
A24 Public health infrastructure	0.83±0.38	0.97±0.16	-8.113	0.000**
A31 Are training expenses spent to improve the quality and ability of employees?	0.66±0.47	0.90±0.30	-9.477	0.000**
A32 Is there any investment in technological innovation?	0.46±0.50	0.70±0.46	-7.675	0.000**
B11 Residents' Health Records Establishment	6.07±1.00	6.90±0.41	-17.311	0.000**
B15 Reporting And Handling of Infectious Diseases and Public Health Emergencies	5.74±0.97	6.89±0.29	-25.432	0.000**
B16 Healthcare Education	6.16±0.84	6.90±0.32	-18.397	0.000**
B17 Health Management of The Aged	5.92±0.98	6.90±0.33	-21.089	0.000**
B18 Management of Severe Psychosis Patients	5.81±1.05	6.88±0.38	-21.634	0.000**
B21 Rehabilitation Services	6.17±0.91	6.95±0.23	-18.775	0.000**
B12 Immunization and Vaccination	5.56±1.22	6.87±0.57	-21.747	0.000**
B22 Formal Traditional Chinese Medicine Care	5.73±1.35	6.92±0.28	-19.542	0.000**
C11 Core Values	5.39±0.93	6.88±0.30	-34.121	0.000**
C12 Mission and Vision	5.62±1.01	6.89±0.33	-26.766	0.000**
C21 Strategic Orientation	5.46±1.11	6.90±0.31	-27.838	0.000**
D21 IT Infrastructure	5.03±1.41	6.84±0.46	-27.332	0.000**
D22 Internal Electronic Integration	3.92±1.39	6.58±0.84	-36.719	0.000**
D23 External Electronic Integration	3.71±1.40	6.53±0.95	-37.300	0.000**
E24 Strategic Innovativeness	4.33±1.07	6.69±0.55	-43.952	0.000**
E25 Technology Innovativeness	3.25±1.36	6.27±1.03	-39.841	0.000**
E26 Exploitative Innovation	4.13±1.00	6.71±0.45	-52.715	0.000**
E27 Exploratory Innovation	3.40±1.13	6.49±0.65	-53.233	0.000**
E31 Integrated Care Organization	3.79±1.20	6.46±0.71	-43.201	0.000**
E32 Remote Consultation	3.34±1.60	6.38±1.21	-34.069	0.000**
E33 Human Resource Integration	4.02±1.72	6.68±0.67	-32.369	0.000**

* $P<0.05$, ** $P<0.01$

4.3.2 Exploratory factor analysis

Exploratory factor analysis is used to verify the theoretical framework of the scale. According to Kaiser & Rice (1974), if KMO (measure of how coherently a set of variables are) is more than 0.90, the items are perfectly preferred for factor analysis. Because the collected data is from a large sample and meanwhile the data conform to the multivariate normality, the maximum likelihood (ML) method is used to estimate the model. Whether the model is consistent with the actual data can be measured by three indicators: the basic fitness index, the overall model fitness index (evaluating the external quality of the model), and the internal structural fitness index (evaluating the internal quality of the model). The overall model fitness index can be subdivided into Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Incremental Fitting Index (IFI) and parsimonious fitness index (χ^2/df). According to Hoyle and Panter's recommendation, χ^2/df, CFI, SRMR and RMSEA are used for statistical analysis. $\chi 2 / df < 2.00$, CFI > 0.90, SRMR < 0.08, RMSEA < 0.08, which indicates that the model fitting is good.

After statistical analysis, the KMO value of the scale is 0.926 ($P < 0.05$), which is suitable for factor analysis (Table 4.8).

Table 4.8 KMO and Bartlett's test

KMO value		0.926
Bartlett test of Sphericity	Approximate chi square	31275.747
	df	300
	P Value	0.000

Through principal component analysis (PCA), there are five factors with Eigenvalue greater than 1, and the cumulative explained variation is 68.355, that is, the five common factors explain 68.355% of the total variation (Table 4.9).

Table 4.9 Explained variance ratio

No.	Eigenvalues			Principle component extraction		
	Eigenvalues	Variance interpretation rate%	Cumulative rate %	Eigenvalues	Variance interpretation rate%	Cumulative rate %
1	9.282	37.130	37.130	9.282	37.130	37.130
2	3.448	13.793	50.922	3.448	13.793	50.922
3	2.270	9.082	60.004	2.270	9.082	60.004
4	1.059	4.236	64.240	1.059	4.236	64.240
5	1.029	4.115	68.355	1.029	4.115	68.355
6	0.800	3.200	71.555	-	-	-
7	0.726	2.904	74.459	-	-	-
8	0.701	2.802	77.261	-	-	-
9	0.606	2.423	79.684	-	-	-
10	0.572	2.288	81.972	-	-	-
11	0.512	2.048	84.020	-	-	-
12	0.491	1.963	85.983	-	-	-
13	0.438	1.753	87.736	-	-	-
14	0.388	1.551	89.287	-	-	-
15	0.330	1.318	90.605	-	-	-
16	0.317	1.269	91.874	-	-	-
17	0.296	1.182	93.056	-	-	-
18	0.293	1.171	94.227	-	-	-
19	0.284	1.136	95.363	-	-	-
20	0.260	1.041	96.405	-	-	-
21	0.224	0.894	97.299	-	-	-
22	0.217	0.866	98.165	-	-	-
23	0.197	0.787	98.952	-	-	-
24	0.164	0.655	99.607	-	-	-
25	0.098	0.393	100.000	-	-	-

After the analysis using the maximum rotation orthogonal method, we can see from the factor matrix after axis rotation (Table 4.10) that common factor 1 includes A23, A24, A31 and A32, common factor 2 includes B11, B15, B16, B17, B18, B21, B12 and B22, common factor 3 includes C11, C12 and C21, common factor 4 includes D21, D22 and D23, common factor 5 includes E24, E25, E26, E27, E31, E32 and E33, and the factor load of each item ranges from 0.659 to 0.860, and the communality falls between 0.439 and 0.874.

Table 4.10 Results of validity analysis

Dimension index	Factor load coefficient					communality
	Factor1	Factor 2	Factor 3	Factor 4	Factor 5	
A23 Auxiliary examination equipment	0.025	0.100	0.814	0.042	-0.039	0.676
A24 Public health infrastructure	0.055	0.032	0.658	0.160	0.101	0.473
A31 Are training expenses spent to improve the quality and ability of employees?	0.111	0.133	0.837	0.029	-0.020	0.732
A32 Is there any investment in technological innovation?	0.119	-0.028	0.723	-0.047	0.079	0.546
B11 Residents' Health Records Establishment	0.131	0.763	-0.044	0.008	0.029	0.602
B15 Reporting And Handling of Infectious Diseases and Public Health Emergencies	0.168	0.721	0.142	0.350	0.066	0.696
B16 Healthcare Education	0.100	0.809	-0.032	0.115	0.041	0.681
B17 Health Management of The Aged	0.104	0.801	0.031	0.194	0.055	0.695
B18 Management of Severe Psychosis Patients	0.088	0.763	0.037	0.227	0.093	0.652
B21 Rehabilitation Services	0.098	0.738	0.056	0.189	0.055	0.597
B12 Immunization And Vaccination	0.160	0.501	0.117	0.381	0.061	0.439
B22 Formal Traditional Chinese Medicine Care	0.189	0.622	0.310	0.141	0.065	0.542
C11 Core Values	0.275	0.437	0.075	0.755	0.129	0.860
C12 Mission and Vision	0.196	0.411	0.054	0.758	0.103	0.796
C21 Strategic Orientation	0.247	0.377	0.093	0.784	0.077	0.833
D21 IT Infrastructure	0.298	0.299	0.082	0.246	0.471	0.467
D22 Internal Electronic Integration	0.367	0.065	0.041	0.053	0.850	0.866
D23 External Electronic Integration	0.410	0.066	0.067	0.087	0.801	0.826
E24 Strategic Innovativeness	0.729	0.226	0.035	0.306	0.141	0.698
E25 Technology Innovativeness	0.773	0.053	0.021	0.040	0.359	0.732
E26 Exploitative Innovation	0.809	0.227	0.070	0.272	0.189	0.821
E27 Exploratory Innovation	0.881	0.116	0.073	0.138	0.244	0.874
E31 Integrated Care Organization	0.793	0.151	0.109	0.082	0.221	0.720
E32 Remote Consultation	0.829	0.086	0.081	0.006	0.071	0.706
E33 Human Resource Integration	0.697	0.168	0.144	0.161	0.039	0.562

4.3.3 Confirmatory factor analysis

The Maximum Likelihood method is used to estimate the path coefficients (see Table 4.11), and the path coefficients in the model are statistically significant ($P < 0.05$). The C.R. value is obtained by dividing regression coefficient by the standard error of the estimated value, which is called the critical ratio. If its absolute value is greater than 1.96, it means that the estimated value reaches the significance level of 0.05. β represents the standardized regression coefficient, that is, the path coefficient between variables.

From Table 4.11, the standard load coefficient of resources, service capability, organizational culture, management capability and dynamic capability is 0.394, 0.626, 0.592, 0.656, and 0.910 respectively; among the third level indicators, the standard load coefficient of training expenditure spent to improve the quality and ability of employees (0.916), strategic orientation (0.934), external electronic system integration (0.911) and exploratory innovation (0.960) is all above 0.9.

Table 4.11 Factor load coefficient

Factor (Latent Variables)	Analysis item (Explicit Variables)	Non-Standard load coefficient	Std. Error	*Z* (CR value)	*p*	Standard load coefficient (Std. Estimate)
Resource	A23 Auxiliary examination equipment	1.000	-	-	-	0.719
	A31 Are training expenses spent to improve the quality and ability of employees?	1.721	0.157	10.975	0.000	0.916
	A32 Is there any investment in technological innovation?	1.259	0.131	9.644	0.000	0.549
Service Capability	B15 Reporting And Handling of Infectious Diseases and Public Health Emergencies	1.000	-	-	-	0.893
	B16 Healthcare Education	0.659	0.044	14.951	0.000	0.701
	B18 Management of Severe Psychosis Patients	0.784	0.069	11.436	0.000	0.572
	B21 Rehabilitation Services	0.728	0.046	15.792	0.000	0.729
	B22 Formal Traditional Chinese Medicine Care	1.073	0.064	16.811	0.000	0.762
Organizational Culture	C1 Core Values	1.000	-	-	-	0.529
	C2 Mission and Vision	1.948	0.192	10.166	0.000	0.817
	C3 Strategic Orientation	2.217	0.219	10.128	0.000	0.934
Management Capability	D1 IT Infrastructure	1.000	-	-	-	0.394
	D2 Internal Electronic Integration	2.086	0.293	7.114	0.000	0.780
	D3 External Electronic Integration	2.511	0.354	7.097	0.000	0.911
Dynamic	E1 Strategic Innovativeness	1.000	-	-	-	0.739

Capability	E2 Technology Innovativeness	1.447	0.090	16.136	0.000	0.822
	E3 Exploitative Innovation	1.201	0.068	17.553	0.000	0.885
	E4 Exploratory Innovation	1.516	0.079	19.170	0.000	0.960
	E5 Integrated Care Organization	1.179	0.080	14.738	0.000	0.757
	E6 Remote Consultation	1.568	0.102	15.434	0.000	0.789
	E7 Human Resource Integration	1.118	0.089	12.498	0.000	0.651
Core Capability	Resource	1.000	0.000	-	-	0.394
	Service Capability	5.322	0.976	5.454	0.000	0.626
	Organizational Culture	3.392	0.698	4.859	0.000	0.592
	Management Capability	5.211	1.169	4.459	0.000	0.656
	Dynamic Capability	10.768	1.931	5.576	0.000	0.910

According to Table 4.12, AVE >0.5, and CR >0.7, indicating that the convergent validity is high.

Table 4.12 Analysis results of AVE and CR

factor	Average Variance Extracted Value	composite reliability (CR value)
Resource	0.517	0.754
Service Capability	0.533	0.846
Organizational Culture	0.652	0.837
Management Capability	0.550	0.767
Dynamic Capability	0.642	0.925

The χ^2/ df of the scale is 2.918 (< 3), CFI is 0.919 (> 0.9), SRMR is 0.078 (< 0.1), RMESA is 0.073 (< 0.1), indicating that the model fits well (Figure 4.1).

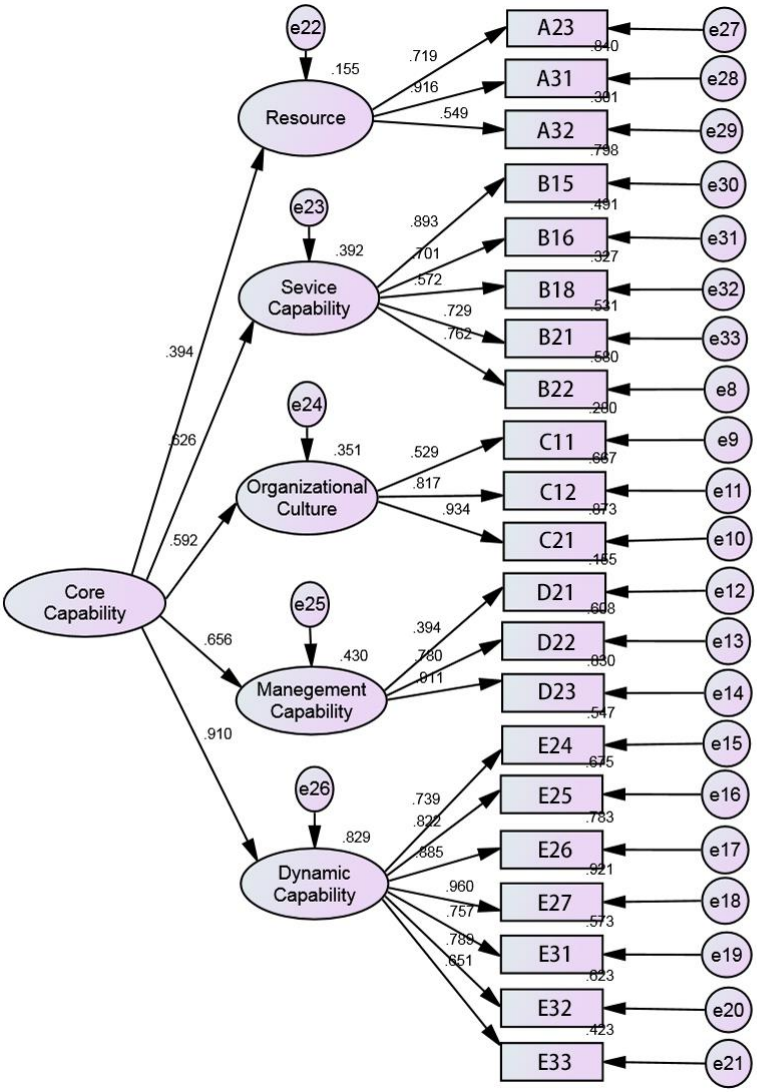

Figure 4.1 Model path analysis diagram

Chapter 5: Discussions

5.1 The CHS in China

5.1.1 The reform pressure faced by China's fundamental CHSC

Over the past two decades, China has been undergoing a process of economic reform and has been relatively successful. But in the meantime, it faced multiple challenges: limited financial support from governments; high rates of catastrophic out-of-pocket spending and impoverishment through health expenses; inequalities in health and health- care utilization; and limited financial protection even among those with insurance (a small minority of the population) (Wagstaff, 2009). Due to the above challenges, the old 'three-tiered' hospital system, which involved local neighborhood hospitals, district-wide secondary hospitals and city-wide tertiary hospitals, was forced to rely on the sales of new drugs and technologies to boost income, which resulted in expensive and inefficient care and strained patient-doctor relationships (Wang & Ahmed, 2007). The old public health system was the responsibility of dozens of disparate institutes, centres, agencies, bureaus and departments, which resulted in overlapping and sometimes conflicting mission statements and agency mandates (Liu, 2004a, 2004b). With an increase in life expectancy, increased burden due to chronic diseases, and the challenges of emerging infectious diseases (e.g. severe acute respiratory syndrome in 2003), the Chinese Government re-examined the public health infra- structure and saw the need for a new public health system to address the many health issues associated with these changes (Peng et al., 2003). To minimize overlapping of functions and to increase efficiency, the Chinese Government consolidated existing institutions into a new agency: The Centres for Disease Control and Prevention (CDC). The goal of the CDC is to provide a central public health organization with responsibility for both community and individual health needs. The development of the CDC strengthened the Government's role in public health (Peng et al., 2003). As public health and primary care share the common goal of improving the overall health of specific populations, it was decided to integrate the two systems by strengthening public health functions in primary healthcare settings. This approach could improve local public health surveillance and reinforce disease prevention and health promotion (Rowan, Hogg, & Huston, 2007). In order to resolve the problems of the increasing burden of healthcare expenses and

limited access to health services, the Chinese Government initiated its CHS programme in 1997 (Yang et al., 2008). The 'three-tiered' hospital system was replaced by the current 'two-tiered' CHSC system. The new system consists of ambulatory care in CHS centres and inpatient care in referral hospitals (Wang & Ahmed, 2007). The main roles of the CHS centres are to provide high-quality, affordable, accessible primary health care and public health services to community residents.

