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Relationships Among Patient Market Cognition, Hospital Dynamic and Service Capabilities, Patient Satisfaction, and Hospital Competitive Advantages

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Doctor of Management

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Hospital Competitive Advantages**

Xu 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.

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Abstract

The market environment in which aesthetic hospitals operate is intensely competitive, with patients frequently switching service providers. Understanding factors that affect patient satisfaction and perceived hospital competitive advantage is crucial. Based on the resource-based view of the firm, this study proposes and tests a research model about how market cognition of patients affects patient satisfaction and perceived hospital competitive advantage through patient-perceived dynamic and service capabilities of the hospitals. Market cognition is composed of patient knowledge, information, and choice intentions. Dynamic capabilities as perceived by the patients are composed of integration, agility, and innovation capabilities. Service capabilities as perceived by the patients are composed of facility excellence, convenience, clinical ability, responsiveness, and doctor-patient communication. Patient satisfaction is defined based on patient satisfaction regarding time, price, and clinical outcome. Competitive advantage as perceived by the patients is composed of value congruence, rareness, and inimitability. A survey instrument was developed based on literature review, interviews, and pilot tests. A sample of 891 patients was collected from two aesthetic hospitals in Hangzhou, Zhejiang, China. Structural equation modelling software, SmartPLS, was used to test the research model and hypotheses. The empirical results support the research model and hypotheses. More specifically, patient market cognition affects the dynamic capabilities and service capabilities of hospitals which, in turn, affect patient satisfaction and perceived hospital competitive advantage. This study contributes to the practical and theoretical knowledge base regarding how aesthetic hospitals can enhance patient satisfaction and competitive advantage through improving patient market cognition, patient-perceived dynamic and service capabilities.

Keywords: patient market cognition; dynamic capabilities; service capabilities; aesthetic hospitals; patient satisfaction; competitive advantages

JEL: I10; I12; L84

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Resumo

O ambiente de mercado em que os hospitais estéticos operam é intensamente competitivo, com pacientes frequentemente trocando fornecedores de serviços. Compreender fatores que afetam a satisfação do paciente e a vantagem competitiva percebida no hospital é crucial. Com base na visão baseada nos recursos da empresa, este estudo propõe e testa um modelo de pesquisa sobre como a cognição de mercado dos pacientes afeta a satisfação dos pacientes e a percepção da vantagem competitiva do hospital através da dinâmica de percepção dos pacientes e capacidades de serviço dos hospitais. A cognição de mercado é composta de conhecimento do paciente, informação e intenções de escolha. As capacidades dinâmicas percebidas pelos pacientes são compostas de capacidades de integração, agilidade e inovação. As capacidades de serviço, tal como percebidas pelos doentes, são compostas por excelência de facilidade, conveniência, capacidade clínica, capacidade de resposta e comunicação médico-paciente. A satisfação do paciente é definida com base na satisfação do paciente em relação ao tempo, preço e resultados clínicos. A vantagem competitiva, tal como percebida pelos doentes, é composta por congruência de valor, raridade e inimizade. Um instrumento de pesquisa foi desenvolvido com base na revisão da literatura, entrevistas e testes-piloto. Uma amostra de pacientes 891 foi coletada de dois hospitais estéticos em Hangzhou, Zhejiang, China. Software de modelagem de equações estruturais, SmartPLS, foi usado para testar o modelo de pesquisa e hipóteses. Os resultados empíricos apoiam o modelo e hipóteses de investigação. Mais especificamente, a cognição do mercado dos doentes afeta as capacidades dinâmicas e as capacidades de serviço dos hospitais que, por sua vez, afetam a satisfação dos doentes e a percepção da vantagem competitiva do hospital. Este estudo contribui para a base de conhecimento prático e teórico sobre como os hospitais estéticos podem aumentar a satisfação dos pacientes e a vantagem competitiva através da melhoria da cognição do mercado dos pacientes, das capacidades dinâmicas e de serviço percebidas pelo paciente.

Palavras-chave: conhecimento do mercado dos doentes; Capacidades dinâmicas; Capacidades de serviço; hospitais estéticos; Satisfação do doente; vantagens competitivas

JEL: I10; I12; L84

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摘要

医美医院所处市场环境竞争激烈，患者经常更换服务提供商。了解影响患者满意度和感知竞争优势的因素至关重要。本研究基于企业资源观，提出并检验了患者市场认知度如何通过患者感知的动态能力和服务能力影响患者满意度和患者感知的竞争优势。市场认知度由患者的知识、信息和选择意愿组成；患者感知的动态能力包括由集成能力、响应能力和创新能力组成；患者感知的服务能力包括服务设施、服务便利性、诊疗能力、服务响应性和医患沟通；患者满意度是根据患者对时间、价格、诊疗结果的满意度来定义的；患者感知的竞争优势包括价值适宜性、独特性、不可效仿性。调查工具是在文献综述、访谈和预检验（pilot test）的基础上开发的。本研究从中国浙江杭州的两家美容医院收集了 891 名患者的样本，结构方程建模软件 SmartPLS 用于测试研究模型和假设。实证结果支持了研究模型和假设，更具体地说，患者市场认知度会影响医院的动态能力和服务能力，进而影响患者满意度和感知的医院竞争优势。本研究有助于建立关于美容医院如何通过提高患者市场认知度、患者感知动态和服务能力来提高患者满意度和竞争优势的实践和理论知识基础。

关键词：患者市场认知度；动态能力；服务能力；医美医院；患者满意度；竞争优势

JEL: I10; I12; L84

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Chapter 1: Introduction

1.1 Research background

On the strength of the development of economy and technology, aesthetic medicine service gets popular in the daily life of the public. The dissemination of information is faster in the Internet environment. Information such as the SoYong APP aesthetic medicine social platform, celebrity plastic surgery, Internet celebrity culture keeps deepening people's knowledge of aesthetic medicine, and more and more people begin to experience aesthetic medicine projects.

“Medical aesthetics is an offshoot of cosmetic dermatology where the experience gained from practicing cosmetic dermatology is applied to the management of various diseases and disorders, manage their side effects, correct deformities and improve the quality of life” (Arora & Arora, 2021). There is no internationally recognized definition of medical aesthetics. The American Board of Cosmetic Surgery defines cosmetic surgery as "a subspecialty of medicine and surgery that uniquely restricts itself to the enhancement of appearance through surgical and medical techniques. It is specifically concerned with maintaining normal appearance, restoring it, or enhancing it beyond the average level toward some aesthetic ideal" (Goh, 2009). Medical aesthetics belongs to the medical category (Arora & Arora, 2021), which is a form of health service. Medical aesthetics can be divided into surgical and non-surgical categories (Goh, 2009), and its complete and huge industry chain covers many medical and aesthetic services have been established (de Melo et al., 2020). Since the appearance of the skin and face is considered to be an important factor in happiness and health (de Melo et al., 2020), more and more medical aesthetic services are turning to meet the spontaneous psychological needs of consumers, rather than necessary medical treatment (Tijerina et al., 2020). The current market competition in the medical aesthetics industry is becoming increasingly fierce, and medical aesthetic hospital managers are gradually paying attention to topics such as patient satisfaction and hospital competitive advantages (Hibler et al., 2016).

In the past few years, the aesthetic medicine industry has achieved rapid development in China and around the world. Globally, aesthetic medicine first originated in ancient Egypt, and the global aesthetic medicine market scale has reached 156.1 billion USD in 2020, and

the growth rate has been maintained at more than 7% in the past five years (as shown in Figure 1.1). Domestically, the Chinese aesthetic medicine industry started in the 1980s, initially in the plastic surgery department of public hospitals, followed by the rise of private aesthetic medicine institutions. In terms of user scale, the scale of aesthetic medicine users in China in 2020 increased by 35.7% compared to 2019, with an increase of 4 million population, of which women aged 25-35 are the main customer group in the aesthetic medicine market, and women aged 30-40 have a relatively high consumption level. In terms of market scale, China's aesthetic medicine market reached RMB 197.5 billion in 2020, an increase of 11.6% compared to 2019 (RMB 176.9 Billion). Figure 1.1 shows the expansion trend of China's aesthetic medicine market in recent years, from which the growth rate of China's aesthetic medicine market is higher than that of the global market, and although it has slowed down in recent years, the growth space of the market is still relatively wide.

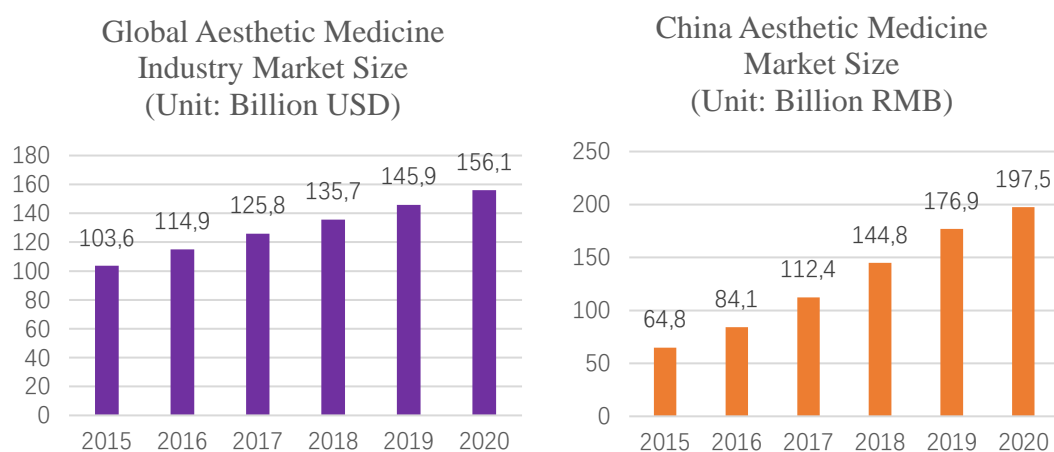


Figure 1.1 Aesthetic Medicine Industry Market Size, 2015-2020

Source: "Deloitte - Meituan aesthetic medicine" China Aesthetic Medicine Market Trends Insight Report (left); China Aesthetic Medicine Industry Insight White Paper by iResearch (right)

However, the rapid development of China's aesthetic medicine market has been accompanied by increasing competition. The uneven distribution of the penetration rate of aesthetic medicine in China and the low concentration of the market have led to small companies struggling in the aesthetic medicine market. According to the China Aesthetic Medicine Market Trends Insight Report (Deloitte), the overall penetration rate of aesthetic medicine in South Korea was 20.5% in 2019, while it was only 3.6% in China where the penetration rate decreasing from first-tier, new first-tier, second tier, and then third- and fourth-tier cities, so aesthetic medicine might go through the process of "sinking" in the future. The low penetration rate makes it difficult for aesthetic hospitals with no significant competitive advantage to expand their patient base. Besides, there are more and more entrants in the aesthetic medicine market, diversifying patients' choices. In recent years, a large

number of companies turn to aesthetic medicine industry, such as Evergrande, Suning, Wanda in the traditional field, as well as the SAIF, Sequoia Capital, Matrix Partners in the investment field. The increasing number of entrants in the aesthetic medicine market has not only allowed patients to “shop around”, but also reduced their loyalty, resulting in a decline in the proportion of “returned patients” of aesthetic hospitals and affecting their performance.

This increasing competition reflects some of the market characteristics inherent in the aesthetic medicine industry. Firstly, aesthetic medicine services have a high elasticity factor in respect of the demand. Medical services have been generally viewed as a rigid demand with a low elasticity factor, making patients less price sensitive. However, aesthetic medicine services are different from general medical services in that their demand is motivated by people’s nature of chasing beauty and maintaining youth, and is a supplement to functional health, which has developed with the improvement of patients’ affordability. The fact that the elasticity of demand coefficient for such services is high and customers are more price sensitive (Wang, 2014) leads to the result that price turns into a key factor in the perceived value of aesthetic medicine services for customers (Liao et al., 2019), with price-based market strategies clearly increasing the level of competition between them. Secondly, in terms of supply, the aesthetic medicine market has low barriers to entry and little product and service differentiation. Any formally trained and practicing healthcare professionals carry the ticket to enter the aesthetic medicine services market (Goh, 2009). The educational background and professional and technical titles of aesthetic medicine practitioners are low (Nedelciuc et al., 2020). Operating an aesthetic hospital generally does not require large, high-tech medical equipment. These factors make the level of technological and service innovation in aesthetic hospitals low and limit the rate of introduction of technological innovation in plastic surgery, ultimately resulting in a low degree of product and service differentiation in the industry. Finally, in terms of channels, the rise of the Internet and social media has intensified competition in the aesthetic medicine industry. The Internet and social media have inevitably established a highly competitive market environment (Su, 2016). On the one hand, patients could access complete information and compare the price and quality of different service providers through the Internet and social media. On the other hand, the priming effect of the Internet and social media has prompted aesthetic hospitals to integrate their channels with Internet platforms (Tijerina et al., 2020), further intensifying the price competition dynamics in the industry.

Therefore, although the overall outlook of the aesthetic medicine industry is promising in the context of health, the problems of “difficulty in patient retention, patient acquisition and

management” are still prominent in the aesthetic medicine market. The main result of successful medical cosmetic surgery is patient satisfaction (Hibler et al., 2016). It is a tough test for business managers and an imperative bottleneck for aesthetic hospitals to capture the dynamic needs of patients to strengthen service quality and thus enhance patient loyalty and patient satisfaction.

To solve the above problems, we need to take patients’ demand for aesthetic medicine service as the entry point, and studying on patients’ demand should focus on patient market cognition level, detect the current situation of patient market cognition of the aesthetic medicine market at the root and improve patient satisfaction in a targeted manner. It has been shown that the marketing effectiveness of companies is influenced by customers’ perceptions of the functions, services and emotions of the brand (Lu, 2020). As an important stakeholder of an organization (Schuler & Cording, 2006), differences in customers’ cognition of brands and markets not only affect individual consumption behavior, but also determine the market share of goods or services offered by an organization, i.e., customer cognition influences business performance. From the perspective of consumer behavior, Ellis has deeply explored the impact of consumer knowledge on the development of enterprises. The research found that consumers objective knowledge (knowledge stored in memory), subjective knowledge (knowledge that consumers think they have), and product familiarity not only affects the consumer’s purchase decision-making process (consumers identify their needs, search for information, evaluate alternatives, purchase and use experience), but also ultimately affect the market demand and market share of products or services (Ellis, 2015). In the study, Ellis found that the more objective knowledge consumers have, the easier it is to try unfamiliar products (exploratory purchasing behavior), while consumers with more subjective knowledge tend to try different brands (variety-seeking behavior). Regarding the analytical dimensions of customer market cognition, some scholars have summarized it into three dimensions: corporate association, corporate image and corporate reputation (Hu et al., 2016); others have explored its impact on the proliferation of new products from multiple dimensions such as product perception difficulty, customer risk perception, and customer innovativeness (Yang et al., 2017).