As the result, the participation of CHC in China's health care market slightly alleviated the problem "medical service was expensive and difficult to access" (Yuan et al., 2009) and CHC should continue strengthening its competitive advantages (involving shorter waiting time for medical service and lower medical cost, compared with hospitals in the three-level public hospital system, here the definition of medical cost was the actual cost of providing both goods and services related to the delivery of medical care) (Shen & Tang, 2010; Tang, 2013), but the community patient was still not very satisfied with community medical service (Eggleston et al., 2007; Shen et al., 2010; Shen & Tang, 2010) in the 2008 national urban resident household survey, it was suggested that the quality of the process of delivering treatment service. The reduction of medical cost (particularly in regions with higher per capita GDP and more abundant community medical resources), the improvement of doctor-patient communication (particularly in regions with higher per capita GDP and more abundant community medical resources), the promotion of medical facility and hospital environment (particularly in regions with higher per capita GDP and more abundant community medical resources), the improvement of medical treatment process (particularly in regions with lower per capita GDP and less abundant community medical resources), the promotion of trust in doctor (particularly in regions with lower per capita GDP and less abundant community medical resources), the promotion of trust in prescription (particularly in regions with lower per capita GDP and less abundant community medical resources), and the promotion of trust in recommended medical examination (particularly in regions with lower per capita GDP and less abundant community medical resources) could significantly contribute to the promotion of the community patient's life satisfaction (Shen et al., 2010; Tang, 2011).

5.1.2 Service system construction of community health service center

(1) Constructing primary medical and health professionals. In collaboration with medical education, we will deepen the reform of general practice education in colleges and universities, and establish and improve a post-graduation general practice education system. General

practitioners should be trained through various channels, such as training for on-the-job doctors, targeted training of general practitioners, and upgrading of educational levels of on-the-job doctors, so as to gradually transition to standardized training of general practitioners, so that there are 2-3 qualified general practitioners for every 10,000 urban and rural residents. We will promote price reform of medical services, reflecting the value of the skilled services of medical staff, including general practitioners. We will promote the contract service of family doctors, and the contract service fee will be a part of the income of primary-level medical and health institutions where family doctors work, and can be used for salary distribution. We will increase the proportion of medium and senior professional and technical posts in community-level medical and health institutions, and give priority to general practitioners who have passed the standardized training for residents in general practice and specialists in general practice (China State Council, 2018). We will strengthen the training of rehabilitation therapists, nursing staff and other professionals to meet the people's needs for multi-level and diversified health services.

(2) Capability building of primary medical and health services. Through the government's organization or purchase of services, we will scientifically arrange primary health institutions, strengthen standardization construction, and achieve full coverage of urban and rural residents. Through the establishment of medical consortium, counterpart support, multi-point practice of doctors，doctors from hospitals at or above the second level in cities are encouraged to practice in primary medical and health institutions，or make regular visits to improve CHSC service capacity. We can improve the ability of Chinese medicine service and medical rehabilitation service in primary medical and health institutions, strength the construction of characteristic diagnosis and treatment areas of traditional Chinese medicine, promote the comprehensive service mode of traditional Chinese medicine，in order to give full play to the role of traditional Chinese medicine in the prevention and treatment of common, frequently occurring and chronic diseases (China State Council, 2015).

(3) Establishing and improving the guarantee mechanism of hierarchical diagnosis and treatment. Improve the rational allocation mechanism of medical resources, and strengthen the guiding and restrictive role of regional health planning and medical institution setting planning in the allocation of medical resources. Formulate the service capacity standards of various medical institutions at all levels, and carry out functional positioning from the aspects of administrative management, capital investment, performance appraisal, medical insurance payment and other incentive and restraint measures. Establish a grass-roots signing service

system, and promote residents or families to voluntarily sign service agreements with the signing doctor team through policy guidance. The contracted doctor team is composed of doctors from secondary or above hospitals and medical personnel from grass-roots medical and health institutions. We will improve the performance-based pay distribution mechanism in community medical and health institutions and give preference to medical personnel who sign up for services. Establish a division of labor and cooperation mechanism for medical and health institutions, guided by improving the ability of community medical and health services, with business, technology, management and assets as the link, explore the establishment of medical consortia, counterpart support and other modes of division of labor and cooperation, Improve the management and operation mechanism (China State Council, 2015).

(4) Promoting the reform of the medical insurance payment system. Adjust and improve the medical insurance policy according to the requirements of hierarchical diagnosis and treatment. Appropriately increase the proportion of medical insurance contributions of community medical and health institutions, the starting payment line of eligible referral inpatients can be continuously calculated, promote the orderly flow of patients. Eligible community medical and health institutions and chronic disease medical institutions will be included in the designated scope of basic medical insurance. Expand the gap in reimbursement levels between community medical and health institutions, county-level hospitals and large urban hospitals, to enhance the attractiveness of community medical services, guide insured patients to seek medical treatment in an orderly manner (China State Council, 2015).

(5) Integrating and promoting the sharing of regional medical resources. Promote the top-down connection of high-quality medical resources in the medical consortium, uniformly allocate medical technology and other resources, and give full play to the maximum utilization efficiency of existing resources. Medical institutions at or above the second level are encouraged to send professional technical and management talents to primary medical and health institutions. Give full play to the leading role of tertiary public hospitals. According to the disease spectrum and the diagnosis and treatment needs of regional key diseases, send medical personnel through professional co construction, clinical teaching and business guidance to promote the sharing of high-quality medical resources and sink to the grass-roots level. Unified information platform to realize the interconnection of diagnosis and treatment information of medical consortium. Realize regional resources sharing. Medical imaging center, laboratory testing center, disinfection supply center and logistics service center can be established in the Hospital Union to provide comprehensive services for all medical institutions in the Hospital Union. Strengthen medical quality management and promote mutual recognition

of laboratory testing results among medical institutions at the same level, primary medical institutions and independent medical laboratory institutions (China State Council, 2017).

(6) Medical and health informatization construction. We will accelerate the construction of the national health security information project, establish a regional medical and health information platform, Realize the continuous recording of electronic health records and electronic medical records, as well as the information sharing between different levels and different types of medical institutions, so as to ensure the smooth flow of referral information. Improve the accessibility of high-quality medical resources and the overall efficiency of medical services by improving the ability of telemedicine service, using information technology to promote the vertical mobility of medical resources (China State Council, 2015).

5.2 The CHS in Shenyang City

5.2.1 The basic situation of community health medical institutions in Shenyang

The community health service in Shenyang started early with large investment and rapid development. By the end of 2017, Shenyang has built 138 community health service centers and 293 community health service stations. With the community health service centers playing the central role and the community health service stations as the basis, a community health service system that can be reached within 10-15 minutes has been initially established, which basically meets the basic medical needs of community residents and forms a relatively perfect community health service system. Because most of the community health service centers are transformed from the secondary hospitals in each district, there are some differences in terms of the infrastructure and medical level between CHSCs, but the overall development is good.

The Action Plan for Strengthening the Construction and Development of Primary Health Care System in Shenyang (2016-2018)(hereinafter referred as “the Plan”) issued by Shenyang municipal government requires that by 2018, at least 1 community health service center should be established within the jurisdiction of each sub-district street office or in residential areas holding 30,000-100,000 population in the city, and one government-sponsored health center should be built in every township, in order to make the layout of the primary medical service network of the city more reasonable. The basic medical institutions should have 2000 general practitioners, and the human resources allocation should be further optimized. The equipment configuration of primary medical institutions should be improved to meet the needs of basic medical services.

5.2.2 Medical services of CHSCs in Shenyang

At present, the main services provided by community health service centers in Shenyang are as follows:

I. Basic medical services refer to the diagnosis and treatment services for frequently occurring and common diseases, including prescription of essential drugs, emergency rescue and rehabilitation therapy. Meanwhile, community health service centers also provide two-way referral service. Currently, the community health service centers in Shenyang have devoted efforts to provide the TCM rehabilitation service by actively establishing TCM-based preventive treatment department and the TCM outpatient services.

II. Public health service refers to the basic public health and disease prevention and control services provided by health departments and medical service institutions to improve people's health. Its main functions include information file management, health education, prevention and control of chronic non-communicable diseases, protective vaccination, maternal and child health care, elderly health management and handling of public health emergencies.

According to the development of CHSCs in Shenyang and the national new requirements of deepening the construction of community health services, Shenyang government proposes that the municipal health planning should aim to meet the needs of the people for community health service to the greatest extent, give full play to the functions of community health resources, and establish a new type of community health service mode featuring full coverage, whole process monitoring, information support, grid management and flat structure. The ultimate goal is to achieve the sustainable development of community health service and bring its six functions into full play thus fully reflecting the crucial role of the government in providing public services.

5.3 Analysis of the current situation of CHSCs in Shenyang

5.3.1 Current situation of resources of CHSCs

On March 19, 2019, the official website of the National Health Commission issued the *Notice of the General Office of the National Health Commission on Issuing the Guidelines for the Evaluation of the Service Capacity of Community Health Service Centers* (hereinafter referred to as “Guidelines” (Doc No. 287. [2019]) (China Ministry Of Health, 2019). The “Guidelines” is an important basis for evaluating the service capacity of community health service centers in China.

(1) In terms of the number of registered general practitioners per 10,000 people, the “Guidelines” requires that the number of registered general practitioners per 10,000 people in a district shall not be less than 2 (see 1.4 Staffing-[B2]). As per Table 4.1, Shenhe District (4.02 on average) and Heping District (2.97) meet the standard, while Dadong District (1.72), Tiexi District (1.22) and Huanggu District (1.07) are below the standard; among 64 CHSCs, only 18 (28.13%) had 2 or more registered general practitioners per 10,000 population. It shows that the registered GPs in Shenyang community health service centers are not evenly allocated, and most of them are in shortage of registered GPs.

(2) In terms of the proportion of health personnel with intermediate title or above, the “Guidelines” requires that the proportion of health personnel with intermediate title and above should reach 35% (see 1.4 staffing-[A3]). From Table 4.1, Huanggu District (53.54% on average), Heping District (44.48%), Shenhe District (42.62%) and Tiexi District (37.72%) all meet the standard, and only Dadong District (31.46%) is under the standard. Among the 64 CHSCs, there are 30 (46.88%) whose proportion of health personnel with intermediate title or above is less than 35%. It reveals that about half of the CHSCs are under the standard in this regard.

(3) In terms of the number of certified public health practitioners, the “Guidelines” requires "each community health service center shall have at least one certified public health practitioner (see 1.4 staffing-[C1])". According to Table 4.1, among the 64 CHSCs, 24 (37.5%) have no certified public health practitioners, and there are 54 (84.38%) whose proportion of certified doctors accounts for less than 10% of the total health employees. It shows that the number of certified public health practitioners in most CHSCs in Shenyang is still insufficient.

(4) In terms of the proportion of doctors with master degree or above, among the 64 CHSCs, there are 11(17.19%) whose proportion of doctors with master degree or above accounts for more than 5% of the total; there are 15(23.44%) whose proportion of doctors with master degree or above accounts for 3%~5%; there are 21(32.81%) whose proportion of doctors with master degree or above accounts for less than 3%; 22 (34.38%) have no doctors with master degree or above. It shows that most of the CHSCs in Shenyang are lack of high-level medical talents.

(5) In terms of service area per 10,000 population, the “Guidelines” formulates different standards according to Table 4.1, Shenhe District (872.78 square meters on average), Heping District (597.71 sqm), Tiexi District (427.97 sqm), Huanggu District (352.94 sqm) and Dadong District (326.04 sqm) are all above the standards. Among the 64 CHSCs, there are 10 (15.63%) whose service area per 10,000 people is less than 200 square meters. The results show that the

service areas of most CHSCs in Shenyang basically meet the requirements.

The research results show that the CHSCs in Shenyang have generally established a grass-roots health service team composed of licensed doctors, registered nurses and other health personnel. The health human resources basically meet the standard, but the structural difference among CHSCs in terms of medical talents with senior professional title and high education background is still significant.

Based on the surveys of 64 CHSCs in Shenyang, we conducted in-depth interviews with leaders of 10 national demonstration CHSCs. When talking about resources, they all agree that medical talents have played a pivotal role in building the core capability. CHSC could not have built its own unique advantages without excellent talents and cutting-edge medical technology. The study found that the national demonstration CHSCs gain an advantage over other CHSCs in terms of staffing and equipment configurations. The core capability is a reflection of comprehensive strength underpinned by substantial human resources, material resources, and intangible resources such as brand and business reputation. The effective allocation and utilization of these resources plays a decisive role in the sustainable development of CHSC. In terms of material resources of CHSC, capital resources can ensure financial support for the development of CHSC, such as the investment in the leading technology and technological innovation, the training expenses spent to improve the quality and ability of employees, the investment in equipment capable of high-quality and efficient diagnosis and treatment ability, and the investment in information network construction to realize the digitization of CHSC. In particular, the human resources have played an irreplaceable and pivotal role in forming core capability, which can provide technical support for CHSC's scientific and technological progress and technological innovation. Human resources, as the "carrier" of knowledge and skills, when effectively combined with knowledge, can form competitive advantages that will be further transformed into core capability.

5.3.2 Current situation of service capability

Shenyang Health and Family Planning Commission and other six departments jointly issued the *Implementation Plan of Shenyang Family Doctor Contractual Service*, aiming to provide contract service for key groups. After that, with the overall goal of providing contract service in a solid, meticulous, and excellent way, Shenyang intensified efforts to improve policies and measures, improve service quality, and provide comprehensive and high-quality health services for contract signing residents from five aspects: (1) Work out plan with top-down design method;

(2) Build core services and strengthen team building. The "1+1+N" contract service mode is adopted to form the contract service team, including family doctor, team assistant and other supporting health personnel such as public health doctors, medical technicians and family planning personnel. The aim is to provide comprehensive health services for the contract-signing people; (3) Clarify the work objectives and refine the service items; (4) Strengthen the construction of contract signing service system. Efforts have been made to implement the action plan of strengthening the construction and development of primary medical and health service system in Shenyang, further improve the equipment configurations of primary health institutions, and improve the service quality and strengthen the construction of grass-roots medical team with general practitioners as the core; (5) Improve policies to provide guarantee for signing services. Shenyang issued the "*Notice of Shenyang Health and Family Planning Commission on Issuing the Implementation Plan for Promoting the Construction and Development of Shenyang Urban Medical Alliance*" and "*Notice of Shenyang Health And Family Planning Commission on Issuing the implementation Plan for Promoting Hierarchical Medical System*" to further standardize the working mechanism of Shenyang medical alliance.

On August 30, 2019, the National Health Commission published the Notice on Providing Basic Public Health Services on its official website, which requires the primary health service institutions to provide 14 kinds of national basic public health services, as shown in Table 5.1.

Table 5.1 List of national basic public health services (2019)

No.	Categories	Service items
1	Establish residents' health records	1. Establish health records 2. Maintain and manage health records
2	Health education	1. Provide health education materials 2. Set up health education bulletin board 3. Carry out public health consultation service 4. Hold lectures on health knowledge 5. Provide individual health education
3	Preventive vaccination	1. Vaccination management 2. Vaccination 3.Treatment of persons with abnormal reactions to vaccination
4	Health management of children aged 0-6	1. Family visit for newborn 2. Full moon neonatal health management 3. Infant health management 4. Health management of preschool children
5	Maternal health management	1. Early pregnancy health management 2. Health management in mid-pregnancy period 3. Health management during late pregnancy 4. After-delivery visit 5. Health examination of 42 days of postpartum
6	Health management of the elderly	1. Lifestyle and health assessment 2. Physical examination 3. Auxiliary examination

No.	Categories	Service items
7	Health management of patients with chronic diseases (hypertension)	4. Health guidance 1. Disease screening 2.Follow-up evaluation and classified intervention 3. Physical examination
	Health management of patients with chronic diseases (Type 2 diabetes)	1. Disease screening 2.Follow-up evaluation and classified intervention 3. Physical examination
8	Management of patients with severe mental disorders	1.Information management of patients with severe mental illness 2.Follow-up evaluation and classified intervention 3. Physical examination
9	Health management of tuberculosis patients	1.Report persons with similar symptoms 2.Follow-up evaluation and medication management (MDR patients management), medication guidance 3. Physical examination
10	Report and management of infectious diseases and public health emergencies	1.Risk management of infectious diseases and public health emergencies 2.Discovery and record of infectious diseases and public health emergencies 3.Information report on infectious diseases and public health emergencies 4. Management of infectious diseases and public health emergencies
11	TCM Health management	1.TCM-based physical diagnosis and examination for the elderly 2. TCM-based care for children
12	Health and family planning supervision and management	1.Food safety information report 2.Health consultation and guidance and information report on family planning 3. Inspection of drinking water safety 4. School health service 5.Illegal medical practice and information report on illegal blood collection and supply
13	Distribution of free contraceptives	1.The provincial health and family planning department is responsible for regional procurement of free contraceptives in accordance with law 2.The provincial, prefectural and county-level family planning drug administration institutions are responsible for the storage and distribution of free contraceptives
14	Promote activities for health preservation	1.Health preservation and promotion in county (district) 2.Popularization of health science and knowledge 3.Construction of health promotion hospital and smoking-quitting clinics 4.Health literacy promotion and tobacco epidemic monitoring 5.12320 hotline consultation service 6.Health education for key diseases, key areas and key groups

Source: National Health and Family Planning Commission (2009)

The questionnaire in this study covers 10 items (see results in Table 4.3)

(1) Basic situation of public health services in Shenyang.

By averaging scores of 10 services in each CHSC and according to the “aggregate” score in the last column, we can see the average score of Huanggu District (6.75), Shenhe District (6.53), Heping District (6.46), Tiexi District (6.41) and Dadong District (6.06) is all over 6, which shows that all CHSCs pay attention to basic public health services.

According to the average score of services in 64 CHSCs in the city, the “health education” (6.60) and the “establishment of residents' health records” (6.56) are excellently carried out, while the “report and handling of infectious diseases and public health emergencies” (6.41) and “rehabilitation medical services” (5.87) report the lowest score.

(2) In terms of the establishment of residents' health records, among the 64 CHSCs, only 4 (6.25%) scored below 6.0.

(3) In terms of vaccination, among the 64 CHSCs, only 2 (3.15%) scored below 6.0.

(4) In terms of child health management, among the 64 CHSCs, only 2 (3.15%) scored below 6.0.

(5) In terms of maternal health management, among the 64 CHSCs, only 3 (4.69%) scored below 6.0.

(6) In terms of the reporting and handling of infectious diseases and public health emergencies, among the 64 CHSCs, 10 (15.63%) scored below 6.0.

(7) In terms of the health education, among the 64 CHSCs, only 1 (1.56%) scored below 6.0.

(8) In terms of the health management for the elderly, among the 64 CHSCs, 5 (7.81%) scored below 6.0.

(9) In terms of management of patients with severe mental illness, among the 64 CHSCs, 8 (12.5%) scored below 6.0.

(10) In terms of provision of rehabilitation medical services, among the 64 CHSCs, 29 (45.31%) scored below 6.0.

(11) In terms of provision of TCM services, among the 64 CHSCs, 7 (10.94%) scored below 6.0.

According to the service score of 64 CHSCs, the provision of public health services in Shenyang City is in good condition. Mrs. Zhang, director of the CBS center of Heping District, a national demonstration community, shared his experience as follows. First, with the equalization of public health services as the focus, efforts have been made to ensure pregnant women and children to get high-quality basic health services, and strengthen the management

of chronic diseases stressing prevention while combining with treatment. With the management of hypertension and diabetes as the breakthrough point and through the treatment of patients, control of blood glucose and blood pressure, medication treatment, referral of critical patients among medical alliance. Through green channel, doctor exchange and learning, remote video consultation and other means, the grass-roots health center is linked to the tertiary hospitals to improve the service capability of the center.

Mr. Hu, director of Tiexi District ZJSQ health center, shared his experience: the center won the honorary title of "national model community health service center" in 2013. The center continuously enhances its service capability mainly from two aspects. First, we stimulate the vitality of health center service through innovating public health service: The "ID electronic identification system" is put into use. After the ID number is identified by the system, the patient can quickly read the personal information and complete the registration in one second, which achieves the information interchange between "basic medical care" and "basic public health" in the management information system. Meanwhile, doctors can directly maintain and manage the health records of patients who register through the "ID card electronic identification system" in the doctor workstation. Second, provide free or discount service for the disadvantaged people. The center implements the "three exemptions and two reductions" policy for the low-income families, fees for TCM physiotherapy and infusion services are cut by half. Strengthen the construction of each department, and constantly improve the level of diagnosis and treatment services.

When talking about the service characteristics of his health center, Mrs. Wang, director of LJS health center of Huanggu District, a national demonstration community, said: since 2017, the center has fully introduced the family doctor contract service into the community. With each performing his duties but cooperating when necessary, the professional family doctor team has provided "convenient, continuous, active, personalized" basic medical services for the residents in the area, which is very popular among residents. CHSC emphasize the practicability of the service scheme. Based on a "contractual" active service mode, the family doctor service has achieved a full coverage in the community. CHSC provide diversified contract service. In order to diversify the contract service, the center introduces the TCM-based treatment methods, including TCM physical examination, TCM preventive treatment, TCM health preservation and rehabilitation.

From the survey, it is found that each district of Shenyang has made some achievements in improving family doctor contract service, outpatient service capability, inspection and drug service capability, traditional Chinese medicine service capability, service environment and

residents' experience, and information level, which has greatly improved the ability of the primary health services of the city. Although the ability of grass-roots health services has been improved, the shortage of professional health talents still needs to be resolved.

5.3.3 Analysis of the current situation of organizational culture

The analysis results of organizational culture in 64 CHSCs in five districts of Shenyang City are as follows (see Table 4.4):

(1) Analysis of the dimensions of organizational culture

The average score of four dimensions of organizational culture of 64 CHSCs is ranked as follows: vision and mission (6.37)> strategic orientation (6.31) > coordination and integration (6.27) > core values (6.23). Among 64 CHSCs, there are 10 (15.63%) whose four dimensions of OC all scored below 6.0.

(2) In terms of the core values, among 64 CHSCs, there are 15 (23.44%) with core values score below 6.0.

(3) In terms of vision and mission, among 64 CHSCs, there are 10 (15.63%) with score of vision and mission below 6.0.

(4) In terms of strategic orientation, among 64 CHSCs, there are 11 (17.19%) with score of strategic orientation below 6.0.

(5) In terms of coordination and integration capability, among 64 CHSCs, there are 14 (21.88%) with score of coordination and integration capability below 6.0.

5.3.4 Analysis on the current situation of employee satisfaction

From Table 4.5, the analysis results of employee satisfaction of 64 CHSCs in five districts of Shenyang City are as follows.

The average score of six dimensions of employee satisfaction of 64 CHSCs is ranked as follows: satisfaction with work atmosphere (5.58) > satisfaction with overall development prospect (5.46) > satisfaction with superior and subordinates' communication (5.44) > satisfaction with personal development prospect (5.29) > satisfaction with job stress (3.87) > satisfaction with health center's performance and salary (3.75).

5.3.5 Analysis on the current situation of dynamic capability

The dynamic capability analysis results of 64 CHSCs in five districts of Shenyang City are as follows (See Table 4.6).

The average score of four dimensions of dynamic capability of 64 CHSCs is ranked as follows: learning capability (5.91) > absorptive capability (5.45) > innovation capability (5.13) > integration capability (4.91).

5.4 Reliability analysis of evaluation index system of CHSC core capability

Delphi method is a qualitative research method, whose reliability relies largely on the experts' knowledge, experience and subjective judgment. It is mainly used for the research topics lacking authoritative standards and historical data, especially for the construction of competency model. Currently, there is still no research on the core capability model regarding community health service center based on dynamic capability theory.

The reliability of Delphi-based consultation results mainly depend on the representativeness and authoritativeness of the selected experts. One of its defects is the biased views of the consultation experts.

In this study, 40 experts were selected by random sampling in Shenyang. After full communication, 25 experts agreed to complete two rounds of consultations, including 12 experts in clinical medicine, 8 experts in preventive medicine, 2 experts in community management and 3 experts in community nursing (See Table 3.1). These experts basically represent the highest professional level of the region.

The expert consultation questionnaire regarding CHSC core capability evaluation system is designed based on the following efforts: (1) analyze the dynamic capability theory and research results; (2) systematically review the literature on the core capability of community health service centers;(3) revisit the government's documents and regulations on the construction of community health service centers; (4) analyze the community basic public health service standards; (5) consult experts with theoretical research and practical experience in local and national basic public health services. In the first round of consultation, the experts freely put forward any indicator they think important and necessary. The evaluation indicators are finalized after two rounds of Delphi consultations by 25 experts. In each round of consultation, the experts were asked to score the importance and operability of each indicator to determine those that the experts universally think important and operable. Besides, the questionnaire also encourages experts to make comments on each indicator and can even delete, add or modify indicator, and give corresponding reasons. In this way, the experts participating in the consultation have fully expressed their divergent opinions and their opinions are seriously considered when designing the questionnaire.

The effective recovery rate of the two rounds of questionnaires is 100%. The expert familiarity coefficient (CS) is 0.852, the coefficient of determination (CA) is 0.960, and the authority coefficient is 0.906 (CR ≥ 0.7 is considered acceptable). We can see that the experts in this study are highly authoritative and the results of this study are reliable.

The consensus degree of experts' opinions on indicators is usually expressed by coefficient of variation (Cv) and Kendall coefficient of concordance (W). In this study, the coefficient of variation of each index ranges from 0.000 to 0.218 (see Table 3.2), which are all less than 0.250, indicating that experts' opinions are basically consistent. Kendall coefficient of concordance (W) is 0.264, and $P < 0.001$, the difference is statistically significant.

The weight of index system assigned by Delphi experts, the standard load coefficient of confirmatory factor analysis and the score of each index in the empirical study of CHSC in Shenyang are shown in Table 5.2. From the results of this study, the index construction method is reasonable and the research conclusions are reliable.

Table 5.2 The Delphi index system, the confirmatory factor analysis and the score of each index in the empirical study of CHSC in Shenyang

Index			Confirmatory factor analysis		Shenyang	
3-level index	Combination weight	Sort by weight	standard load coefficient	Sort	Score	Sort
A11 % of Staffs with Bachelor Degree and up	0.333	24			0.44	58
A12 % of Staffs with Intermediate Title and up	0.111	47			0.42	60
A13 Doctor-Nurse Ratio	0.555	12			0.97	51
A21 High-value equipment Number	0.022	59			1.67	50
A22 Equipment of clinical diagnosis and treatment	0.2	35			0.87	53
A23 Auxiliary examination equipment	0.067	53	0.719		0.86	54
A24 Public health infrastructure	0.111	47			0.92	52
A25 Business premises areas & Property right	0.155	42			0.44	59
A31 Are training expenses spent to improve the quality and ability of employees?	0.185	36	0.916		0.83	55
A32 Is there any investment in technological innovation?	0.742	4	0.549		0.59	56
A33 The proportion of CHSC’s special fund input in the total income	0.742	4			0.48	57
B11 Residents' Health Records Establishment	0.344	23			6.55	2
B12 Immunization And Vaccination	0.094	50			6.51	4
B13 Childcare	0.22	33			6.52	3

Index			Confirmatory factor analysis		Shenyang	
3-level index	Combination weight	Sort by weight	standard load coefficient	Sort	Score	Sort
B14 Maternity Care	0.156	41			6.50	5
B15 Reporting And Handling of Infectious Diseases and Public Health Emergencies	0.406	17	0.893		6.41	9
B16 Healthcare Education	0.282	27	0.701		6.59	1
B17 Health Management of the Aged	0.468	15			6.49	6
B18 Management of Severe Psychosis Patients	0.312	26	0.572		6.43	8
B21 Diagnosis and treatment of common and frequently occurring diseases	1.125	1	0.729		5.95	23
B22 Community emergency rescue	0.375	20	0.762		6.47	7
C11 Core Values	0.125	45	0.529		6.24	14
C12 Mission and Vision	0.375	20	0.817		6.37	10
C21 Strategic Orientation	0.375	20	0.934		6.29	11
C22 Coordination and Integration	1.125	1			6.29	12
D11 Institutional Policy	0.445	16			6.27	13
D21 IT Infrastructure	0.557	9	0.394		6.04	19
D22 Internal Electronic Integration	0.557	9	0.78		5.19	40
D23 External Electronic Integration	0.557	9	0.911		5.04	43
D24 Development of Information Technology	0.112	46			5.55	32
D31 Satisfaction with The Overall Development Prospect of CHSC	0.206	34			6.13	15
D32 Satisfaction with The Working Atmosphere of CHSC	0.093	51			6.02	20
D33 Satisfaction with Personal Development Prospects	0.167	39			5.80	30
D34 Satisfaction with the Communication Channels of CHSC	0.055	55			6.04	18
D35 Satisfaction with Performance and Pay of CHSC	0.019	60			4.80	46
D36 Satisfaction with Job Stress	0.129	44			6.05	16
E11 Discovery Capability	0.273	28			5.86	29
E12 Invention Capability	0.056	54			5.87	28
E13 Selecting Capability	0.385	19			5.95	24
E14 Executive Capability	0.603	7			6.05	16
E15 Reflective Capability	0.165	40			5.95	25
E16 Knowledge Acquiring Capability	0.82	3			5.99	21
E17 Knowledge Output Capability	0.711	6			5.89	27
E18 Knowledge Base Building Capability	0.494	13			5.91	26

Index			Confirmatory factor analysis		Shenyang	
3-level index	Combination weight	Sort by weight	standard load coefficient	Sort	Score	Sort
E21 Market Innovativeness	0.044	56			5.27	39
E22 Process Innovativeness	0.491	14			5.97	22
E2-3 Behavioral Innovativeness	0.403	18			5.52	34
E24 Strategic Innovativeness	0.581	8	0.739		5.52	33
E25 Technology Innovativeness	0.313	25	0.822		4.68	49
E26 Exploitative Innovation	0.18	37	0.885		5.47	35
E27 Exploratory Innovation	0.18	37	0.96		4.93	44
E31 Integrated Care Organization	0.134	43	0.757		5.14	42
E32 Remote Consultation	0.08	52	0.789		4.92	45
E33 Human Resource Integration	0.268	29	0.651		5.43	36
E34 Item Resource Integration	0.268	29			5.15	41
E35 Information Resource Integration	0.268	29			4.74	48
E36 Service Process Integration	0.268	29			4.75	47
E37 Resource Reconstruction	0.026	58			5.34	38
E41 Potential Absorptive Capacity	0.032	57			5.74	31
E42 Realized Absorptive Capacity	0.095	49			5.42	37

From Table 4.6 and Table 5.2, we can see that in terms of the first level indicators, the standard load coefficient of resources, service capability, organizational culture, management capability and dynamic capability is 0.394, 0.626, 0.592, 0.656 and 0.910.

In terms of the sub-items of the first level indicators, the standard load coefficient of sub-items is as follows. (1)Resources: auxiliary equipment configuration (0.719), expenses spent to improve the quality and capability of employees (0.916), investment in technological innovation (0.549); (2) Service capability: the reporting and handling of infectious diseases and public health emergencies (0.893), health education (0.701), management of patients with severe mental illness (0.572), rehabilitation medical service (0.729), and TCM service (0.762); (3)Organizational culture: core values (0.529), vision and mission (0.817), strategic orientation (0.934); (4) Management capability: IT infrastructure (0.394), internal electronic system integration (0.780), external electronic system integration (0.911); (5)dynamic capability: strategic innovation (0.739), technological innovation (0.822), exploratory innovation (0.960), medical alliance (0.757), remote consultation (0.789) and human resource integration (0.651), they are highly correlated to the core capability of CHSC.

Among the above third level of indicators, the standard load coefficient of expenses spent to improve staff's quality and ability (0.916), strategic orientation (0.934), external electronic system integration (0.911), and exploratory innovation (0.960) is all above 0.9.

According to the weight coefficient assigned by Delphi method, the results of this study are in highly consistent with the research hypothesis, which proves the index evaluation system is rational.

5.5 Analysis on the influencing factors of CHSC's core capability

Based on the above analysis, dynamic capability is the most important factor influencing the core capability of community health service centers, and the contribution degree to the core capability of CHSCs is: dynamic capability (0.910) > management capability (0.656) > service capability (0.626) > organizational culture (0.592) > resources (0.394).

5.5.1 Resources and core capability

Resources include tangible resources and intangible resources. The human resources are measured by the employee count, quality and ability; material resources include medical equipment, business area and environment; capital resources include government investment.

Resources do not reflect the core capability. Resource and capability are two different concepts, and they play different roles in the development of CHSC.

Researches show that successful organizations usually have managers who understand the most valuable resources and capabilities of the organization and know how to most effectively use those resources to create value for the organization. Resources could be viewed as inputs, which the organization can use to achieve goals, human resources or technical factors that enable the organization to gain a favorable advantage. For example, an electronic medical record system is a resource. It is the capability to build and organize trainers to take full advantage of the system.

When managers review the resources of an organization, they often first consider tangible and easily visible things, such as human resources, physical facilities and equipment, and capital. These resources are necessary and should not be overlooked, but the organization's knowledge and general resources are strategically particularly attractive. For example, knowledge resources such as information systems, technological development and support for intrapreneurship are critical to corporate innovation.

All the resources and capabilities of an organization constitute a system for creating value.

For example, hospitals with limited human resources may not be able to recruit new staff effectively, resulting in understaffing. Understaffing leads to poor working conditions and increased consumption. This vicious cycle can lead to poor quality of care, a loss of doctors and a shift of patients to higher-quality hospitals. Fewer patients can bring the nurse-patient ratio back to normal, but it also means lower income and less ability to invest in new medical technologies. The weakness of value-creating resources, such as human resources, requires further attention, as these resources create problems not only for one aspect, but also for a whole range of problems for the enterprise.