In addition, strengthening the dynamic capabilities and service capabilities of aesthetic hospitals is essential to enhance their competitive advantages and patient satisfaction. The ability of an organization to adjust itself to external changes is defined as dynamic capabilities, and the level of dynamic capabilities affects the level of value co-creation between customers and organizations. Studies show that the lower dynamic capabilities one organization owns,

the more likely customers will churn (Chen et al., 2017), the lower value creation one company has (Preikschas et al., 2017), the less sustainable it will be (Beske et al., 2014). Unlike the traditional medical industry, the rapid development of the aesthetic medicine market is backed by the continuous inflow of large amounts of capital and the disappearance and annexation of small firms. Along with the rapid iteration of technology and the continuous improvement of aesthetic medicine service quality, the dynamic ability of aesthetic hospitals, i.e., their ability to adapt, absorb, and innovate, is particularly crucial to survive in the changing market.

Service capabilities reflects the difference between company's service goal and service level in practice. Important components of a firm's core competencies include its service capabilities (Liang & Yang, 2016), which involves various aspects such as human, financial, and material resources, and is closely related to the factors such as organization, operation, and organization culture. Some scholars engaged in service capacity research have explored the health service capabilities in traditional medical field from four dimensions: integration of health services, convenience of health services, inclusion of health resources, and diversification of service supply (Wang et al., 2017); some scholars have also found that the quality and experience value of aesthetic medicine services affect patients' intention to repurchase (Chang et al., 2020). It can be seen that service quality and service capabilities are counted as competitive advantages for organizations and focusing on improving the service level of aesthetic hospitals with service capabilities as a grip would help form their competitive advantages, while organizations with low service quality will gradually be eliminated by the highly competitive market.

However, there are some limitations in the research on the competitive advantages and patient satisfaction of aesthetic hospitals. On the one hand, there is a lack of research that explores the service capabilities and dynamic capabilities of aesthetic hospitals from the perspective of patient perception. Organization resources are considered as a collection of capabilities and resources, and the systematic use of corporate resources can provide strategic competitive advantage for companies (Barney, 1991), which is interpreted under the Resource Based-View (RBV) perspective. However, in the field of management, the study on firms in service industry is carried out only from the service provider perspective (Schilke et al., 2018, Story et al., 2017) Although dynamic capabilities are an objective capabilities that is essentially the ability of an organization to adjust its own service capabilities (Helfat & Winter, 2011), due to the different service attributes of traditional hospitals and aesthetics hospitals, the evaluation criteria for them is different. Objective indicators such as cure rate,

improvement rate, and fatality rate are often used to evaluate the diagnosis and treatment effects of traditional hospitals, while the diagnosis and treatment effects, service quality, brand image and corporate reputation of aesthetic hospitals are often subjectively judged by patients (Chang et al., 2020). Therefore, evaluating the dynamic capabilities level and service capabilities of aesthetic hospitals from the patient perspective and finding their antecedents are other ways to understand the sustainable competitive advantage and patient satisfaction of hospitals. On the other hand, few studies have integrated dynamic capabilities and service capabilities and explored their internal relationships with customer satisfaction and organizations' competitive advantage. In fact, service capabilities are the static capabilities of a firm, and dynamic capabilities are the corresponding changing capabilities of service capabilities. Few studies have been conducted on aesthetic hospitals from both dynamic capabilities and service capabilities, and it is impossible to systematically analyze the possible influencing factors of patient satisfaction and to have a comprehensive view of the competitive advantage of organizations.

In summary, given the different perspectives of aesthetic medicine managers and aesthetic medicine patients, it is in urgent need to resolve the difficulties in finding appropriate methods to accurately measure the dynamic capabilities and service capabilities of Chinese aesthetic hospitals, and to effectively improve patient satisfaction and to gain sustainable competitive advantage. This study focuses on the service scenarios of aesthetic hospitals and aims to explore how aesthetic hospitals can form a competitive advantage and improve patient satisfaction in the competitive market environment through qualitative theoretical research and quantitative data analysis. Firstly, through theoretical analysis, we design a scale of questionnaire based on the patient's cognitive perspective and measure the dynamic capabilities and service capabilities of the hospital; then, we further analyze the correlation between dynamic capabilities and service capabilities, patient satisfaction and competitive advantages from the perspective of corporate management; finally, we propose targeted management strategies to support the benign development of aesthetic hospitals.

1.2 Research questions

The aesthetic medicine industry has developed rapidly in recent years and has made great progresses in all aspects of aesthetic medicine technology, doctor training and practice regulations. However, as the development and competition coexist, the aesthetic medicine industry constantly emphasizes the “patient-oriented” and “patient-centered” service concept,

and the competitive aesthetic medicine market attaches great importance to the satisfaction level of patients with aesthetic medicine services. From the perspective of strategic management, how to flexibly allocate and adjust the organization's resources and capabilities to achieve the viability and development in a competitive marketing environment where customer acknowledge are rapidly updated is an issue that cannot be ignored by corporate managers. From knowledge-based perspective, it is worth to explore the influencing factors of customers on the dynamic ability and service capabilities of organizations, measure and analyze the relationship between dynamic capabilities and service capabilities and customer satisfaction, and corporate competitive advantage.

Specifically, the main research questions of this thesis are as follows.

(1) How to define, measure and evaluate dynamic capabilities and service capabilities of aesthetic hospital from the perspective of patient? The current dynamic capabilities and service capabilities measurement is based on the evaluation of the integration, reconfiguration, acquisition, release and operation of the corporate resources by the managers. The study of the above issues can provide a theoretical basis for measuring and evaluating the dynamic capabilities and service capabilities of aesthetic hospitals.

(2) What are the antecedents and outcomes of dynamic capabilities and service capabilities of aesthetic hospitals from the lens of patients based on the knowledge perspective? What are the interrelationships between the variables? Research in the field of management analyzes the antecedents of corporate capabilities from three aspects of organization, human resources and environment, and among those knowledge-based perspective research generally explores the antecedents of dynamic capabilities from the corporate knowledge management and learning capabilities. Therefore, analyzing and generalizing customer knowledge and characteristics related to dynamic capabilities and service capabilities are one of the research difficulties. The construction and validation of the antecedent and outcome models of dynamic capabilities and service capabilities of organizations from the patient (or customer) perspective by uniting the outcome variables of organization capabilities are the core of this work.

1.3 Research purpose and significance

The number of aesthetic medicine institutions in China has increased dramatically in recent years. However, due to the increasing homogeneous competition within institutions, they are also facing problems such as patient loss, market share encroachment, and declining profit

growth in recent years. How to ensure the sustainable development of the organization and ensure the profit margin have become issues that many aesthetic medicine institutions need to solve. As a condition for survival and development, many aesthetic medicine institutions have already recognized the importance of the patient as the source of profits. Therefore, how to acquire patients, how to gain patient circulation, how to improve patient satisfaction, how to cultivate patient loyalty, how to maintain a long-term stable business relationship with patients represent the prerequisite and foundation to promote the steady development of aesthetic hospitals. In order to clarify the relationship between patient satisfaction and the operational performance of the hospital and to conduct efficient patient relationship management, more and more aesthetic hospitals are investing a lot of capital in patient relationship research, hoping to improve patient service standards, develop marketing strategies, and enhance patient loyalty starting from patient satisfaction, so as to maintain the old and build a long-term development foundation with patients.

In view of this, this study selects the patient perception service model of two leading aesthetic hospitals in Hangzhou as the research scenario from the patient's perspective, based on the resource-based view and the knowledge-based view. Besides, it takes the construction of the conceptual model and measurement model of dynamic capabilities and service capabilities as the link, and uses a combined research method to explore the antecedents and results of the dynamic capabilities and service capabilities of aesthetic hospitals from the perspective of patients, so as to provide a basis for aesthetic hospitals to formulate correct competition and strategic choices, which is of great significance to the development of the aesthetic medicine industry. In addition, aesthetic medicine, as the representative of the highest degree of market-oriented organization operation in my country's health services, the results of this research also have certain reference significance for the formulation of management strategies in other health service industries besides aesthetic medicine. The specific research significance is as follows.