From Table 5.2 we can see that the evaluation index "whether to spend to improve the quality and ability of employees (0.916)" under human resources is highly related to core capability; while the index "auxiliary equipment configuration (0.719)" under material resources and "whether to invest in technological innovation (0.549)" under capital resources are weakly linked to the core capability. According to Table 4.1, the situation of the number of registered general practitioners per 10,000 populations and the proportion of employees with master degree or above indicates that the CHSCs in China should focus on improve the quality of medical employees. Although CHSC's advanced diagnosis and treatment equipment and cutting-edge medical technology are sources of competitive advantages, firms with core technology do not necessarily have strong core capability. C. K. Prahalad and G. Hamel pointed out that building core capability does not mean that we must surpass our rivals in the field of research and development. This shows that core capability is not equated with core technology. Although a CHSC has grasped the core technology of dealing with a certain disease, it does not mean the CHSC can always maintain a long-term competitive advantage over its competitors. The growth of performance is a long-term and slow process, and it is not equal to the core capability.

According to the resource-based theory, the ability with valuable, rare, imperfect imitable and non-substitutable is called core capability. For example, while access to the latest medical technology or new procedures may provide short-term benefits that stimulate demand growth, neither technology is likely to provide a lasting competitive advantage because both are easy to copy. However, some of the most important resources are not found in specific medical procedures, technologies, or information systems. From a competitive point of view, the most important resources are intangible resources, including knowledge and ideas, scientific ability, innovation capability, reputation and management capability. Because these resources are hardest to emulate, they tend to be strong and sustainable resources that can deliver lasting and potentially sustainable competitive advantage.

5.5.2 Service capability and core capability

Capability is more important than resources. CHSCs with the same resources but different capability will vary greatly in performance. For example, some managers of CHSCs with poor performance went to visit CHSCs with better performance and thought it is the advanced medical equipment that contributed to their success. Therefore, they copied mechanically and invested heavily in advanced equipment, but nothing ever goes as they expect. They failed to improve the market competitiveness and reverse the unfavorable situation, which indicates that increasing material resources does not necessarily lead to the improvement of core capability.

According to the research results shown in Table 4.3, 64 CHSCs generally attach importance to basic medical services and basically provide all the services required by the country. Meanwhile, their service capability basically meets the requirements.

According to Table 5.2, we can see that the evaluation index "reporting and handling of infectious diseases and public health emergencies (0.893)" is highly correlated with core capability, which reveals that CHSC's capability to provide public health services is crucial. In particular, the outbreak of coronavirus pandemic at the end of 2019 shows that, the medical staff of CHSC serves as the outpost for the prevention and control of the epidemic of infectious diseases. During the epidemic period, the medical staff cooperate with the CDC and the health administration department to enter the community for the nucleic acid detection at the first time, and at the same time, the medical staff is selected to the quarantine hotel for the management and monitoring of the quarantined observers. Especially in the twice First Level Response to epidemic situation in Shenyang, the basic medical staff played a decisive role as the gatekeeper, so the prevention and control of infectious diseases has always been the top priority of the public health work of the CHSC.

In September, 2020, *Qiushi* magazine published the article by general secretary Xi Jinping, titled "Building a strong public health system to safeguard the people's health". When discussing the disease prevention and control system, the article said, "In the fight against the pandemic, China's public health system has played an important role. However, in the face of the epidemic like this, it still exposes some problems such as the weak capability, inflexible mechanism, lack of motivation, and loose combination of prevention and treatment. These are all old problems, and now it's time to solve them."

In February, 2018, Shenyang issued the *Implementation Plan for Deepening the Reform of the Medical System during the 13th Five Year Plan Period*, which proposed that during the 13th Five Year Plan period, Shenyang will promote the development of the health service industry,

further optimize the policy environment, and implement the policy measures of treating all medical institutions equally. In order to meet the needs of the people who hope to visit TCM doctors for first diagnosis, Shenyang will strengthen the construction of TCM department in primary health institutions, and meanwhile improve the capability of basic medical service in township health centers and community health service centers. Shenyang will make efforts to improve the TCM service capability at grassroots health centers. The study found that 90% of the 64 CHSCs in Shenyang City have provided TCM services, and most of the special services provided by 10 CHSCs are TCM services.

5.5.3 Organizational culture and core capability

Organizational culture is a unique cultural image of an organization composed of its values, beliefs, rituals, symbols and approaches of doing things. Organizational culture is the soul of an enterprise, the inexhaustible power to promote the development of the enterprise, and the basic beliefs and cognitions established by the enterprise to solve the problems of survival and development, which is considered effective and shared by the members of the organization and followed by them together. Its core consists of the spirit and values of the enterprise. The values do not generally refer to various cultural phenomena in management, but the values held by employees in business activities (Huang, Huang, & Tzeng, 2016). Corporate culture is generally stable, once formed, it cannot be changed.

In recent years, under the enlightenment of corporate culture, the hospital cultural concept is playing a powerful driving role in building the core capability of the hospital. Hospital culture is the assemblage of values, moral ethics, behavioral norms and management concepts, and serves as the spiritual pillar that is suitable for the construction goal and strategic development of the hospital. Hospital culture is committed to the common pursuit of a hospital and its staff. With the common understanding of hospital strategy, the hospital culture can unify the minds and behaviors of the employees to form a strong cohesion within the hospital. A sound hospital culture represents not only the desired condition of the hospital's internal humanistic quality, but also the basis for the harmonious relationship between the hospital and the outside world. The humanistic business philosophy, positive self-image and service level manifested by the hospital culture has built strong momentum for the development of the hospital, maintained the lasting constraining forces and strong cohesion, and determined the value orientation and foothold of the hospital core capability. Hospital culture, especially the core values can keep stable for a long period of time. Once the external business environment substantially changes

and the original core capability no longer gives it the significant advantages over the rivals, the hospital culture can help build new core capability, thus continuously improving the hospital's competitiveness. Many century-old companies in the world can sustain robust development despite undergoing many industrial transformations just because their excellent corporate culture has ensured the stable replacement of core capability. The unique hospital culture is inextricably linked with unique core capability.

We can see that hospital culture cannot only help hospital employees reach consensus on what kind of core capability should be established, but also enhance their coordinated efforts in cultivating the core capability, and thus makes it difficult for rivals to imitate. Hospital culture highly recognized by the employees can unify their ideas, will and behavioral norms and even exerts a subtle influence on the employees' minds, motivates them to consciously and cooperatively work to build and strengthen the core capability of the hospital. The higher the recognition degree of hospital culture by employees, the more coordinated the employees' behaviors, the less likely its core capability is imitated by competitors.

Organizational culture is closely related to the core capability of an enterprise. The significance of culture is that it runs through the whole social and historical life of human beings. Once the organizational culture is established, its value and importance will go beyond the enterprise and employee psychology. Organizational culture, as invisible and tangible perceptual force, creates an atmosphere in the enterprises of this particular group, not only creates for the enterprise, but also creates the enterprise. Organizational culture is the soul of an enterprise, and its essence is a recognition of the working rules of an enterprise.

Based on the relevant literature, the relationship between organizational culture and core capability can be classified as the following:

(1) Organizational culture is an important part of the core capability of enterprises. This view understands corporate culture in a narrow sense, and holds that the corporate culture, like technology, management, human resources, is an integral part of the core capability of enterprises, which is a view mostly held by earlier research.

(2) Organizational culture itself is the core capability of enterprises. This view understands corporate culture in a broad sense, and holds that corporate culture includes technology, organizational structure, management and enterprise system. It has been widely discussed by recent research.

(3) Organizational culture plays an important role in building and improving corporate core capability. This viewpoint regards organizational culture and enterprise core capability as two independent concepts, and holds that organizational culture can play a great role in building

and enhancing enterprise core capability through guidance, motivation, enlightenment and unification. At present, most case studies or empirical research hold this view.

This study found that employees in CHSCs with high comprehensive score have stronger team awareness, and the results shown in Table 5.2 support the third view regarding organizational culture above. Among them, strategic orientation (0.934) is highly correlated with core capability, and vision and mission (0.817) and core values (0.529) also have great influence on core capability.

Medical care is a highly individualized service in which civilized norms and beliefs can influence the way individuals interact with the medical institution and shape their expectations about the treatment process and expected outcomes. Understanding and adapting to the influence of culture not only helps to avoid misunderstandings, but also helps to provide high-quality service and enhance the credibility and loyalty associated with a business's capability to create value.

5.5.4 Management capability and core capability

Enterprise management is realized by establishing organizational structure and assigning executive powers to some management posts. The enterprise management capability refers to the management team’s capability in formulating business strategies and development plan, coordinating the work of different departments and ensuring the smooth information exchange between different organizational units so that the production and operating activities of an enterprise can move ahead in an orderly manner. Therefore, it is difficult to use one or several indicators to evaluate the management capability and it is necessary to establish an index system to evaluate it comprehensively (Park et al., 2019).

The index system constructed in this study for CHSC management capability evaluation includes hospital system and policy, information technology application and employee satisfaction. The hospital system and policy reflect the healthiness of rules and regulations of CHSCs and the standardization level of management. The application of information technology refers to the CHSC's capability of processing information in providing services and communication with external world. The application of information technology in medical services can effectively provide data basis for future disease diagnosis and prevention, health preservation, rehabilitation services and family planning.

However, some CHSCs show more interests in medical equipment while ignoring application of information technology and only use information tool to manage community

pricing system. This one-sided view will hinder the development of community information-based medical service, negatively affecting the improvement of overall level of community medical services. Information management forms a systematic and comprehensive health data system, which provides an effective basis for future medical diagnosis and disease prevention.

The results of this study (See Table 5.2) show that the information technology has been widely used in CHSCs to provide residents with quantitative, geo-location and qualitative services, which cannot only enhance the sense of responsibility of staff, but also improve service efficiency. Among them, external electronic system integration (0.911) is highly correlated with core capability, followed by internal electronic system integration (0.780) and information technology infrastructure (0.394).

5.5.5 Dynamic capability and core capability

Teece et al. (Teece, Pisano, & Shuen, 1997) first put forward the theory of dynamic capability. He believes that dynamic capabilities should be understood from two dimensions.

Dynamic capability and ordinary capability are considered to be two different capabilities. (Collis, 1994) proposed four types of capabilities. The first is the ability of a firm to perform its basic functions. The second and the third are similar with dynamic capabilities, including rapid innovation, organizational learning and adaptation, and the ability to formulate strategies ahead of competitors. The fourth is the ability to change, or "learning to learn capabilities", which is an ability of "creating ability".

Helfat et al. (2007) believes that dynamic capabilities are the capabilities that enable companies to create new products and processes in response to changing market environments. Eisenhardt and Martin (2000) think that dynamic capability reflects the process of how an enterprise integrates, reallocates, acquires and releases resources to respond to or even lead market changes. Zollo and Winter (2002) discussed the development mechanism of dynamic capability, and analyzed the formation mechanism of dynamic capability, including experience accumulation, knowledge integration and knowledge real-time dynamic updating. Winter (2003) thinks that dynamic capabilities are "capabilities" used to expand, modify or create ordinary capabilities. Zahra, Sapienza, and Davidsson (2006) think that dynamic capabilities refer to the reallocation of the enterprise resources and processes in the minds of decision makers. Wang and Ahmed (2007) defined dynamic capability as the continuous integration, reallocation, renewal and recreation of resources. Dong et al. (2014) believe that capability can be regarded as the collection of enterprise knowledge.

Since the concept of dynamic capability was put forward, it has been inextricably linked to the competitive advantage of enterprises, and the opinions on it differ widely among the academic circles. Some scholars believe that the competitive advantages generally come with dynamic capability. Scholars represented by Teece, Pisano, and Shuen (1997), such as Griffith and Harvey (2001), believe that the dynamic capability is a resource that is difficult to imitate and can bring strong competitive advantage to enterprises. Lee et al. think that dynamic capability is the source of sustainable competitive advantage in rapid changing environment. Another view holds that the dynamic capability is indirectly to competitive advantage. Zott (2003) argues that dynamic capabilities can affect the enterprise performance through reorganizing its resource portfolio, organizational practices and operational capabilities. From the perspective of resource-based view, Bowman and Ambrosini (2003) think that the VRIN resources of enterprises are the direct sources of competitive advantage, and the dynamic capabilities exert influence by changing how economic rents are generated. Makadok (2001) proposed how enterprises generate economic rents under two different mechanisms, namely resource selection strategy and capacity building strategy. Under the strategy of resource selection, managers can establish resource and select market by collecting and analyzing information; under the strategy of capacity building, managers can strengthen the productivity of enterprise resources by establishing and operating organizational system.

5.6 Practical significance of CHSC core capability evaluation index system

5.6.1 Innovation is the key to build and improve CHSC core capability

A CHSC cannot compete and stay ahead among its peers, or in a leading position if it lacks of innovation capability. Exploratory, technological and strategic innovation will lead the CHSC to keep up with the medical frontier in the reform opportunity. At the same time, with the implementation of medical consortium, patients can enjoy high-quality and convenient diagnosis and treatment services such as two-way referral between regional medical centers and primary medical institutions, remote consultation, specialist community consultation, and mutual recognition of laboratory test results (Jin et al., 2015). It is helpful to promote the re-integration and rational allocation of medical resources in the region, facilitate the implementation of two-way referral, and effectively alleviate the problem of difficult and expensive medical treatment for residents (Hu et al., 2015).

5.6.2 Information construction is the key to improve CHSC service capability

Strengthen information integration and sharing, so as to realize the collection, collation, statistics and analysis of medical data and information in a larger scope. Telemedicine will be integrated with medical information platforms, and a cross-regional medical information sharing mechanism will be established to facilitate hierarchical diagnosis and treatment. Perfect information system can improve the efficiency of primary medical service (Zhang et al., 2016).

5.6.3 The strategic development goal is the key to build CHSC core capability

Hospital formed in the process of organizational culture is formed in the long-term development of the hospitals. It is embedded in all the activities of all staff, and agreed by all staff. To accept and abide by the management idea, standardize the behavior of the image and values, social responsibility and so on, is the sum of spiritual wealth with hospital characteristic, and also the epitome to emphasize the people-oriented, and effectively strengthen the team spirit. The important significance of cultivating the strategic objective of hospital culture lies in strengthening the cohesion of hospital, exerting the stimulating and normative function, speeding up the technological innovation of hospital and promoting the development of hospital productivity. It is the key to effectively enhance CHSC's core service capability and accelerate the development of the hospitals.

5.6.4 Talent training is the catalyst to improve CHSC core capability

In the era of rapid development, the talent management of CHSC directly determines the core capability of CHSC. Human resources are the core strategic resources of the center, and the construction of talent team also determines the foundation of the core capability of CHSC.

The quality and ability of management personnel determine the ability and level of hospital management innovation and organizational performance, the quality and ability of medical service personnel determine the level of patient satisfaction, and the quality and ability of scientific research personnel determine the frequency and level of hospital technical innovation. Therefore, the ability of the CHSC's talent team determines the strength of CHSC's core capability.

Chapter 6: Conclusions and Policy Suggestions

6.1 Conclusions

6.1.1 Overall level of core capabilities

(1) The empirical research in Shenyang verified the rationality of the core capability model regarding CHSCs based on dynamic theory.

By broadly reading relevant literature on resource-based theory, dynamic capability theory and core capability, the researcher learns the theoretical knowledge of dynamic capability and summarizes the theoretical research findings and actual case studies concerning the core capability of community health service centers in China and abroad. Through in-depth interviews with the surveyed city's health policy makers, researchers, community health center managers and other experts in related fields, and after two rounds of Delphi consultation involving 25 experts, the index system of this study is established, which includes the five first level indicators (including organizational resources, service capability, organizational culture, management capability and dynamic capability), 14 second level indicators and 60 third level measurable variables.

The empirical study is conducted through cluster sampling, field interview and questionnaire survey. Sixty-four community health service centers (hereinafter referred to as CHSC) in five administrative divisions of Shenyang city are selected as the research objects and 1865 valid questionnaires were retrieved.

Exploratory factor analysis shows that the KMO value of the scale is 0.926 ($P < 0.05$), which is suitable for factor analysis. Through principal component analysis, there are five factors with Eigenvalue greater than 1, and the cumulative explained variation is 68.355, that is, the five common factors explain 68.355% of the total variation. After the analysis using the maximum rotation orthogonal method, we can see from the factor matrix after axis rotation (See Table 4.4) that common factor 1 includes A23, A24, A31 and A32, common factor 2 includes B11, B15, B16, B17, B18, B21, B12 and B22, common factor 3 includes C11, C12 and C21, common factor 4 includes D21, D22 and D23, common factor 5 includes E24, E25, E26, E27, E31, E32 and E33, and the factor load of each item ranges from 0.659 to 0.860, and

the communality falls between 0.439 and 0.874.

According to the confirmatory factor analysis, the maximum likelihood method is used to estimate the path coefficients, and the path coefficients in the model are statistically significant (P<0.05). For all levels of indicators, AVE>0.5, CR>0.7, which indicates the convergent validity is high. The $\chi 2$/ df of the scale is 2.918 (< 3), CFI is 0.919 (> 0.9), SRMR is 0.078 (< 0.1), RMESA is 0.073 (< 0.1), indicating that the model fits well.

(2) Dynamic capability is the key influencing factor of the core capability of CHSCs, and other influencing factors include management capability, service capability, organizational culture and resources.

The results of structural equation model show that dynamic capability is the most important factor influencing the core capability of CHSCs, and the degree of contribution to the core capability of CHSCs is ranked as follows: dynamic capability (0.910) > management capability (0.656) > service capability (0.626) > organizational culture (0.592) > resources (0.394).

In terms of resources, “expenditure spent to improve the quality and ability of the staff (0.916)” is the most important factor influencing the core capability of CHSCs, followed by the "auxiliary equipment configuration (0.719)" and "investment in technical innovation (0.549)".

In terms of the service capability, "reporting and handling of infectious diseases and public health emergencies" (0.893) is the most important factor influencing the core capability of CHSCs, followed by TCM service (0.762), rehabilitation medical service (0.729), health education (0.701) and management of patients with severe mental diseases (0.572).

In terms of organizational culture, strategic orientation (0.934) is the most important factor influencing the core capability of CHSCs, followed by vision and mission (0.817) and core values (0.529).

In terms of management capability, external electronic system integration (0.911) is the most important factor influencing the core capability of CHSCs, followed by internal electronic system integration (0.780) and information technology infrastructure (0.394).

In terms of dynamic capability, exploratory innovation (0.960) is the most important factor influencing the core capability of CHSCs, followed by technological innovation (0.822), remote consultation (0.789), medical alliance (0.757), strategic innovation (0.739) and human resource integration (0.651).

(3) The standard load coefficients of four indicators, namely, exploratory innovation in dynamic capability (0.960), strategic orientation in organizational culture (0.934), external electronic system integration in management capability (0.911), expenses spent to improve staff quality and ability in human resources (0.916), is all above 0.9. They are all important factors

affecting the core capability of CHSCs.

(4) Problems found in empirical research in Shenyang's CHSCs

① Shortage of resources

The critical shortage of resources in primary health institutions results in inadequate service ability, inability to diagnose and poor medical informatization in CHSCs. Due to the shortage of manpower, grassroots doctors have to undertake different types of work and therefore the burden of basic medical work is heavy. Besides, because of poor information flow and lack of systematic management, the work pressure of public health services is rising, the work is overlapping and insufficient.

The equipment in CHSCs is poorly configured, with low-end equipment accounting for a large proportion, and the mid and high-end equipment in shortage. According to the survey data, 95% of CHSCs only have low-end laboratory equipment, ultrasound machine and DR, and only 14% of CHSCs are equipped with 16 slice CT. At the same time, due to the lack of professional examination talents and high-end equipment, the function of grass-roots medical institutions is weakened, and the grass-roots doctors are incapable of professional diagnosis, so patients are more inclined to visit the large hospitals.

② Uneven development of grass-roots medical informatization

The informatization construction in most CHSCs is only limited to the purchase of computer equipment and use of relevant software, which can only meet the basic functions such as information input and query. Although some CHSCs have installed information systems, the low maintenance rate and the lack of good network and computer equipment support causes the systems not to function effectively. Besides, without professional computer personnel for maintenance, the computer system is aging quickly. Due to the poor connection of the information system, the data exchange and resource sharing among the information systems in CHSC cannot be realized, resulting in the insufficient utilization of medical information resources. Worse, without effective external links with information system of large hospitals, the information between CHSC and large medical institutions cannot be interconnected and the diagnostic information cannot be shared.

③ Weak service capability

The age composition of the doctors in CHSCs is unbalanced, the educational level of most employees is low, and the professional skills of doctors in diagnosis and treatment are insufficient. Due to lack of proven experience in disease diagnosis, examination and medical

prescription, the patients have low trust in the doctors in grass-roots medical institutions. Because the service quality cannot meet the expectations of patients for diagnosis and treatment, the trust of patients is low, the initial diagnosis rate at the grass-roots level is not high, and meanwhile the lack of sense of achievement and poor employment security has contributed to the high turnover rate of doctors.

In terms of learning capability, grass-roots doctors often participate in trainings organized by medical associations and enterprises. However, at present, with limited educational resources, and due to busy work or weak learning desire, insufficient learning time, the medical skills of grassroots doctors need to be improved.

④ Management capability needs to be improved

According to the survey, the number of directors of the 64 CHSCs with educational experience in technical secondary school or below is 14, accounting for 21.87%, which indicates that their education level is very low, and their management skills need to be improved. In terms of employee satisfaction; 81.8% of employees are dissatisfied with the existing performance management system and salaries. Employees hope that the performance distribution mechanism should be flexible so that the employees can participate in the development of CHSC with a more positive attitude.

6.1.2 The function of dynamic capability to enterprise development

The key points of dynamic capability theory is to constantly create new advantages. Existing strengths and core competencies are short-term in a rapidly changing market. Insisting on the original advantage will lead to the end of the business. The rigidity of enterprise capability and manager capability will affect the competitive advantage of enterprises. Creating new core competencies overcome path dependence.

Dynamic capability can promote the development of enterprise innovation capability. The above case study results show that exploratory innovation (0.960) is highly correlated with the core capability of CHSC, and is also highly correlated with technological innovation (0.822), strategic innovation (0.739), medical confederation integration capability (0.757), remote consultation (0.789) and human resource integration (0.651). Therefore, in a dynamic environment, the enterprise must change or restructure its structure in time, break away from the past dependence on success, become more flexible, and strengthen the delegation, rather than be abandoned by the past success.

Dynamic capabilities can be understood as a kind of continuous innovation, and early

research on resource strategies has emphasized the importance of specific resource (core competencies) capabilities. By emphasizing the change of enterprise resources, dynamic capabilities put innovation at the core of strategy, especially the consistency between dynamic environmental change and innovation behavior. In this ever-changing matching process, the capability to learn is particularly important. The concept of dynamics emphasizes the continuous innovation of organizational capability. The concept of dynamic capabilities changes the way resources are viewed, not only as markets, but also as organizational capabilities and other aspects of innovation.

Dynamic capabilities can help maintain a competitive advantage. Centres should emphasize knowledge management in medical technology and medical training, with a particular focus on explicit learning of tacit knowledge specific to primary medical institutions. Improving the medical skills of the Centre has become an enduring competitive advantage for the Organization. Dynamic capabilities are mainly reflected in the capability of an enterprise to respond quickly to market changes, reorganize resources, rebuild levels, create new methods, and create new competitive advantages through the procurement process.

6.1.3 Dialectical thinking of core capability to enterprise development

The current core capability of the enterprise often enables the enterprise to grasp its own advantages and slowly respond to the challenges brought by external changes. Due to external events, such as new competitors finding better ways to serve customers, the development of new technologies, or major changes in the enterprise, these changes may limit the existing core competencies of the enterprise. In this study, we found the results of 64 CHSC cases from five aspects: dynamic capability, management capability, service capability, organizational culture and resources. Some of the centers are gradually coming out of the predicament of development, while others are clinging to ideas and gradually entering the predicament. Of course, companies can use their existing core competencies to maintain their existing competitive advantage, but if they ignore the resulting changes or challenges, they will face difficulties. Core capability is the basis of establishing enterprise competitive advantage. The enterprise needs to strengthen the cultivation continuously. However, when the core competencies produce rigid negative effects and become an obstacle to the development of the enterprise, the existing influence should be changed, the existing core competencies should be weakened or eventually abandoned. For most businesses, this is neither desirable nor easy. From the perspective of dynamic capabilities, enterprises must keep innovating and developing and timely change their

strategic objectives if they want to have lasting competitive advantages.

6.2 Policy suggestions

This study deeply discussed the influencing factors of the core capability of China's urban community health service centers based on the dynamic capability theory, and accordingly put forward the enlightenment and suggestions for the government in terms of policy guidance.

6.2.1 The government should increase the support for CHSCs

The government's support is not only an essential driving force for the development of community health services, but also an important guarantee for the realization of their functions. Among them, policy support is the key to the development of community health services. The government's attention and policies can give great support for the development of CHSCs in terms of resources, financial funds and talents supply. Meanwhile, with the great support of the government, the development of community health services can be coordinated by multiple departments, which are conducive to the realization of the comprehensive functions of community health services.

6.2.2 Efforts should be made to improve the innovation capability of CHSCs

The dynamic nature of core capability enlightens us that the continuous innovation and learning is the only way to retain the competitive edge. The community health service center should provide the training of new technology and new knowledge according to its own actual needs.

Staff training constitutes the basis of building the core capability of community health service center. By providing all kinds of trainings for employees such as new knowledge and skills, thinking mode, creative thinking, team cooperation, communication skills, legal knowledge and service etiquette, community health service center and employees can achieve a win-win situation. The improved skills through trainings can bring benefits to CHSCs and improve the service capability of CHSCs.

6.2.3 Strengthen the management capability of CHSCs

(1) Improve the rules and regulations of CHSCs

First, fully integrate and utilize resources in a coordinated way; secondly, strengthen the quality control of community health services; thirdly, improve the communication and

coordination mechanism of community health services.

(2) Information construction

CHSC should strengthen the information construction, realize the sharing of medical resources and patient information in the community, and establish the medical information-sharing platform, which can provide detailed medical history and treatment record of the referred patients. In this way, the upper hospital can track the patients' treatment record, and recognize some of the previous examination results to avoid repeated examination and over treatment.

(3) Strengthen the construction of medical alliance and improve the two-way referral system.

The health administrative department should make efforts to formulate a unified referral standard, establish a two-way green referral channel, simplify the medical procedures, and guide grassroots hospitals to provide high-quality services for patients, and provide expert outpatient appointment and prioritized hospital admission for referral patients. This is the fundamental way to solve the problem of "difficult and costly access to health care services" in current stage. Whether the government has played its due role is the key to the smooth implementation of two-way referral.

6.2.4 Strengthen the service capability of CHSCs

(1) Improve the "six in one" function and strengthen community public health services.

Efforts should be made to expand the service in scope and depth and make changes from four aspects: first, the service coverage shifts from individuals to the whole community; secondly, the service method shifts from pure treatment to the combination of prevention and treatment; thirdly, the service process shifts from intermittent hospital service to continuous life-long health care service; fourthly, the service mode shifts from passive patients' hospital-visiting to active door-to-door family-visiting services.

① Strengthen the function of public health. Among the six functions of community health services, we should stress prevention while combining with treatment. The CHSC should perform its duties to prevent and control the chronic non-communicable diseases, endemic disease and carry out health education. It is suggested to establish the chronic disease management organs and register the chronic disease patients in the community, which is beneficial to the health education.

② Strengthen health education. Community health service should put priority to health

education, prevention first, systematic management and combination of prevention and treatment. The CHSC should regularly popularize the health knowledge among community residents and improve their health awareness so that they can actively and consciously apply health knowledge to protect themselves.

(2) Clarify service standards, and comprehensively improve the residents' satisfaction with basic medical services.

① Optimize the treatment process of CHSC and improve the service efficiency. As an important service of the "six in one" CHSC services package, basic medical service is still considered to be an important indicator to measure the quality of community health service in the short term. Therefore, it is necessary to refine the standards of community health services by formulating standards, specifications and operating procedures similar to ISO9000 and GMP, so as to make community health services more scientific and standardized.

② Rationalize the service pricing standards of CHSC. When formulating the service pricing standard, the prices of basic medical services and public health services should be set according to the actual cost. First, the service price should reflect the public nature of community health services; second, it should reflect the technical value of grassroots medical staff. Other special services can be priced according to the law of value. It is necessary to make a clear definition of public health services and non-public health services in CHSCs, so as to provide the basis for the government to purchase public health services or provide subsidies.

③ Improve the access and exit mechanism of community health services. Introduce proper competition and constantly standardize the management system. The access and exit management of CHSC should be jointly managed by multiple functional departments such as medical administration department, disease control department, TCM department, so as to give full play to "six in one" service of CHSC.

6.2.5 Intensify efforts to strengthen the resource construction of CHSCs

(1) Strengthen the construction of human resources.

Whether the CHSC has the unique core capability that others cannot imitate determines whether the CHSC can stand out among competitors in the market competition and maintain the momentum of sustainable development. As the "carrier" of knowledge, skills and ability, human resources represent the sum of expertise, technology and ability of CHSC, which is the source of core capability. Although the technology, knowledge and ability of the hospital are

intangible, the human resources representing the three capabilities are tangible and can be managed, trained and developed.

① The director of CHSC and the high-quality leadership team play a pivotal role in building the core capability of CHSC. All the CHSC's staff should rally behind the director and work with collective wisdom and concerted efforts to build and improve core capability and ensure the sustainable development of CHSC.

② Core employees also play crucial role in building the core capability of CHSC. According to the established strategic plan, it is necessary to formulate the targeted human resource plan and organizational strategy for talents selection. The core employees are the most excellent members of the team, including the top technical experts and the best managers. They should have at least three kinds of qualities: the spirit of innovation, the spirit of dedication and the spirit of cooperation.

③ We should provide preferential policy for general practitioners to stabilize the existing talent team and enhance the attractiveness of CHSC to outside talents, and encourage all kinds of health professionals to join general practitioner team. We should elevate the professional status of general practitioners and promote their professional image; establish a full set of cultivation mechanism for general practitioners from education, training, internship to promotion; clarify the career development path of general practitioners, and attract more talents to join the general practitioner team.

(2) Capital resources

① Establish a sustained and stable funds investment mechanism and financing compensation mechanism. With the development of social economy and growth of population, the investment in community public health services should increase in the same pace, and the per capita subsidy for community public health services should be guaranteed through financial macro-control. Besides, we should continue to put more money into the medical insurance for the permanent and flowing population.

② Strengthen comprehensive budget management and avoid disorderly expenditure. It is necessary to further implement and improve separation between revenues and expenditures in community health services, ensure zero price differences of community essential drugs, implement centralized procurement and unified distribution of community essential drugs, and maintain a reasonable balance between revenue and expenditure through comprehensive budget

management and enhanced financial supervision. It is necessary to strengthen cost accounting and cost control to avoid the waste of community public health resources.

6.3 Limitations

(1) There are still some deficiencies in the construction of the evaluation index system of the core capability of CHSCs.

Although Delphi expert consultation method is a relatively mature index screening method, it still has flaws caused by, for example, the personal factors of experts and the possible biased understanding of the dynamic theoretical conceptual model by some experts in selecting indicators.

Due to the limitation of health industry policy, the evaluation index system is still lack of the support of financial data. Some financial data in health institutions have been considered as the business secret that are inaccessible.

(2) Each CHSC understands the questions in the questionnaire from its own perspective, which weakens the authenticity and reliability of collected data.

The respondents in surveyed CHSCs respond to the questionnaire according to their own understanding or even misinterpretations, which calls into question of the reliability of some collected, thus affecting the authenticity of some results of this study.

(3) The research object is limited to five districts in Shenyang.

Study sample limited to one big city in China, future research should generalize to more regions. A large sampling in wider areas can make the research results more convincing.

(4) The longitudinal dynamic data of CHSCs are difficult to obtain to analyze some dynamic indicators.

Some dynamic indicators, such as hospital learning ability, organizational culture, employee satisfaction, can only reflect the situation at the time of survey, but the longitudinal data of the same CHSC in different periods are difficult to be obtained, so it is impossible to show how the dynamic changes of these indicators impact on the core capability.

(5) The evaluation index system established in this study is not suitable to be compared with the results of other scholars.

At present, there is still no unified standard for the evaluation index of CHSC core capability, and the evaluation index system constructed based on dynamic theory has not been found in previous research. Because different researchers evaluate the CHSC core capability based on different theoretical framework, different evaluation indexes and different number of

evaluations, it is difficult to compare the research conclusions of this study with those of other researchers.

Bibliography

Adner, R. & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, *24* (10), 1011-1025.

Agwunobi, A. & Osborne, P. (2016). Dynamic Capabilities and Healthcare: A Framework for Enhancing the Competitive Advantage of Hospitals. *California Management Review*, *58* (4), 141-162.

Ambrosini, V., Bowman, C., & Collier, N. (2009). Dynamic capabilities: an exploration of how firms renew their resource base. *British Journal of Management*, *20* (S1), S9-S24.

Amit, R. & Schoemaker, P. J. H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, *14*, 33-46.

Arend, R. J. & Bromiley, P. (2009). Assessing the dynamic capabilities view: spare change, everyone? *Strategic Organization*, *7* (1), 75-90.

Argyris, C. (1976). Single-loop and double-loop models in research on decision making. *Administrative Science Quarterly*, *21* (3), 363-375.

Barney, J. B. & Wright, P. M. (1998). On Becoming a Strategic Partner: The Role of Human Resources in Gaining Competitive Advantage. *Human Resource Management*, *37* (1), 31-46.

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

Barney, J. (1995). Looking Inside for Competitive Advantage. *Academy of Management Executive*, *9* (4), 49-61.

Barney, J. & Stewart, A. (2002). *Organizational identity as moral philosophy: Competitive implications for diversified corporations*. Retrieved March 17, from http://search.epnet.com/login.aspx?direct=true&db=bth&an=11154465

Barreto, I. (2009). Dynamic Capabilities: A Review of Past Research and an Agenda for the Future. *Journal of Management*, *36* (1), 256-280.

Bhattacharyya, O., Yin, D., Wong, S. T., & Chen, B. (2011). Evolution of primary care in China 1997-2009. *Health Policy*, *100* (2-3), 174-180.

Bowman, C. & Ambrosini, V. (2003). How the Resource-Based View and the Dynamic Capability Views of the Firm Inform Corporate-Level Strategy. *British Journal of Management*, *14* (4), 289-303.