Theoretical significance. The theoretical model and empirical findings of this study will further promote the existing research on dynamic capabilities and service capabilities. On the one hand, it provides a theoretical basis for the definition of dynamic capabilities and service capabilities of hospitals based on patients' perspective; on the other hand, it extends the research on the correlation factors and analysis dimensions of patient satisfaction and hospital competitive advantage and enriches the theoretical application of dynamic capabilities and service capabilities in the field of specialized services in the context of aesthetic medicine. Although a few studies have explored the relationship between firms and customers using

corporate marketing as a sample, there is a lack of research on organization dynamics and service capabilities in the medical field. Therefore, this study, in view of the limitations of previous studies, measures the dynamic capabilities and service capabilities of aesthetic hospitals from the perspective of patient satisfaction and the complex model composed of “cognition-competencies-outcomes”. It not only enriches the application of dynamic capabilities theory in the medical field, but also expands the influencing factors and analysis paths of customer satisfaction and competitive advantage and reveals the mechanism of dynamic and service capabilities on competitive advantage, which can provide theoretical reference and reference for the subsequent research.

Practical significance. Based on practice, this study not only summarizes the current development of the aesthetic medicine market and the practical problems that need to be solved, but also proposes feasible countermeasures to improve patient satisfaction and competitive advantage, which is of certain leading significance to improve the current management of aesthetic hospitals and guide the future development direction of the aesthetic medicine industry. The current research not only objectively analyzes the development and competition situation of the aesthetic medicine industry, but also points out many problems faced by the aesthetic medicine market, such as patient loyalty and satisfaction dilemmas, which are of certain significance for aesthetic hospitals to accurately judge the current market situation and reasonably grasp the way of organization operation. In addition, the current research discusses how aesthetic hospitals should improve patient satisfaction and competitive advantage from a management perspective, which on the one hand provides a certain reference for resource and process integration and service model innovation in the whole industry, and helps to improve the service quality of aesthetic hospitals; and, on the other hand, it also provides objective and feasible strategic advice for the sustainable development of Chinese aesthetic hospitals, and ultimately promotes the development of the Chinese aesthetic industry.

1.4 Overall research approach

Following the research paradigm of “discovering the problem-deciphering the essence-proposing strategies-solving the problem”, this thesis analyzes the development dilemma of aesthetic hospitals, and discusses the relevant problems through a combination of qualitative and quantitative methods, and finally draws conclusions. The study firstly defines and analyzes the concepts and dimensions of patient market cognition, dynamic capabilities,

service capabilities, patient satisfaction and competitive advantage from a theoretical perspective, and constructs a corresponding theoretical model; secondly, it elaborates on the data collection and analysis processes such as questionnaire design, data testing, structural equation model testing and result analysis from a methodological perspective; finally, it elaborates on how aesthetic hospitals can effectively improve their competitive advantage and patient advantage from a management perspective. Finally, from the management perspective, the thesis discusses how to effectively improve the competitive advantage and patient satisfaction of aesthetic hospitals.

The study can be divided into three parts as follows.

The first part (containing chapters I and II) starts from the current development of the international aesthetic medicine market, combines the theoretical literature on dynamic capabilities, service capabilities, patient satisfaction and competitive advantage, systematically compares the research results and shortcomings of the aesthetic medicine industry, and puts forward research questions. The first chapter gives a macro overview of the development of the aesthetic medicine industry in recent years and presents the main dilemmas it faces under the fierce market competition; it introduces the main ideas of the two concepts of dynamic capabilities and service capabilities in improving patient satisfaction in the aesthetic medicine field and the gap of the existing related research; in addition, it introduces the research questions of the thesis, explains the purpose and significance of the research, and explains the research methodology and the framework of the thesis. Chapter II focuses on the current status of domestic and international research, including the definition and key dimensions of dynamic and service capabilities of firms, the influencing factors and the outcomes. Besides, it also provides a systematic review of the definition and conceptual evolution of customer satisfaction and competitive advantage of firms, and the influencing factors. Furthermore, the definition and dimension of key constructs employed by the study are explained in detail. While sorting out the previous research results, this chapter also focuses on summarizing the strengths and weaknesses of previous studies.

The second part (including chapters III and IV) elaborates the theoretical model and research hypotheses, while organizing the research methods used in this study and clarifying the problem-solving ideas. Chapter III starts with the theory and constructs the theoretical model of this research through the theoretical foundation study; and on the basis of that, the research hypothesis that are closely related to the research questions is proposed; Chapter IV first introduces the design and development process of the questionnaire, presenting the measurement items corresponding to each variable; then explains the small sample testing

process and test results of the questionnaire; after ensuring the scientific and rationality of the questionnaire, this chapter then details the data collection process, the sample representativeness test process, the model second-order variable analysis process and the PLS-SEM method analysis process of this study.

The third part (containing chapters V and VI) discusses the main results and findings of this work and summarizes the overall study. Chapter V is an analysis of the study results, specifically including the PLS-SEM evaluation criteria, the results of the first-order variable reliability analysis, the results of the second-order variable reliability analysis, and the results of the structural equation model analysis. Chapter VI discusses and summarizes the main findings of this study, and proposes countermeasures and suggestions for aesthetic hospitals to form competitive advantages and improve patient satisfaction on the basis of organizing the relationship between dynamic capabilities and service capabilities of aesthetic hospitals and patient satisfaction and competitive advantages. Finally, by summarizing the study, the innovations and shortcomings of this paper are discussed, as well as the future research that can be carried out in depth.

The general research ideas and the research framework are shown in Figure 1.2.

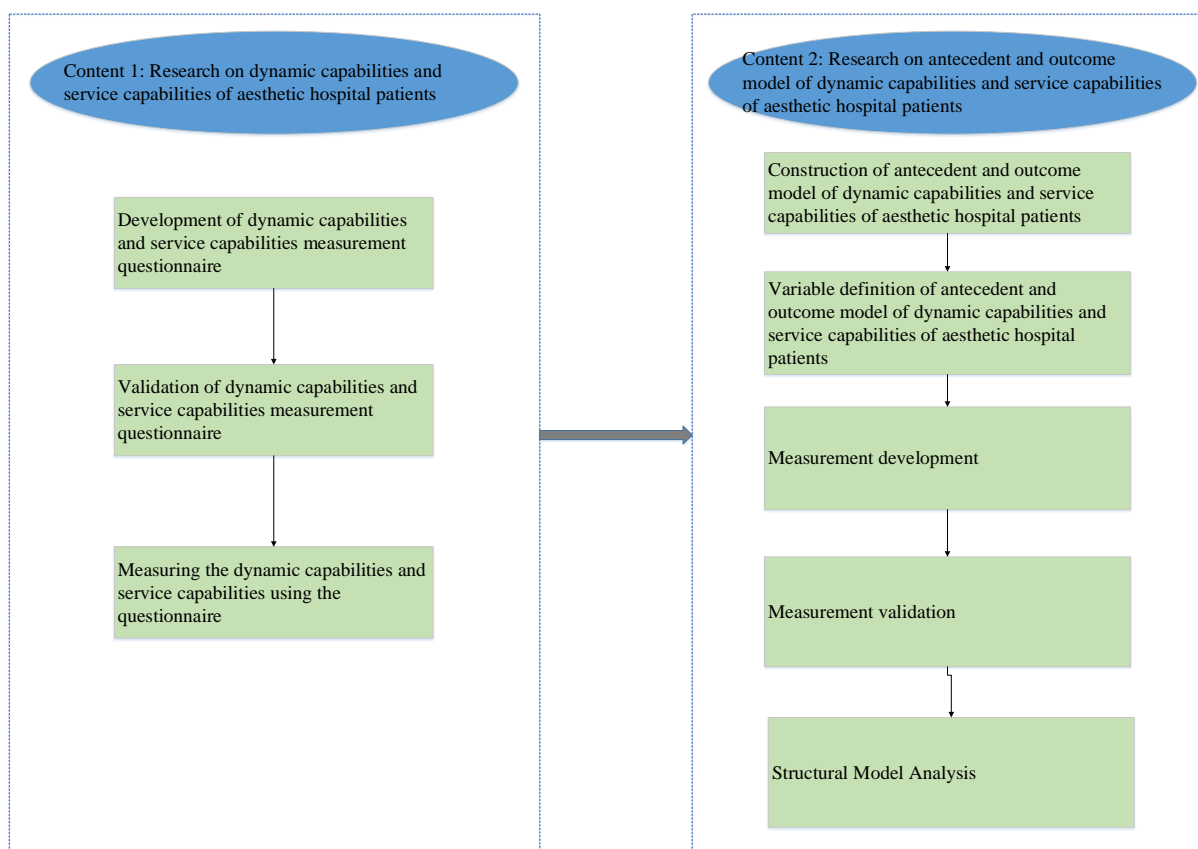


Figure 1.2 Overall Research Approach

According to the above framework, research problems and research objectives, the

content of this research can be divided into the following two parts:

(1) Evaluation of dynamic and service capabilities of aesthetic hospitals

Since the introduction and application of dynamic capabilities theory, scholars have been classifying them according to different dimensions, which is reflected in measuring and evaluating its role in the process of starting a business such as developing new products, innovating, and going international (Eisenhardt & Martin, 2000). It is important to note that the dynamic capabilities of business are often difficult to measure and test. In practice, scholars mostly operate from the perspectives of the elements that constitute dynamic capabilities, the various business activities, or the characteristics of dynamic capabilities (Barreto, 2010).

First of all, based on a comprehensive analysis of a large amount of literature at home and abroad, such as dynamic capability research articles of Min (2017), Schilke (2014), Teece (2014), Xia et al. (2013), and service capability articles of Chen (2018), Ke and Wang (2020), Li (2014), Luo and Ou (2021) to make a preliminary division of the service capabilities dimensions of the aesthetic institutions, this research combines the characteristics of the aesthetic medicine industry and its service process. Subsequently, on the basis of analysis of semi-structured interviews with patients, the dimension division is determined.

Secondly, in order to better quantify the dynamic capabilities and service capabilities of aesthetic hospitals in China, the foreign dynamic capabilities and service capabilities measurement scale is translated and revised according to the cross-cultural debugging guide of international scale. The process includes: 1) Two doctoral students from marketing and health management were invited to translate the English version into Chinese; 2) Two graduate students majoring in English were invited to do the back-translation and revision until the back-translation is consistent with the original English description, so as to ensure the accuracy of the translation of the measurement items; 3) Feedback was collected from 12 experts in the field of business management and health management; 4) In this study, pre-surveys were used to modify the expression of the questionnaire, and then measurement testing and purification was conducted using development sample, so as to finally determine the measurement questionnaire required for the study. According to the translation results and expert opinions, the dynamic capabilities are divided into three dimensions: integration, agility and innovation capabilities, and the service capabilities are divided into five dimensions: facility excellence, convenience, clinical ability, responsiveness and doctor-patient communication (refer to Table 2.4).

Finally, the revised questionnaire was used to collect sample data using convenient

sampling methods in selected aesthetic hospitals, and the reliability and validity of the dynamic capabilities and service capabilities measurement scale of aesthetic hospitals were verified by the sample survey data, uses the data to further measure and evaluate the dynamic capabilities and service capabilities of the sample aesthetics hospitals.

(2) Research on model of relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction and hospital competitive advantages

Dynamic capabilities and service capabilities can drive organizations to integrate and reconstruct resources in the changing market environment, prompting companies to continuously improve and innovate internally and externally to gain competitive advantages in the fierce market competition. However, research on the management of aesthetic hospitals in China and the world are still in infancy, which is manifested in the lack of overall mechanism analysis on the causes and consequences of the dynamic capabilities and service capabilities of companies and failing to verify the effectiveness of the dynamic capabilities and service capabilities of organization in improving the competitive advantage of aesthetic hospitals.

Moreover, as the competition in the aesthetic medicine market intensifies, it becomes extremely important for aesthetic hospitals to improve patient satisfaction and gain competitive advantages. If the dynamic and service capabilities of aesthetic hospitals can significantly influence patient satisfaction and business competitive advantage, it is critical to identify the key factors that influence dynamic and service capabilities. Starting from a knowledge-based perspective and patient value co-creation, this research introduces patient market cognition, analyzes its impact on the dynamic capabilities and service capabilities of aesthetic hospitals, and further explores the impact of the three aforementioned variables on patient satisfaction and competitive advantages.

In order to further explore the influence mechanism of dynamic capabilities and service capabilities of aesthetic hospitals, this study first builds a theoretical model of relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction and hospital competitive advantages (see Figure 3.1 for details), defines and analyzes the variables involved in the model. Then we design the questionnaire and uses development sample to test and purify the questionnaire, uses purified questionnaire to collect sample data, constructs the structural equation model to verify and analyze the theoretical model, so as to quantify the important relationship between the constructs in the model. This research work will probably provide necessary basis for the formulation of management strategies to improve the competitive advantage and patient satisfaction of aesthetic hospitals.

The research phases, methods and contents of this study are shown in Figure 1.3.

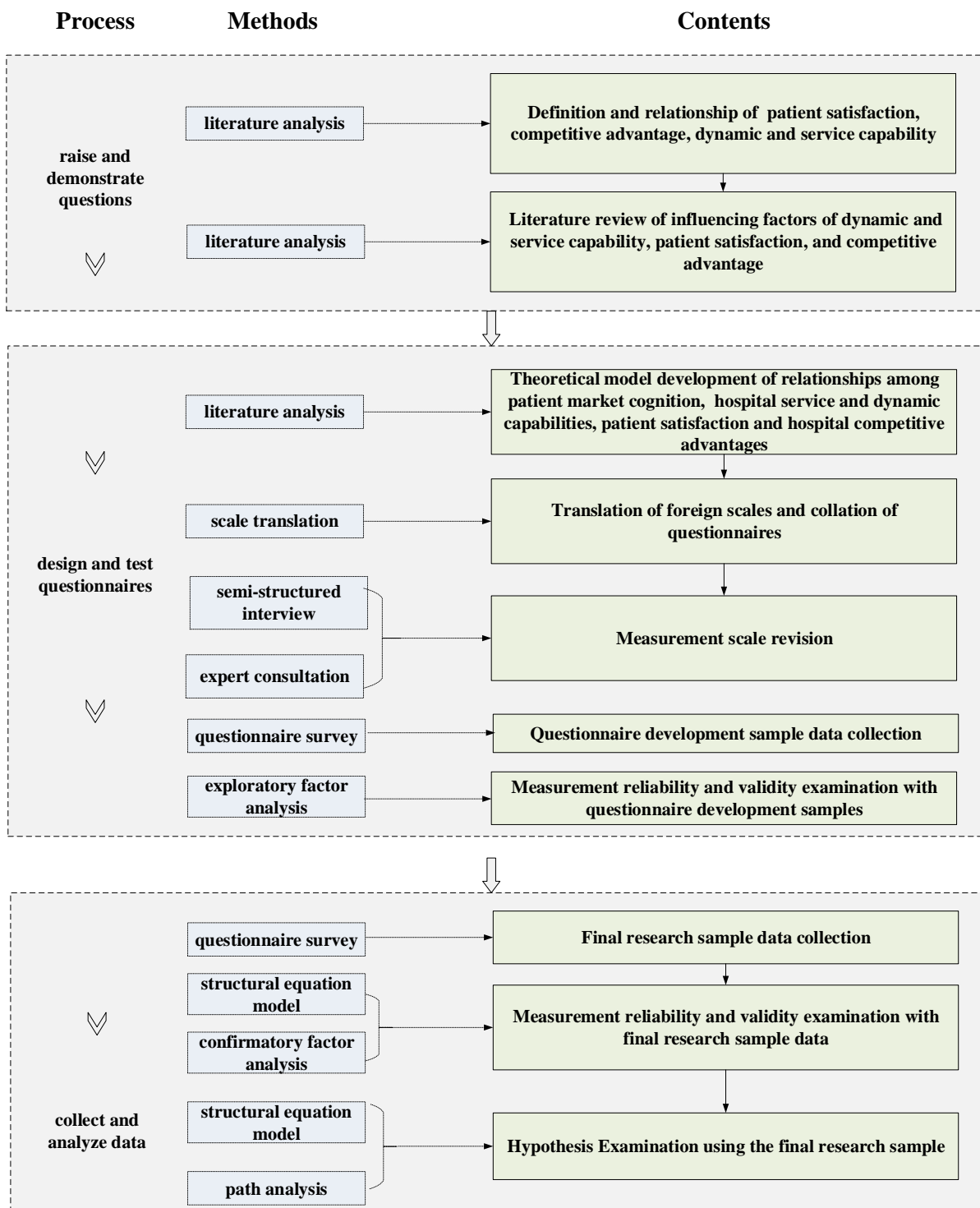


Figure 1.3 Research Phases, Methods and Contents

In the first phase of the research, it focuses its attention on proposing and demonstrating research questions using literature analysis and interview analysis. The output includes the potential antecedents and outcomes of hospital dynamic capabilities and service capabilities, definition and conceptual dimensions of the key constructs herein, and their linkages. This is

followed by measurement development and testing. This research study employs survey method, and consequently requires the use of psychometric measurement instruments to test the hypotheses posited herein. As such, it is necessary to ensure the validity and reliability of these instruments. Therefore, an aim of this study is to develop (or revalidate) valid and reliable instruments for the following constructs: patient market cognition, dynamic capabilities, service capabilities, patient satisfaction, and competitive advantages. By doing so, the instrument is developed. Next, structural equation model (SEM) method was employed for statistical analysis. SEM is considered a more rigorous approach for assessing predictive validity than other statistical methods such as correlation (Joreskog, 1970). This analysis was performed using the statistical application SMART Partial Least Squares (PLS) SmartPLS 3.0. Path analysis and mediating effect analysis are used to test proposed research model herein.

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Chapter 2: Literature Review

2.1 Aesthetic medicine service management

As aesthetic medicine industry is a part of the medical and health care industry, the standardized development of it is of great significance to maintain people's right to life and health (Zhong, 2020). However, with the development of the aesthetic medicine industry and the competitive market environment, the difficulty of aesthetic medicine service management is increasing. From a management perspective, service management refers specifically to the need to understand and manage the service elements of the user relationship in order to achieve a stable and sustainable competitive advantage when companies face fierce competition. According to Albrecht (1988), “service management is a total organizational approach that makes quality of service, as perceived by the customer, the number one driving force for the operations of the business”. In the aesthetic medicine industry, aesthetic medicine products or services are more often considered as experiential or reputable products due to their high involvement, professionalism, and invasive medical practices with certain risks (Chang et al., 2020), so patients tend to choose aesthetic medicine institutions with high service quality. Therefore, how to improve aesthetic medicine service management is the focus of aesthetic hospitals. However, few scholars have paid attention to aesthetic medicine service management in recent years. The literature review suggests that aesthetic medicine service management mainly focus on service quality, patient relationship management and marketing strategy.

(1) Service Quality

Aesthetic medicine is a kind of experiential product where the free will of the patient plays a decisive role in the purchase of the services, so that one of the important factors influencing the patients' choice of the hospital is the quality of service (Swoboda et al., 2007). Sun (2008) proposed that service quality is an important factor in creating customer satisfaction, providing customer value and gaining customer loyalty. Chang et al. (2020) reported that there are high correlations between the service quality level of aesthetic medicine institutions, patient perceived value, and patient intention to repurchase. In other words, the high-quality service provided by aesthetic institutions significantly influences the

repeat consumption behavior of patients. That is, when the quality of a product or service experience reaches the expected level of customers, they are more likely to show positive attitudes, high degree of satisfaction, and higher propensity to repurchase (Li, 2010). In South Korea, where the aesthetic medicine industry is well developed, its health regulators pay close attention to the rational application of equipment and facilities, the operational competence of practitioners, and patient satisfaction in aesthetic hospitals, and intervene promptly when problems are detected (Zhang et al., 2013) to protect the safety of patients and financial resources as well as the service quality of the institutions. Therefore, it is crucial for aesthetic hospitals to make patients better perceive the experience value in their service operations. Experiential value is considered as the customer's perception based on the interaction of goods and services that are directly used or appreciated from a distance (Mathwicka et al., 2001).

(2) Customer Relationship Management

Aesthetic medicine service is a highly customized service, which takes client engagement as an integral part of the service delivery process. The interactive relationship is an important element of patient assessment in health care, which plays an indispensable role in proactive health behaviors, health promotion and fitness behaviors as opposed to traditional treatment or therapy seeking behaviors (Lane & Lindquist, 1988). Customer relationship management (CRM) is the set of processes by which companies establish, develop and maintain successful communication with their customers. It is particularly important for patient-initiated health maintenance behaviors like aesthetic medicine, since these behaviors are highly customized with discrete transactions that are part of an ongoing relationship between patients and service providers (Hartman, 1998). Patients prefer a participatory medical model during therapeutic process (Ryan & Sysko, 2007), since engagement and customization foster good relationships such as trust, friendship and a feeling of being valued. Trust is the driver of customer loyalty, which makes customers less price sensitive and likely to consume more often, to try other products or service from the company and to bring new customers to the company (Li et al., 2012). Relationship marketing creates customer value through collaboration and trust. Sun's research (2008) demonstrates that customer relationships surpass service quality as an important determinant of behavioral intentions among aesthetic medicines patients, while patient relationships create differentiation and foster behavioral intentions of satisfaction, value and loyalty. Therefore, developing and nurturing relationships with customers is an important business strategy (Berry et al., 1983).

(3) Marketing strategy

Different customers have their unique expectations, experiences, inter-generational histories, lifestyles, and values that influence their buying behavior, so marketers should treat them with different strategies (Williams, 2011). Chang et al. (2020) found that in terms of inter-generational effects, limited by insecurity, X Generation (born in the early 1980s to early 2000s) were more concerned with the quality of services that aesthetic medicine hospitals can provide, including personal privacy, operational risks and staff responding agility during service operations. Generation Y (born in the early 1960s to the early 1980s) focuses more on the experience of service than on the quality of service. Generation X pays more attention to the functional benefits of aesthetic medicine products or services, while Generation Y pays more attention to emotional benefits. Therefore, for the younger generation, aesthetic medicine service providers should pay more attention to the privacy, comfort, safety and responsiveness of their patients, to create a safe and high-quality environment in order to make a good impression. Since medical tourism to Taiwan is becoming more popular among mainland tourists, Wang investigated and found that the main motivation of these tourists is that patients are able to communicate with doctors without barriers and have the access to the use of Taiwan's advanced medical technology. However, monthly income is the main reason that limits the frequent consumption of aesthetic medicine services in Taiwan, and affects the channels to know the aesthetic hospitals, the surgery they want to do and the acceptable cost (Wang, 2014). Therefore, aesthetic medicine service providers can offer a variety of customized products or services to patients in different segments of the market, enhance communication with patients, reduce medical costs, and work with mass media or websites to formulate marketing strategies to attract patients of different ages with different needs.