Bowman, C. & Ambrosini, V. (2007). Identifying Valuable Resources. *European Management Journal*, *25* (4), 320-329.

Brown, S. L. & Eisenhardt, K. M. (1995). Product development: past research, present findings, and future directions. *The Academy of Management Review*, *20* (2), 343-378.

Callaghan, G. & Wistow, G. (2006). Governance and public involvement in the British National Health Service: understanding difficulties and developments. *Social science & medicine (1982)*, *63* (9), 2289-2300.

Cardeal, N. & António, 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.
Cashman, S. B., Adeky, S., Allen, A. J., Corburn, J., Israel, B. A., & Montano, J., et al. (2008). The power and the promise: working with communities to analyze data, interpret findings, and get to outcomes. *Am J Public Health*, *98* (8), 1407-1417.
Cepeda, G. & Verab, D. (2007). Dynamic capabilities and operational capabilities: A knowledge management perspective. *Journal of Business Research*, *60* (5), 426-437.
Chandler, G. N., McKelvie, A., & Davidsson, P. (2009). Asset specificity and behavioral uncertainty as moderators of the sales growth---Employment growth relationship in emerging ventures. *Journal of Business Venturing*, *24* (4), 373-384.
China Ministry Of Health (Ed.). (2021). *China Health Statistical Yearbook*. Beijng: Peking Union Medical College Press.
Christensen, C. M., Bohmer, R. M. J., & Kenagy, J. (2000). Will disruptive innovations cure health care? *HARVARD BUSINESS REVIEW*, *78* (5), 102-112.
Cockburn, I. M., Henderson, R., & Stern, S. (2000). Untangling the Origins of Competitive Advantage. *Strategic Management Journal*, *21* (10-11), 1123-1145.
Cohen, W. M. & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, *35* (1), 128-152.
Collis, D. J. (1991). A resource-based analysis of global competition: The case of the bearings industry. *Strategic Management Journal*, *12*, 49-68.
Collis, D. J. (1994). Research Note How Valuable are Organizational Capabilities? *Strategic Management Journal*, *15*, 143-152.
Collis, D. J. & Montgomery, C. A. (2008). Competing on Resources. *HARVARD BUSINESS REVIEW*, *86* (7-8), 140-150.
Conner, K. R. & Prahalad, C. K. (1996). A resource-based theory of the firm: knowledge versus opportunism. *Organization Science*, *7* (5), 477-501.
Damron-Rodriguez, J. (2008). Developing competence for nurses and social workers. *The American journal of nursing*, *108* (9 Suppl), 40-46.
Danneels, E. (2008). Organizational Antecedents of Second-Order Competences. *Strategic Management Journal*, *29* (5), 519-543.
Deeds, D. L., Decarolis, D., & Coombs, J. (2000). Dynamic capabilities and new product development in high technology ventures: An empirical analysis of new biotechnology firms. *Journal of Business Venturing*, *15* (3), 211-229.
Denrell, J. & Powell, T. C. (2018). Dynamic Capability as a Theory of Competitive Advantage: Contributions and Scope Conditions. In D. J. Teece & S. Leih (Eds.), *The Oxford Handbook of Dynamic Capabilities*: Oxford University Press.
Dong, X., Liu, L., Cao, S., Yang, H., Song, F., & Yang, C., et al. (2014). Focus on vulnerable populations and promoting equity in health service utilization--an analysis of visitor characteristics and service utilization of the Chinese community health service. *BMC Public Health*, *14*, 503.
Døving, E. & Gooderham, P. N. (2008). Dynamic Capabilities as Antecedents of the Scope of Related Diversification: The Case of Small Firm Accountancy Practices. *Strategic Management Journal*, *29* (8), 841-857.
DU, G., Cheng, J. C., & Chen, W. D. (2000). Study on analysis and evaluation of the core competence of the corporation. *Journal of Tianjin University (Social Sciences)*, *2* (1), 56-60.
Durand, T. (1996). Strategizing for Innovation: Competence Analysis in Assessing Strategic Change. In A. Heene & R. Sanchez (Eds.), *Competence-Based Strategic Management*: John Wiley & Sons.
Easterby Smith, M. & Prieto, I. M. (2008). Dynamic capabilities and knowledge management: an integrative role for learning. *British Journal of Management*, *19* (3), 235-249.

Eggleston, K., Li, L., Meng, Q., Lindelow, M., & Wagstaff, A. (2007). Health service delivery in China: a literature review. *Health Economics, 17* (2), 149-165.

Eisenhardt, K. M. & Martin, J. A. (2000). Dynamic capabilities: what are they? *Strategic Management Journal, 21* (10-11), 1105-1121.

Fan, X. J. (2013). The British New Health and Care Systemand Its Implications for China. *Chinese General Practice, 16* (10B), 3403-3406.

Felin, T. & Foss, N. J. (2009). Organizational routines and capabilities: Historical drift and a course-correction toward microfoundations. *Scandinavian Journal of Management, 25* (2), 157-167.

Fiol, C. M. (1991). Managing Culture as a Competitive Resource: An Identity-Based View of Sustainable Competitive Advantage. *Journal of Management, 17* (1), 191-211.

Foss, N. J. (1997). The classical theory of production and the capabilities view of the firm. *Journal of Economic Studies, 24* (5), 307-323.

Galunic, D. C. & Rodan, S. (1998). Resource recombinations in the firm: knowledge structures and the potential for schumpeterian innovation. *Strategic Management Journal, 19* (12), 1193-1201.

Gavetti, G. & Levinthal, D. A. (2000). Looking Forward and Looking Backward: Cognitive and Experiential Search. *ADMINISTRATIVE SCIENCE QUARTERLY, 45* (1), 113-137.

Geisler, E. & Turchetti, G. (2018). Conduit versus content: a model of the firm's market involvement and organisational competitiveness. *International Journal of Technology Management, 76* (1-2), 137-162.

Grant, R. M. (1996). Toward a knowledge‐based theory of the firm. *Strategic Management Journal, 17* (s2), 109-122.

Griffith, D. A. & Harvey, M. G. (2001). A Resource Perspective of Global Dynamic Capabilities. *Journal of International Business Studies, 32* (3), 597-606.

Guo, B. & Cai, N. (2001). Auditing of firm's core competence: indicator system and evaluation method. *System Engineering – Theory & Practice, 32* (3), 597-606.

Hamel, G. & Heene, A. (1994). *Competence-based competition*. New York: Wiley.

Han, K. T., Park, E. C., & Kim, S. J. (2016). Unmet healthcare needs and community health center utilization among the low-income population based on a nationwide community health survey. *Health Policy, 120* (6), 630-637.

Helfat, C., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., & Teece, D., et al. (2007). *Dynamic Capabilities: Understanding Strategic Change in Organizations*. London: Blackwell Publishing.

Henderson, R. & Cockburn, I. (1994). Measuring Competence Exploring Firm Effects in Pharmaceutical Research. *Strategic Management Journal, 15* (s1), 63-84.

Hu, X. Y., Pu, C., Lin, H., Deng, M. L., Yang, L., & Yan, X. (2015). Application of Quantitative Evaluation in Performance Management of Basic Medical Institutions in Chongqing. *Chinese General Practice, 18* (2), 223-226.

Huang, K. W., Huang, J. H., & Tzeng, G. H. (2016). New Hybrid Multiple Attribute Decision-Making Model for Improving Competence Sets: Enhancing a Company’s Core Competitiveness. *Sustainability, 8* (2), 175-201.

Huang, M. L. & Cao, L. H. (2016). The Relationship between Institutional Capital and Competitive Advantage: Literature Review and Future Research. *Open Journal of Business and Management, 4* (1), 94-104.

Iansiti, M. & Clark, K. B. (1994). Integration and Dynamic Capability: Evidence from Product Development in Automobiles and Mainframe Computers. *Industrial and Corporate Change, 3* (3), 557-605.

JIN, Y., HE, L., YUE, D., ZHU, W., ZHANG, L., & MA, H., et al. (2015). Capacity building for primary health care reform and its effectiveness in Feixi county，Anhui province

. *Chinese Journal of Health Policy*, *8* (10), 13-19.
Kaiser, H. F. & Rice, J. (1974). Little Jiffy, Mark IV. *Educational and Psychological Measurement*, *34* (1), 111-117.
Karen, P. S., Alejandra, F. G., & Juan, I. (2019). Primary Care Assessment Tool applied to primary health care workers from Conchalí, Santiago. *Revista medica de chile*, *147* (3), 305-313.
Katkalo, V. S., Pitelis, C. N., & Teece, D. J. (2010). Introduction: On the nature and scope of dynamic capabilities. *Industrial and Corporate Change*, *19* (4), 1175-1186.
Kay, N. M. (2010). Dynamic capabilities as context: the role of decision, system and structure. *Industrial and Corporate Change*, *19* (4), 1205-1223.
Kesler, M., Kostad, D., & Clarke, W. E. (1993). Third generation R&D: The Key to Leveraging Core Competencies. *Columbia Journal of World Business*, *28* (3), 34-44.
King, A. W., Fowler, S. W., & Zeithaml, C. P. (2001). Managing organizational competencies for competitive advantage The middle-management edge. *Academy of Management Executive*, *15* (2), 95-106.
Kraaijenbrink, J., Spender, J., & Groen, A. (2010). The resource-based view: A review and assessment of its critiques. *Journal of Management*, *36* (1), 349-372.
Laamanen, J. T. & Wallin, W. (2009). Cognitive Dynamics of Capability Development Paths. *Journal of Management Studies*, *46* (6), 950-981.
Lai, W. (2010). Analysis of Hospital Core Competence. *Hospital Administration Journal of Chinese PLA*, *17* (5), 409-411.
Leonard-Barton, D. A. (1992). Core capabilities and core rigidities: A paradox in managmg new produd development. *STRATEGIC MANAGEMENT JOURNAL*, *13* (s1), 111-125.
Liao, J. J., Kickul, J. K., & Ma, H. (2009). Organizational dynamic capability and innovation: an empirical examination of internet firms. *Journal of Small Business Management*, *47* (3), 263-286.
Lin, C. & Tsai, H. (2016). Achieving a firm's competitive advantage through dynamic capability. *Baltic Journal of Management*, *11* (3), 10-1108.
Liu, L. Q. (2018). Promoting contracted services of family doctors to strengthen the construction of hierarchical medical system. *Chinese General Practice*, *21* (1), 1-4.
Liu, Y. L. (2004a). Development of the rural health insurance system in China. *HEALTH POLICY AND PLANNING*, *19* (3), 159-165.
Liu, Y. L. (2004b). China's public health-care system: facing the challenges. *Bulletin of the World Health Organization*, *82* (7), 532-538.
Lockett, A., Thompson, S., & Morgenstern, U. (2009). The development of the resource-based view of the firm: A critical appraisal. *International Journal of Management Reviews*, *11* (1), 9-28.
Luhmann, N. (1996). *Modern society shocked by its risks*. Hong kong: University of Hong Kong.
Ma, B. (2014). Review of Chinese hospitals' core competitiveness comprehensive evaluation. *Modern Business*, *8* (14), 165-166.
Makadok, R. (2001). Toward a synthesis of the resource‐based and dynamic‐capability views of rent creation. *Strategic Management Journal*, *22* (5), 387-401.
March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *10* (1), 299-316.
McClelland, D. C. (1973). Testing for competence rather than for intelligence. *American Psychologist*, *28* (1), 1-14.
Meyer, M. H. & Utterback, J. M. (1992). The Product Family and the Dynamics of Core Capability. *MIT Sloan Management Review*, *34* (3), 29-47.
Miller, D. & Shamsie, J. (1996). The Resource-Based View of the Firm in Two Environments:

The Hollywood Film Studios from 1936 to 1965. *The Academy of Management Journal, 39* (3), 519-543.

Miner, A. S., Bassoff, P., & Moorman, C. (2001). Organizational improvisation and learning: a field study. *Administrative Science Quarterly, 46* (2), 304-337.

Newbert, S. L. (2008). Value, rareness, competitive advantage, and performance: a conceptual-level empirical investigation of the resource-based view of the firm. *Strategic Management Journal, 29* (7), 745-768.

Nichani, S., Fitterman, N., Lukela, M., & Crocker, J. (2017). The Core Competencies in Hospital Medicine 2017 Revision. Section 3: Healthcare Systems. *Journal of Hospital Medicine, 12* (4 Suppl 1), s44-s54.

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science, 5* (1), 14-37.

Park, M., Go, Y., Jeong, M., Jeong, M., & Han, E. (2019). Comparing the Needs of Family Caregivers and Program Providers in Long-Term Care in Terms of Family Support Program. *Korean Journal of Adult Nursing, 31* (1), 14-19.

Patel, P. & Pavitt, K. (1997). The Technological Competencies of the World's Largest Firms: Complex and Path-dependent, but not Much Variety. *Research Policy, 26* (2), 141-156.

Pei, D. L. (2008). Primary probe into core competitive force of community health service center and cultural construction. *Community Health Care, 7* (1), 20-21.

Peng, J., Zhang, S. N., Lu, W., & Chen, A. T. L. (2003). Public health in China: the Shanghai CDC perspective. *American Journal of Public Health, 93* (12), 1991-1993.

Penrose, E. T. (1995). *The Theory of the Growth of the Firm*. USA: Oxford University Press.

Peteraf, M. A. (1993). The cornerstone 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. *Manage. Decis. Econ., 24* (4), 309-323.

Prahalad, C. K. & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review, 68* (3), 79-91.

Prencipe, A. (1997). Technological Competencies and Product's Evolutionary Dynamics: a Case Study from the Aeroengine Industry. *Research Policy, 25* (8), 1261-1276.

Prieto, I. M., Revilla, E., & Rodríguez-Prado, B. (2009). Building dynamic capabilities in product development: How do contextual antecedents matter? *Scandinavian Journal of Management, 25* (3), 313-326.

Rowan, M. S., Hogg, W., & Huston, P. (2007). Integrating Public Health and Primary Care. *Healthcare policy, 3* (1), e160-e181.

Rumelt, R. P., Schendel, D., & Teece, D. J. (1991). Strategic management and economic. *Strategic Management Journal, 12* (s2), 5-29.

Schreyögg, G. & Kliesch-Eberl, M. (2007). How dynamic can organizational capabilities be? Towards a dual‐process model of capability dynamization. *Strategic Management Journal, 28* (9), 913-933.

Shamsie, J. (2009). Exploiting the Tie that Binds- Dealing with Issues of Resource Mobility in the U.S. Motion Picture Industry. *SSRN Electronic Journal*, 10-2139.

Shen, Q. H. & Tang, L. Y. (2010). Patient Preferences, Concerns, and Satisfaction with Providers before the Chinese Urban Health System Reform: A Social Groups Analysis. *SSRN Electronic Journal*, 10-2139.

Shen, Q., Tang, L., Feng, Y., & Tang, J. (2010). The Imbalance between Patient Needs and the Limited Competence of Top-Level Health Providers in Urban China: An Empirical Study Based on a 2008 National Household Survey. *SSRN Electronic Journal*, 10-2139.

Shi, J. W., Jin, H., Shi, L. Y., Chen, C., Ge, X. H., & Lu, Y., et al. (2020). The quality of primary care in community health centers comparison among urban, suburban and rural users in

Shanghai, China. *BMC Family Practice, 21*, 178-188.
Subba, P. N. & Narasimha. (2001). Strategy in turbulent environments: the role of dynamic competence. *Managerial and Decision Economics, 22* (4-5), 201-212.
Sun, N., Rau, P. L. P., & Zhong, R. (2019). Understanding patients' trust toward community healthcare providers under different primary care settings in China: Impact of hospital ownership and registration mode. *Human Factors and Ergonomics in Manufacturing & Service Industries, 29* (5), 418-425.
Tang, L. Y. (2011). The influences of patient's trust in medical service and attitude towards health policy on patient's overall satisfaction with medical service and sub satisfaction in China. *BMC Public Health, 11* (1), 472-480.
Tang, L. Y. (2013). The Chinese community patient's life satisfaction, assessment of community medical service, and trust in community health delivery system. *Health Qual Life Outcomes, 11* (18), 10-1186.
Teece, D. J., Pisano, G. P., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal, 18* (7), 509-533.
Tripsas, M. & Gavetti, G. (2000). Capabilities, cognition, and inertia: evidence from digital imaging. *Strategic Management Journal, 21* (10-11), 1147-1161.
Vergne, J. & Durand, R. (2011). The Path of Most Persistence: An Evolutionary Perspective on Path Dependence and Dynamic Capabilities. *Organization Studies, 32* (3), 365-382.
Wagstaff, A. (2009). Correcting the concentration index: a comment. *Journal of Health Economics, 28* (2), 504-515.
Wang, C. L. & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews, 9* (1), 31-51.
Wang, C., Zhang, L., Yu, X., Gao, J., Zhao, L., & Liu, Y. (2018). A study on the present situation of the service ability of the primary health care facilities in Chengdu - from the perspective of basic medical services. (4), 48-51.
Wei, J. & YE, X. F. (2001). Fuzzy-Method- Based Discernment and Evaluation System of Firm's Core Competency. *Science Research Management, 22* (2), 96-103.
Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5* (2), 171-180.
Whelan, L. (2006). Competency assessment of nursing staff. *Orthopaedic Nursing, 25* (3), 203-204.
Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal, 24* (10), 991-995.
Wu, H. (2009). My opinions of the core competitiveness of community hospitals. *China Medicine Innovation, 6* (20), 189-190.
Wu, L. Y. (2007). Entrepreneurial resources, dynamic capabilities and start-up performance of Taiwan's high-tech firms. *Journal of Business Research, 60* (5), 549-555.
Wu, L. Y. (2010). Applicability of the resource-based and dynamic-capability views under environmental volatility. *Journal of Business Research, 63* (1), 27-31.
Xu, X. R. & Sun, Q. (2019). Study on the implementation of graded diagnosis and treatment in China. *Chongqing Medicine, 48* (11), 1977-1980.
Yang, J., Guo, A., Wang, Y., Zhao, Y., Yang, X., & Li, H., et al. (2008). Human resource staffing and service functions of community health services organizations in China. *Annals of family medicine, 6* (5), 421-427.
Yuan, J., Zhang, L., Xu, W., Shen, J., Zhang, P., & Ma, H. (2009). Reported changes in health-related behaviours in Chinese urban residents in response to an influenza pandemic. *Epidemiology and infection, 137* (7), 988-993.
Zahra, S. A. & George, G. (2002). The Net-Enabled Business Innovation Cycle and the Evolution of Dynamic Capabilities. *Information systems research, 13* (2), 147-150.

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and Dynamic Capabilities: A Review, Model and Research Agenda. *Journal of Management Studies, 43* (4), 917-955.

Zhang, Y., Chen, Q., Yan, X., Li, J., & Hu, H. P. (2016). Application status of information system functions in community health service settings and township health centers in China. *Chinese General Practice, 19* (7), 766-770.

Zollo, M. & Winter, S. G. (2002). Deliberate Learning and the Evolution of Dynamic Capabilities. *Organization Science, 13* (3), 339-351.

Zott, C. (2003). Dynamic Capabilities and the Emergence of Intraindustry Differential Firm Performance: Insights From a Simulation Study. *Strategic Management Journal, 24* (2), 97-125.

[This page is deliberately left blank.]

Webliography

China State Council. (2015). *Guidance on promoting the construction of graded diagnosis and treatment system*. Retrievedfrom http://www.gov.cn/gongbao/content/2015/content_2937321.htm?isappinstalled=0

China State Council. (2017). *Guidance on promoting the construction and development of medical Consortium*. Retrievedfrom http://www.gov.cn/gongbao/content/2017/content_5191699.htm

China State Council. (2018). *Opinions on reforming and improving the incentive mechanism for the training and use of general practitioners*. Retrievedfrom http://www.gov.cn/zhengce/content/2018-01/24/content_5260073.htm

China Ministry Of Health. (2019). *Notice of the General Office of the National Health Commission on Issuing the Guidelines for the Evaluation of the Service Capacity of Community Health Service Centers*. Retrievedfrom http://www.nhc.gov.cn/jws/s2908/201904/523e5775cdba451a81ab2fbc0628d9f0.shtml

China Ministry Of Health. (2020). *Notice on improving basic public health service projects in 2020*. Retrieved 2021, March 17, from http://www.nhc.gov.cn/jws/s7874/202006/619506aa0fd14721b7e5711d389c323f.shtml

[This page is deliberately left blank.]

Other References

China Ministry of Health. (2019). *Notice of the General Office of the National Health Commission on Issuing the Guidelines for the Evaluation of the Service Capacity of Community Health Service Centers*. Beijing, China Ministry of Health.

China Ministry of Health. (2020). *Notice on Improving Basic Public Health Service Projects in 2020*. Beijing, China Ministry of Health.

[This page is deliberately left blank.]

Annex A: Interview outline

Research Interview Outline for director (deputy director)

Research on the Core Capabilities of Community Health Service Center

Interviewees：
Method of Interview ：
Site of Interview：

Module	Questions		Key points in Answering
Situation of Community Health Service Center	1	Staff collocation and professional quality	
	2	Hardware Configuration	
	3	Resource Integration	
	4	Center Characteristics and Peculiarity	
Operational Experience	1	What is the biggest achievement in the operation of the community health service center?	

	2	What do you think is the key to this achievement?	
	3	Do you think the operation experience of the center can be spread countrywide as a classic case?	
	4	During your operation, what is your vision for the development of community health service center?	
	5	Has it become a national or provincial model community health service center?	
Operational Uniqueness	1	What knowledge and skills do you think the core staff of the center should possess?	
	2	Can your center staff be replaced by other resources?	
Difficulties and Solutions	1	What do you think are the biggest problems you have encountered in the management and operation of community health services?	
	2	How have you solved the problems?	

Annex B: Expert inquiry

Part I. Letter to Experts

Dear experts,

At present, our research group is carrying out the investigation and research on ***The core capability of Community Health Service Centers.*** In view of your rich working experience and academic influence in the field of community health service management, we are honored to invite you to be a consulting expert for the second round of this project.

The purpose of this study is to draw up a questionnaire to investigate the core capability of community health service centers, form an index system to measure the core capability of community health service centers, and provide a reference for future community assessment and targeted intervention.

After the first round of inquiry, according to the experts' opinions and scores, this study has formed an index system with 5 first level indicators, 14 second level indicators and 65 third level indicators. In order to ensure the development progress of the scale, please reply with your comments and suggestions within 7 days. Your comments are very important to this study. Thank you for your support. If you have any questions about the questionnaire or have any other information, please feel free to contact us.
Once again, please accept my sincere thanks!

Best wishes!

Wu Wei (Doctor Candidate)

Tel:
Email:

Part II

Expert Consultation Form on the *Core Coapability of Community Health Service Centers*

Instructions

1. The scale consists of 5 first level indicators, 14 second level indicators and 65 third level indicators. According to its degree, it can be divided into five levels: very important(VI), relatively important(RI), generally important(GI), not very important(NVI) and not important(NI). 5, 4, 3, 2 and 1 points were given accordingly. Please fill in the appropriate score in the corresponding column.

2. Please fill in the "modification or deletion comments" column if you think the relevant items need to be modified or deleted. Please fill in the "supplementary indicators" column and explain the importance, if you'd like to add items.

Table 1 First Level Index Inquiry Form

First Level Indicators	Index Importance Evaluation					Modification or Deletion Comments
	Very Important	Relatively Important	Generally Important	Not very Important	Not Important	
	5’	4’	3’	2’	1’	
Resource						
Service Capability						
Organizational Culture						
Management Capability						
Dynamic Capability						

For table 1, please fill in here if you have any other comments, _____

_____

_____

Table 2 Second Level Index Inquiry Form

First Level Indicators	Second Level Indicators	Index Importance Evaluation					Modification or Deletion Comments
		VI	RI	GI	NVI	NI	
		5’	4’	3’	2’	1’	
Resource	Human Resource						
	Material resources						
	Capital Resource						
Service Capability	Public Health Service						
	Basic Medical Service						
Organizational Culture	Spiritual Culture						
	Group Culture						
Management Capability	Institutional Policy						
	Information Technology Application						
	Employee Satisfaction						
Dynamic Capability	Learning Ability						
	Innovation Capability						
	Integration Ability						
	Absorptive Capacity						

For table 2, please fill in here if you have any other comments, _____

_____

Table 3 Third Level Index Inquiry Form

First Level Indicators	Second Level Indicators	Third Level Indicators	Index Importance Evaluation					Modification or Deletion Comments
			VI	RI	GI	NVI	NI	
			5’	4’	3’	2’	1’	
Resource	Human Resource	educational background structure						
		professional title structure						
		Proportion of doctors and nurses						
		Doctor patient ratio						
	Material resources	High-value equipment Number						
		Equipment of clinical diagnosis and treatment						
		Auxiliary examination equipment						
		Public health infrastructure						
		Business premises areas & Property right						
	Capital Resource	Annual revenue of CHSC						
		Government's annual special investment fund to CHSC						
		The proportion of CHSC’s special fund input in the total income						
Service Capability	Public Health Service	Residents' Health Records Establishment						
		Immunization And Vaccination						
		Childcare						
		Maternity Care						
		Reporting And Handling of Infectious Diseases and Public Health Emergencies						
		Healthcare Education						
		Health Management of The Aged						
		Management of Severe Psychosis Patients						
	Basic Medical Service	Diagnosis and treatment of common and frequently occurring diseases						
		Community emergency rescue						
		Chronic disease treatment						
		Home visit, referral service						

		Rehabilitation Services						
		Formal Traditional Chinese Medicine Care						
Organizational Culture	Spiritual Culture	Core Values						
		Mission and Vision						
	Group Culture	Strategic Orientation						
		Coordination and Integration						
Management Capability	Institutional Policy	Institutional Policy						
	Information Technology Application	IT Infrastructure						
		Internal Electronic Integration						
		External Electronic Integration						
		Development of Information Technology						
	Employee Satisfaction	Satisfaction with The Overall Development Prospect of CHSC						
		Satisfaction With The Working Atmosphere of CHSC						
		Satisfaction With Personal Development Prospects						
		Satisfaction With the Communication Channels of CHSC						
		Satisfaction With Performance and Pay of CHSC						
		Satisfaction With Job Stress						
Dynamic Capability	Learning Ability	Discovery Ability						
		Invention Ability						
		Selecting Ability						
		Executive Ability						
		Reflective Ability						
		Knowledge Acquiring Ability						
		Knowledge Output Ability						
		Knowledge Base Building Ability						
	Innovation Capability	Market Innovativeness						
		Process Innovativeness						
		Behavioral Innovativeness						
		Strategic Innovativeness						
		Technology Innovativeness						
		Exploitative Innovation						
		Exploratory Innovation						
	Integration Ability	Integrated Care Organization						

		Remote Consultation						
		Human Resource Integration						
		Item Resource Integration						
		Information Resource Integration						
		Service Process Integration						
		Resource Reconstruction						
	Absorptive Capacity	Potential Absorptive Capacity						
		Realized Absorptive Capacity						

For table 3, please fill in here if you have any other comments,_____
_____
_____

Part III Consulting Expert Information Form

Name		Age		Education	
Post		Title		Working Years	
Organization (Full Name)			E-mail		
			Tel		
Field of Study	□Clinical Medicine □Preventive Medicine □Community Management □Community Nursing □Others_____				
Postgraduate Supervisor	□Y □N	Research Directions			

Familiarity towards this Survey	Very Familiar	Familiar	Generally Familiar	Unfamiliar	Very Unfamiliar

Judgment Basis of the Importance of Index	Basis of Judgment	Result of Judgement		
		Strong	Middle	Weak
	Theoretical Analysis			
	Practical Basis			

[This page is deliberately left blank.]

Annex C: Questionnaire

Research on Core Competitiveness of Community Health Service Centers Questionnaire

Questionnaire No.:

We are conducting a case study of community health service centers. Thank you for taking time out of your busy schedule to participate in our study. This study is about the core competitiveness of community health service centers (CHSC) in the operations management. The main research method is questionnaire survey, so your participation and help are particularly needed. The data collected by the questionnaire in this study will be used for pure research purposes. Statistical analysis of the data is based on the comprehensive results of all questionnaires, and no analysis or evaluation of any individual or hospital data is going to be conducted. Therefore, please answer all the questions based on your own personal experience and true feelings. It may take you about half an hour to fill in the following questionnaire. Your sincere cooperation and support is an important guarantee for us to carry out the research scientifically & completely. Thank you very much for your support and help.

The district where the community health service center is located: _____

Central Registration Name: _____

Date of filling: _____Year _____Month_____Date

Questionnaire description:

A. Multiple choice: choose ONLY one option each question; If the question marked "there may be more than one correct answer", then choose your options.

B. Fill in the blanks: please fill in your answers (words or numbers) directly on "____", just like "The total number of people on duty is___30___".

C. Form: please put "✓" in the parentheses.

Part 1. Basic information

1.1 Basic personal information

No.	Question	Option	Description
1	Gender	(1) Male (____) (2) Female (____)	Put "✓" in the parentheses (ONLY one option)
2	Age	_____years-old	
3	Career	(1)Practicing physician (___); (2)Assistant practicing physician (___); (3)Practicing physician of Traditional Chinese Medicine (___); (4)Practicing nurse(___); (5)Practitioner in preventive medicine(__); (6)Licensed Pharmacist(__); (7)Technician(___); (8)IT engineer (___); (9)Administrator (___); (10)Logistics staff (___); (11)Others (___)。	Put "✓" in the parentheses (there may be more than one correct answer)
4	How long with this carrer?	_____ years.	From the time you begin this job first time.
5	Department	(1)General Practice(___); (2)Prevention and health care section ( ); (3)Other clinical section (___); (4)Medical imaging (____); (5)Medical Laboratory (___); (6)Administration (___); (7)General affairs (___); (8)Others (____).	Put "✓" in the parentheses (ONLY one option)
6	Education level	(1)Doctor degree (___); (2)Master degree (___); (3)Bachelor degree (___); (4)Junior College (___); (5)Technical secondary school (__); (6)Others (___)。	Put "✓" in the parentheses (ONLY one option)
7	Professional title	(1)Senior Title (____); (2)Associate senior title (____);	Put "✓" in the parentheses (ONLY one option)

		(3)Intermediate title (____); (4)Junior title (___); (5)Others (___)。	
8	Administra-tive position	(1)Leader(___); (2)Director of clinical (___); (3)Director of medical technology (___); (4)Director of public health section(__); (5)Head nurse (___); (6)Director of general affairs section (__); (7)Others (___)。	Put "✓" in the parentheses (ONLY one option)
9	Monthly average income	(1)3000-5000RMB (___); (2)5001-8000RMB (___); (3)≥8000RMB (___)。	Put "✓" in the parentheses (ONLY one option)
10	Payroll employee by government	(1)Yes (___); (2)No (___).	Put "✓" in the parentheses (ONLY one option)

1.2 CHSC basic information

No.	Question	Option	Description
11	Organizers of your CHSC	(1) Transformation of first-level government hospital(___) (2) Transformation of second-level government hospital (___) (3) Unit of second-level government hospital (___) (4) Unit of enterprises and public institutions (___) (5) Unit of private capital (___)	Put "✓" in the parentheses (ONLY one option)
12	Has your CHSC been included in or not in the designated medical institution of medical insurance	(1)Yes(__); (2)No (__)	Put "✓" in the parentheses (ONLY one option)
13	Total number of registered permanent residence in the district	_____people.	Fill the number of registered permanent residence
14	Actual number of people served in CHSC	_____people.	Fill the number of people served in CHSC

Part 2. Resources

2.1 Human resources

No.	Question	Option	Description
15	Number of CHSC personnel	(1)Total number of personnel on duty__; (2)The number of the doctor _____; (3)The number of the nurse _____; among ： (4)General practitioner number___. (5)Practitioner in preventive medicine number_____. (6)Number of payroll employee by government_____. (7)Number of payroll employee NOT by government_____.	Please fill in according to the actual number of people.
16	Professional title	(1)Senior Title number (____); (2)Associate senior title number ( ) (3)Intermediate title number (____); (4)Junior title number (___); (5)Others number (___)。	Please fill in according to the actual number of people.
17	Education level	(1)Number of PhD & MD _____ ; (2)Number of master's degrees___; (3)Number of bachelor degree_____; (4)Number of Junior College and less_____.	Please fill in according to the actual number of people.
18	Share human resources with 3A grade hospital or not	(1)Yes ( ); (2)No ( )	Put "✓" in the parentheses (ONLY one option)

2.2 Material resources

No.	Question	Option	Description
19	CHSC business premises areas (Not include affricated hospital)	_____ m^2。	
20	CHSC business premises:	(1)Totally free ( ); (2)Partly free ( ); (3)Self-owned ( ); (4)Leased ( ); (5) others ( )。 If self-owned or leased, money supported by: (1) Government totally ( ) (2) Government partly ( )	Put "✓" in the parentheses (ONLY one option)

		(3) CHSC self-raised ( )	
21	High-value equipment	(1)CT( ) (2)Ultrasound ( ) (3)Others( )。	If yes, please tick
22	Equipment of clinical diagnosis and treatment:	(1)Basically perfect ( ) (2)Not perfect( )	Put "✓" in the parentheses (ONLY one option)
23	Auxiliary examination equipment	(1)Basically perfect ( ) (2)Not perfect( )	Put "✓" in the parentheses (ONLY one option)
24	Public health infrastructure	(1)Basically perfect ( ) (2)Not perfect( )	Put "✓" in the parentheses (ONLY one option)
25	Clinical departments:	(1)General surgery room ( ) (2)Traditional Chinese Medicine surgery room ( ) (3)Rehabilitation and treatment room ( ) (4)Resuscitation room ( ) (5)Others? ( )	If yes, please tick, could more than one answer.
26	Preventive health departments:	(1)Vaccination room ( ) (2)Children's health care room ( ) (3) Women's health and family planning guidance room ( ) (4) Health education room ( ) (5)Others?	If yes, please tick, could more than one answer.
27	Medical technology and other departments:	(1)Examination room ( ) (2)Medical imaging room ( ) (3)B ultrasound room ( ) (4)ECG room ( ) (5)Pharmacy ( ) (6)treatment room ( ) (7)disposal room ( ) (8)observation room ( ) (9)health information management room ( ) (10)disinfection room ( ) (11)Others?	If yes, please tick, could more than one answer.
28	Share medical resources with 3A grade hospital or not	(1)Yes ( ); (2)No ( )	Put "✓" in the parentheses (ONLY one option)

2.3 Capital resources

No.	Question	Option	Description
29	Annual revenue of CHSC	_____RMB	
30	Government's annual special investment fund to CHSC	_____RMB	
31	The proportion of your unit's special fund	Percent_____	

	input in the total income		
32	Are training expenses spent to improve the quality and ability of employees?	(1)Yes ( ); (2)No ( )	Put "✓" in the parentheses (ONLY one option)
33	Is there any equipment investment to improve quality and efficiency?	(1)Yes ( ); (2)No ( )	Put "✓" in the parentheses (ONLY one option)
34	Is there any investment in information network construction to realize hospital digitalization?	(1)Yes ( ); (2)No ( )	Put "✓" in the parentheses (ONLY one option)
35	Is there any infrastructure investment for strategic assets such as marketing?	(1)Yes ( ); (2)No ( )	Put "✓" in the parentheses (ONLY one option)
36	Is there any investment in technological innovation?	(1)Yes ( ); (2)No ( )	Put "✓" in the parentheses (ONLY one option)

Part 3. Service capability

Based on your personal experience and real feelings, please circle and select a number to indicate your degree of agreement with each of the following statements (1 means very disagree, 2 means disagree, 3 means inclined to disagree, 4 means Between agreement and disagreement, 5 means inclined to agree, 6 means agree, and 7 means agree very much.) There are no objective answers or criteria for scoring these questions. Please answer all questions.