Based on the above literature, it can be found that consumers play an important role in the performance of medical aesthetics hospitals. Improving service quality, customer relationship management, and formulating marketing strategies are the focus of medical aesthetics service management. Specifically, service quality is one of the important factors that affect patient satisfaction, provide value creation for customers, and improve patient loyalty; and the utility of customer relationship is greater than service quality, which will directly affect service value, satisfaction and repurchase willingness. However, these studies are difficult to answer how medical aesthetic hospitals can create and maintain a competitive advantage in a changing and increasingly competitive market environment. The key for organizations to gain competitive advantage is to maintain dynamic capabilities (Augier & Teece, 2009). Therefore, it is necessary to introduce dynamic capabilities as a key variable from the perspective of consumers and explore ways to improve consumer satisfaction and competitive advantage.

2.2 Dynamic and service capabilities

2.2.1 Conceptual definitions of dynamic capabilities and service capabilities

2.2.1.1 Dynamic capabilities

The dynamic capabilities theory was developed based on the resource-based theory and was formally introduced by Wernerfelt in 1984 and gradually gained popularity with further research by Barney. The scholars of resource-based view deem that firms gain competitive advantages due to the heterogeneity of their resources and capabilities, i.e., the valuable, scarce, inimitable and irreplaceable resources they possess (Wernerfelt, 1984). The dynamic capabilities theory holds that it is more effective for firms to grasp their own development opportunities than to formulate strategic plans in a stimulating competitive market environment. Compared to competitors, a company's competitive advantage derives from its distinct advantages in terms of cost, quality and product efficiency, rather than discouraging competitors' strategic investments (Teece, 2007). Teece et al. innovatively proposed the dynamic capabilities theory based on previous studies, which believes that dynamic capabilities are a firm's capabilities to reconfigure and integrate internal and external resources to adapt to changes in the market environment, and that the important factor for a firm to maintain its competitive advantage is its dynamic capabilities.

Scholars define the dynamic capabilities of firms from different lenses. Teece et al. (1997) define dynamic capabilities as the organization's ability to integrate, build and reconfigure internal and external capabilities to respond to a rapidly changing environment. Since then, scholars have conceptually expanded the scope of capabilities on this basis. Eisenhardt and Martin (2000) conceptualized dynamic capabilities as the ability of a firm to acquire, organize, utilize, integrate and release resources. Helfat and Peteraf (2009) suggest that the dynamic capabilities of a firm is the ability of a firm to create, expand and modify its existing resources on the premise of a clear goal. Augier and Teece (2009) considers dynamic capabilities of a firm to be the ability to protect and reconstruct knowledge assets and complementary assets by perceiving and seizing opportunities, so as to obtain and maintain its own competitive advantage. With the development of theory, Sun et al. (2021) puts forward a more comprehensive definition based on the integration of scholars' research, which is accepted as the definition of dynamic capabilities by current study, that is: the capabilities of an organization to continuously perceive the external environment through organizational learning and knowledge innovation, and to integrate and update organizational resources in

response to environmental changes, thus helping the organization to adapt to the dynamically changing market environment.

As can be seen, the dynamic capabilities mainly refer to the capabilities to acquire, organize, utilize and integrate resources, as well as grasp opportunities and realize innovation. The core of dynamic capabilities is to improve the competitive advantage of the firm in the fierce competitive market environment, so that the firm can obtain long-term stable development. Scholars' representative views on the definition of dynamic capabilities are shown in table 2.1.

Regarding the consisting dimensions of dynamic capabilities, due to different concerns, previous studies have been measured and evaluated from different dimensions. Most of the dimension division are based on Teece's research work. For example, Wang and Ahmed (2007) divided dynamic capabilities into adaptive capacity, absorptive capacity and innovative capacity. Teece (2014) divides dynamic capabilities into organizational capabilities, management capabilities, perception capabilities, and transformation capabilities. Wilhelm et al. (2015) divided dynamic abilities into perceptual ability, learning ability, and reconstructive ability. In addition to these studies, Wang and Hang (2016) analyze dynamic capabilities from technology perspective and presumes that dynamic capabilities can be divided into four dimensions, namely: technology input ability, technology research and development ability, technology transformation ability, and technology output ability. Helfat and Peteraf (2015) deem that dynamic capabilities dominate how the company's common capabilities are developed, enhanced, and combined, including the following capabilities: 1) perceiving and evaluating opportunities and threats; 2) seizing opportunities, mitigating threats and obtaining value from them; 3) reallocating the tangible and intangible assets of the company to maintain competitiveness. The current research integrate multiple scholars' view (Li, 2014; Luo & Ou, 2021; Min, 2017; Schilke, 2014; Teece, 2014) and propose dynamic capabilities include dynamic integration capabilities (the ability of an organization to continuously combine its internal resources to achieve competitive advantage), dynamic agility capabilities (the ability of hospitals to flexibly mobilize medical professionals resources to meet the needs of patients) and dynamic innovation capabilities (innovation ability of hospital in service, technology, project). Min (2017) conducted an in-depth study on the dynamic capabilities of Chinese hospitals from the three dimensions of innovation capability, absorptive capability, and integration capability. Related research is summarized in table 2.1.

Table 2.1 Definition and Dimensions of Dynamic Capabilities

Focus	Scholars	Definition
Definition	Teece and Pisano (1994)	The capabilities of companies to use their own resources to seize market opportunities and create new products.
	Eisenhardt and Martin (2000)	The capabilities of companies to acquire, organize, utilize, integrate, and release resources.
	Zollo and Winter (2002)	A collective learning model through which companies can improve their operational efficiency and competitive advantages.
	Helfat and Peteraf (2009)	The capabilities of companies to create, expand, and revise its resource base.
	Teece (2007)	A company's dynamic capabilities include the capabilities to recognize opportunities and challenges facing the company, the capabilities to seize opportunities, and the capabilities to maintain the company's competitive advantage in the marketplace.
	Lee et al. (2002)	The capabilities of companies to respond to environmental changes in order to maintain competitive advantages.
	Zahra et al. (2006)	The capabilities of business managers or decision makers to allocate business resources in a rational manner
	Wang and Ahmed (2007)	The capabilities of companies to integrate, reconfigure and upgrade its resources as well as to continuously introduce new resources, and to ensure its own competitive advantages by constantly updating and reconfiguring the company's resources.
	Augier and Teece (2009)	The capabilities of a firm to gain and maintain its own competitive advantages by perceiving and seizing opportunities to protect and restructure intellectual assets and complementary assets.
	Sun et al. (2021)	The ability of an organization to continuously perceive the external environment through organizational learning and knowledge innovation, and to integrate and update organizational resources in response to environmental changes, thus helping the organization to adapt to the dynamically changing market environment.
Dimensions	Luo (2000)	Resource acquisition capabilities, resource allocation capabilities, resource innovation capabilities
	Eisenhardt and Martin (2000)	Resource integration capabilities, resource organization capabilities, resource restructuring capabilities, resource acquisition capabilities, resource release capabilities
	Kogut (2000)	capabilities to diversify technology, knowledge, marketing dynamics
	Protogerou et al. (2005)	Adaptive, absorptive, innovative capabilities
	Wang and Ahmed (2007)	Coordination, learning, transformation

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Wang and Huang (2006)	Firm values, individual static and dynamic capabilities, firm static and dynamic capabilities
Zhang and Xu (2006)	Market positioning capabilities, absorption and transformation capabilities, coordination capabilities, collective thinking capabilities
Li and Wang (2004)	Environmental observation capabilities, resource allocation capabilities, resource integration capabilities
Teece (2007)	Opportunity perception capabilities, Opportunity capabilities, Strategic restructuring capabilities
Wei and Jiao (2008)	Environmental insight, Technical flexibility, Organizational flexibility, Change renewal
Wilhelm et al. (2015)	Perceptual capabilities, learning capabilities, reconstructive capabilities
Eriksson (2014)	Cognitive, managerial and organizational skills
Schilke (2014)	Management capabilities, innovative R&D capabilities
Wang and Hang (2016)	Technology input capabilities, Technology R&D capabilities, Technology transformation capabilities, Technology output capabilities
Min (2017)	innovation capability, absorptive capability, and integration capability
Schilke (2014)	Collaborative management capabilities, new product development capabilities
Teece (2014)	Organization ability, management ability, perception ability, transformation ability