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
37	Your unit has established an electronic health record and put it into management	1	2	3	4	5	6	7
38	Your unit has carried out health education for patients in a planned way	1	2	3	4	5	6	7
39	Your unit often provides health education brochures to patients	1	2	3	4	5	6	7
40	Your unit has established a complete vaccination system and vaccination information system	1	2	3	4	5	6	7
41	Your unit can inject various kinds of vaccine	1	2	3	4	5	6	7
42	Your unit has a good health management system for children	1	2	3	4	5	6	7
43	Your unit has established a Maternal Health Care Manual for pregnant women within 12 weeks of pregnancy.	1	2	3	4	5	6	7
44	Your unit can provide prenatal health guidance to pregnant women	1	2	3	4	5	6	7

45	Your unit every year can give a postpartum house call visit	1	2	3	4	5	6	7
46	Your unit conducts an annual assessment of the lifestyle and health status of the elderly	1	2	3	4	5	6	7
47	Your unit often carries out rehabilitation and nursing guidance for mental patients in the community	1	2	3	4	5	6	7
48	Your unit has a complete risk management system and system for epidemic situation of infectious diseases and public health emergencies	1	2	3	4	5	6	7
49	Your unit may timely detect and register epidemic situations of infectious diseases and public health emergencies	1	2	3	4	5	6	7
50	Your unit has performed well in handling infectious diseases and public health emergencies (such as SARS and COVID-19).	1	2	3	4	5	6	7
51	Your unit can provide traditional Chinese medicine services	1	2	3	4	5	6	7
52	Your unit can cooperate with the superior department to carry out health supervision and management	1	2	3	4	5	6	7
53	Your unit can provide very good rehabilitation services	1	2	3	4	5	6	7
54	Your unit has established a health and rehabilitation information platform with public hospitals	1	2	3	4	5	6	7
55	Your unit often provides advice and guidance related to family planning to women of childbearing age	1	2	3	4	5	6	7
56	The total number of personal health records established by your unit is_____	No need to score, fill in directly						
57	Your unit provides the number of free physical examination service to the elderly aged 65 and above who visit the community every year _____	No need to score, fill in directly						
58	Chronic disease patient management rate = number of hypertensive patients under standardized management in the region/total number of hypertensive patients in the region_____.	No need to score, fill in directly						
59	Chronic disease patient management rate = number of hypertensive patients under standardized management in the region/total number of hypertensive patients in the region_____.	No need to score, fill in directly						
60	The number of patients with all kinds of chronic diseases to be intervened and followed up every year (the number of hypertensive patients or diabetes is)	No need to score, fill in directly						
61	The total number of outpatient visits per year	No need to score, fill in directly						
62	The number of times you have served as a family doctor per year_____	No need to score, fill in directly						
63	The number of hospice care providers (person-time) per year_____	No need to score, fill in directly						

Part 4. Organizational Culture

Based on your personal experience and real feelings, please circle and select a number to indicate your degree of agreement with each of the following statements (1 means very disagree, 2 means disagree, 3 means inclined to disagree, 4 means Between agreement and disagreement, 5 means inclined to agree, 6 means agree, and 7 means agree very much.) There are no objective answers or criteria for scoring these questions. Please answer all questions.

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
64	The medical staff of your unit have consistent deep values and a high degree of tacit understanding in the process of diagnosis and treatment	1	2	3	4	5	6	7
65	Departments in your unit can work well together for the common goal of community health service centers, and the completion of work will not be affected by the boundaries of departments	1	2	3	4	5	6	7
66	All the staff of your unit work together around the strategic goals and key tasks of the community health service center to promote the community health service center to gradually achieve the strategic goals	1	2	3	4	5	6	7
67	The high recognition of the future development of the community health service center by all the staff in your unit points out the direction of the community development	1	2	3	4	5	6	7
68	The strategic positioning established by your unit clearly expresses the goals of the community health service center and makes each employee clear about the direction of their efforts	1	2	3	4	5	6	7
69	Your unit has clear, actionable and concrete goals that guide the work of its employees	1	2	3	4	5	6	7

Part 5. Management ability

Based on your personal experience and real feelings, please circle and select a number to indicate your degree of agreement with each of the following statements (1 means very disagree, 2 means disagree, 3 means inclined to disagree, 4 means Between agreement and disagreement, 5 means inclined to agree, 6 means agree, and 7 means agree very much.) There are no objective answers or criteria for scoring these questions. Please answer all questions.

5.1 Institutional Policy

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
70	Your Unit has established a complete performance management system	1	2	3	4	5	6	7
71	How perfect is the health service assessment system in your unit?	1	2	3	4	5	6	7
72	How perfect is your unit's personal performance evaluation index?	1	2	3	4	5	6	7
73	How perfect is medical accident prevention system in your unit?	1	2	3	4	5	6	7
74	How perfect is the management system of nosocomial infection in your unit?	1	2	3	4	5	6	7
75	How perfect has the degree of social publicity system been established in your unit?	1	2	3	4	5	6	7
76	Your company has a sound financial management system and reasonable planning of financial management	1	2	3	4	5	6	7
77	How satisfied are you with the overall development prospect of your unit?	1	2	3	4	5	6	7
78	Rules and regulations of your unit are perfect	1	2	3	4	5	6	7
79	The current organization of your unit is running well	1	2	3	4	5	6	7

5.2 Information Technology Application

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much

80	Your medical staff follows standard data management policies and procedures and can accurately input patient data to generate electronic medical records	1	2	3	4	5	6	7
81	Your system can retrieve a patient's medication, disease, and allergy history and generate drug alerts to the prescribing physician, such as allergy reports or repeated prescriptions	1	2	3	4	5	6	7
82	Your system can automatically retrieve the doctor-patient database when making an appointment	1	2	3	4	5	6	7
83	Your system enables the exchange of patient information among departments of outpatient, emergency, hospitalization, etc	1	2	3	4	5	6	7
84	Your unit has integrated pharmacy information systems, clinical decision support systems, drug management systems, and the ability to detect duplicate orders	1	2	3	4	5	6	7
85	Leverage your unit's expertise to create new service opportunities (home beds, home visits)	1	2	3	4	5	6	7
86	Your unit uses IT-based support to manage its inventory of equipment and medicines	1	2	3	4	5	6	7
87	Your unit understands patient preferences and needs	1	2	3	4	5	6	7

Part 6. Dynamic Capability

Based on your personal experience and real feelings, please circle and select a number to indicate your degree of agreement with each of the following statements (1 means very disagree, 2 means disagree, 3 means inclined to disagree, 4 means Between agreement and disagreement, 5 means inclined to agree, 6 means agree, and 7 means agree very much.) There are no objective answers or criteria for scoring these questions. Please answer all questions.

6.1 Learning capability

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
88	Your unit can detect the new changes & trends of the community center inside and outside timely & accurately	1	2	3	4	5	6	7
89	Your unit can identify any potential problems, challenges or crises inside and outside the center timely and accurately	1	2	3	4	5	6	7
90	Your unit is able to come up with new responses and innovations to changes within and outside the center	1	2	3	4	5	6	7

91	Your unit can give the correct and efficient comparison and make a choice in the face of a variety of schemes	1	2	3	4	5	6	7
92	Your unit can translate the ideas and goals of community health service center management into concrete actions	1	2	3	4	5	6	7
93	Your unit can carry out the work plan effectively	1	2	3	4	5	6	7
94	Your unit is able to turn ideas and goals from work into reality	1	2	3	4	5	6	7
95	Your unit is good at exploring from the previous occurrence common elements out of the regularity of things	1	2	3	4	5	6	7
96	Your unit is good at obtaining knowledge and experience from outside the CHSC	1	2	3	4	5	6	7
97	Your unit is good at getting advice and guidance from outside the center	1	2	3	4	5	6	7
98	Your unit can effectively communicate and spread your unit's ideas, knowledge and experience	1	2	3	4	5	6	7
99	Your unit can effectively spread its ideas, knowledge and experience outside the center by writing articles	1	2	3	4	5	6	7
100	Your unit can effectively use its ideas, knowledge, and experience to influence people outside the center	1	2	3	4	5	6	7
101	Your unit is focus on recording and accumulating ideas, knowledge and experience	1	2	3	4	5	6	7
102	Your unit will devote to its knowledge and experience to document or electronic method of management	1	2	3	4	5	6	7
103	Your unit has put its knowledge and experience in good order, and it is convenient to file and use	1	2	3	4	5	6	7

6.2 Innovation capability

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
104	Your unit's new service is often followed by other similar units	1	2	3	4	5	6	7
105	Compared with other similar units, our service plan is different and unique	1	2	3	4	5	6	7
106	Your unit is usually at the forefront of technology when launching new services	1	2	3	4	5	6	7
107	Your unit is constantly optimizing the service process	1	2	3	4	5	6	7
108	If we try to do things in a new way we get a lot of support from management	1	2	3	4	5	6	7

109	Your unit tolerates individuals who have a unique way of doing things	1	2	3	4	5	6	7
110	Your unit's leadership is willing to take risks, seize and explore high-risk development opportunities	1	2	3	4	5	6	7
111	Your unit seeks novel solutions through thoughtful persons	1	2	3	4	5	6	7
112	When we recognize new ways of managing, we are often the first to adopt them	1	2	3	4	5	6	7
113	Your unit is known for its role as an innovator in other centers of the region	1	2	3	4	5	6	7
114	Your unit is at the forefront of service innovation	1	2	3	4	5	6	7
115	Your unit continues to improve the efficiency of existing services	1	2	3	4	5	6	7
116	Your unit continues to develop new service directions	1	2	3	4	5	6	7
117	Your unit continues to expand its existing services	1	2	3	4	5	6	7
118	Your unit's App can accept online / WeChat / mobile registration	1	2	3	4	5	6	7
119	Your unit can accept online/WeChat/mobile payment	1	2	3	4	5	6	7
120	You have an interactive reservation system	1	2	3	4	5	6	7
121	Your unit can provide mobile test results	1	2	3	4	5	6	7
122	Your unit seeks based on social-network collaborative and innovative processes and services	1	2	3	4	5	6	7
123	Your unit will host working meetings with patients and caregivers to seek new procedures or services	1	2	3	4	5	6	7
124	Your unit can provide telemedicine services	1	2	3	4	5	6	7
125	Your unit can provide mobile electronic inspection equipment	1	2	3	4	5	6	7
126	Your unit can send medication alerts on time	1	2	3	4	5	6	7
127	Your unit will communicate the goal of home care with patients and their families	1	2	3	4	5	6	7
128	Your unit has policies and procedures to support home care practitioners	1	2	3	4	5	6	7
129	Your home care policies and procedures allow your staff to work efficiently	1	2	3	4	5	6	7

6.3 Integration capability

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
130	Your unit will use information system to carry out hierarchical medical treatment (appointment and referral) services within medical consortium	1	2	3	4	5	6	7
131	You think the mode of medical association can play a role in the hierarchical medical pattern	1	2	3	4	5	6	7
132	Your unit often provides technical guidance and professional training for village doctors to village health centers	1	2	3	4	5	6	7
133	Your unit has established a remote consultation system based on the Internet platform and the construction of medical consortium	1	2	3	4	5	6	7
134	Your unit to improves the diagnosis rate of your unit consultation through remote consultation system	1	2	3	4	5	6	7
135	Doctors of your unit can go to medical alliance hospital for further study free of charge	1	2	3	4	5	6	7
136	Your unit has set up a chronic disease expert guidance clinic	1	2	3	4	5	6	7
137	Your unit can carry out remote ECG monitoring	1	2	3	4	5	6	7
138	Your unit can obtain the mutual sharing of material resources in many areas	1	2	3	4	5	6	7
139	Your unit has set up a green channel for two-way referral between hospital and community	1	2	3	4	5	6	7
140	Network information system and information resource sharing between your unit (community - hospital - health administration department)	1	2	3	4	5	6	7
141	Your unit has examined the domestic and foreign hospital management mode or the enterprise management mode	1	2	3	4	5	6	7
142	Your doctor workstation and examination system can realize information resource sharing through network	1	2	3	4	5	6	7
143	Your unit can conduct remote consultation with medical experts through the Internet	1	2	3	4	5	6	7
144	Your unit timely transfer serious patients, submit electronic medical records, transfer the examination list	1	2	3	4	5	6	7
145	Your unit receives the examination results from the hospital and gives online diagnosis and treatment guidance	1	2	3	4	5	6	7
146	The health examination or medical service information of the community health management clients can be safely interconnected within the medical consortium	1	2	3	4	5	6	7

147	Your unit can quickly deal with conflicts during the strategic decision-making process	1	2	3	4	5	6	7
148	Your unit's ability to quickly identify external changes is better than peers, and can timely put forward contingency measures (resources, strategies)	1	2	3	4	5	6	7
149	Your unit can quickly reorganize resources to adapt to changing circumstances	1	2	3	4	5	6	7

6.4 Absorptive capability

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
150	We can quickly analyze and understand changes in patients' needs	1	2	3	4	5	6	7
151	We strive to seize opportunities for our unit to absorb external knowledge	1	2	3	4	5	6	7
152	Some fresh college graduates are attracted to work at our community health center	1	2	3	4	5	6	7
153	Your unit often implements new medical services	1	2	3	4	5	6	7
154	Your unit interacts frequently with other centers or hospitals to gain new knowledge	1	2	3	4	5	6	7
155	Your unit holds regular meetings to discuss industry trends and new services	1	2	3	4	5	6	7

Part 7. Employee Satisfaction

Based on your personal experience and real feelings, please circle and select a number to indicate your degree of agreement with each of the following statements (1 means very disagree, 2 means disagree, 3 means inclined to disagree, 4 means Between agreement and disagreement, 5 means inclined to agree, 6 means agree, and 7 means agree very much.) There are no objective answers or criteria for scoring these questions. Please answer all questions.

No.	Question	very disagree	disagree	inclined to disagree	between	inclined to agree	agree	agree very much
156	My current department encourages staff to try new things	1	2	3	4	5	6	7
157	My current department emphasizes stable work efficiency and smooth work flow	1	2	3	4	5	6	7
158	My current department is a very humanized place, like a big family, sharing medical experience with each other.	1	2	3	4	5	6	7
159	My current department is a dynamic place where medical staff dare to challenge themselves	1	2	3	4	5	6	7
160	You feel that you urgently need further study or study	1	2	3	4	5	6	7
161	Your current job will help you improve your professional proficiency	1	2	3	4	5	6	7
162	How satisfied are you with your job prospects in this organization	1	2	3	4	5	6	7
163	The current leader of my department emphasizes teamwork and encourages employees to participate	1	2	3	4	5	6	7
164	How satisfied are you with the way your superior communicates with you	1	2	3	4	5	6	7
165	How satisfied are you with your salary	1	2	3	4	5	6	7
166	Your satisfaction with the matching of total compensation and workload	1	2	3	4	5	6	7
167	Your satisfaction with the consistency of the performance appraisal results with the amount of the salary allocation	1	2	3	4	5	6	7
168	Your satisfaction with non-material incentives (such as training, further study, etc.)	1	2	3	4	5	6	7
169	I feel a lot of pressure from the administrative work I have to do	1	2	3	4	5	6	7
170	I feel a lot of pressure from this job	1	2	3	4	5	6	7
171	I felt a lot of pressure from the patient's demanding demands	1	2	3	4	5	6	7
172	I feel a lot of pressure from the number of patients I see every day	1	2	3	4	5	6	7
173	I feel that I have little time to spend with my family and friends or do leisure activities, which puts a lot of pressure on me	1	2	3	4	5	6	7

This is the end of the questionnaire.

Thank you very much for your support and help!