2.2.1.2 Service capabilities

Since the 19th century, scholars at home and abroad have defined and explained the service capabilities from various aspects and given many classical definitions of the service capabilities. Levitt (1972) conceptualizes service capabilities by comparing customers before and after receiving services and considers service capabilities as the degree of conformity between the results achieved by a firm or organization in providing services and its pre-set service objectives, and he believe that service capabilities reflects the degree of agreement between the results achieved by the service and the previously set service goals. Grönroos (1984) also holds a similar view that service capabilities are the result of the comparison between the customer's perception of the actual process of receiving service and the customer's expectation before receiving service. Other scholars have summarized service capabilities as several core elements or factors, specifically including the company's equipment, facilities, products, personal interaction of customers and service employees, timeliness of service delivery, and the ways to deliver customer service. In addition, considerable number of researchers conceptualize service capabilities as products and processes: Reichheld and Sasser (1990) insists that service capabilities involves not only the level of products and facilities that a firm provides for customers, but also the ways in which a

firm provides services for customers; Rust and Oliver (1994) holds that service capabilities mainly consists of four elements: product, environment, service delivery, and tangible product, among which tangible product is considered as the core of service capabilities; Akbaba (2006) points out that service capabilities mainly includes three elements: the facilities and products of a firm or an organization, the interaction between customers and service personnel, and the reputation of a firm or an organization. The conception of service capabilities adopted by the current study is: service capabilities, also known as operational capabilities, is the ability of a company to have appropriate resources and mobilize the initiative of resources to deliver services to customers (Barreda et al., 2019; Deji-Dada et al., 2021).

For the evaluation of firm service capabilities, scholars have posited them into different dimensions. Zhang and Li (2010) divided service capabilities into resource planning capabilities, resource acquisition capabilities, resource allocation capabilities, executive capabilities, and crisis management capabilities. He (2013) believes that customer demand identification ability, service provision ability and government learning and growth ability are the important dimensions of service ability. He et al. (2017) maintain that healthcare service capacity should include capital, health management, service, model and patient satisfaction.

In general, service capabilities can mainly be divided into two aspects. On the one hand, it is reflected in the distribution of hardware and materials, mainly including the human resources, capital, material resources, equipment, facilities, and technology of the firm, while on the other hand, it is reflected in the firm's capabilities to manage the internal management, such as the capabilities to provide services, acquire and allocate resources. Comprehensively considering the above two aspects, this study divides the service capabilities into: service facilities, service convenience, diagnosis and treatment capabilities, service responsiveness, service personnel and patient communication (Chen, 2018; Gan & Zhao, 2011; Hawes & Rao, 1985; Ke & Wang, 2020; Sun et al., 2021; Xia et al., 2013;). The current research concluded the above-mentioned dimensions into the research model, which is followed by designing measurement questionnaire to evaluate the firm's service capabilities. Representative studies on service capabilities are presented in table 2.2.

Table 2.2 Definition and Dimensions of Service Capabilities

Focus	Scholars	Views
Definition	Levitt (1972)	The fit between service performance and company's desired business results.
	Grönroos (1984)	A comparison between the customer's perception of the actual process of receiving the service and the customer's expectations before receiving the service.
	Akbaba (2006)	Service capabilities consists of three main elements: the facilities and products of a company or organization, the interaction between customers and service personnel, and the reputation of a company or organization.
	Rust and Oliver (1994)	Service capabilities consists of four main elements: product, environment, service delivery, and tangible product, of which the tangible product is considered the core of service capabilities.
	Reichheld and Sasser (1990)	Service capabilities includes not only the actual level of service but also the perceived level of service, in addition to the level of products and facilities that the company provides to customers, but also the way in which the company provides service to customers.
	Wu et al. (2010)	"Operational capabilities are firm-specific sets of skills, processes, and routines, developed within the operations management system, that are regularly used in solving its problems through configuring its operational resources."
	Markovich et al. (2021); Story et al. (2017)	Service capabilities, also known as operational capabilities, is the ability of a company to have appropriate resources and mobilize the initiative of resources to deliver services to customers.
	Zhang and Li (2010)	Resource planning capabilities, resource acquisition capabilities, resource allocation capabilities, execution capabilities, crisis management capabilities
	He (2013)	Customer needs identification capabilities, service provision capabilities, government learning and growth capabilities
	Dimensions	Zhang et al. (2001)
Jia et al. (20 4)		Human resource, technology, service, management
He et al. (2017)		Funding, health management, services, models, customer satisfaction
Bao (2003)		Proportion of senior professionals, management system, information system, service quality, hardware, health care outcomes, health education, health promotion
Shi et al.(2013)		Number of personnel, financial income, facilities and equipment, economic development
Jin et al. (2016)		Human resource, finance, material resources, medical services, public services, related services
Madinah et al. (2015)		Service cost, service quality, social welfare
Polidano (2000)		Policy capabilities, authority of policy implementation, efficiency of policy operation
Chen (2018)		Medical technology, medical procedures, medical expenses, medical environment, service attitudes, doctor-patient communication
Luo and Ou (2021)		Reliability, responsiveness, assurance ability, tangible ability, empathy ability

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Focus	Scholars	Views
	Li (2014)	Tangibility, reliability, responsiveness, effectiveness, economy
	Ke and Wang (2020)	Work efficiency, environment, medical services, diagnosis and treatment effectiveness, rights protection
	Xia et al. (2013)	The degree of disease improvement, the level of doctors' diagnosis and treatment, the timeliness of explaining affairs to patients, and handling complaints from patients

2.2.2 Factors influencing dynamic and service capabilities

By reviewing the factors influencing the dynamic capabilities and service capabilities of firms, it is found that the main factors affecting the dynamic capabilities of firms are factors related to service or product providers such as service facilities, and organization culture, and the factors related to service recipients (customers), such as patient knowledge and the capabilities to obtain information. According to the above division, the following analysis and elaboration of the influence of these two aspects on the dynamic capabilities and service capabilities are carried out respectively.

2.2.2.1 Service provider related factors

First of all, most studies believe that the service facilities are the basis for the service delivery. In a competitive market environment, only by constantly updating products, equipment and facilities and optimizing the product structure can the organization maintain and enhance its core competitiveness in the market, thus improving its operation efficiency and service capabilities (Lu, 2009). At the same time, human resource is the foundation for the sustainable operation of a company, and a large number of studies (Wooten & Crane, 2004) have shown that human resources have an important influence on the development and evolution of dynamic capabilities. Some Chinese scholars believe that human resources occupy an important position among the factors affecting the dynamic capabilities of firms (Qi, 2014). Others also deemed that in addition to human resources, structural factors such as organizational structure and rules and regulations of organizations are also important factors affecting its service capabilities.

Secondly, service culture is an important part of organization culture, which refers to a philosophy and code of conduct provided by an organization to its employees so that members in the organization have common values and guidelines (Dawson, 1991). Most studies show that organization service culture has a positive effect on the service capabilities of an organization and the performance of its employees. Organization culture can reflect the standards of behavior and values of an organization and has a strong cohesive effect on

various aspects of the organization (Anders & Michael, 2004). For example, Yang et al. (2005) found through a survey of 2881 business operators that a vast majority of participants believed that organization culture building had a greater or deeper impact on corporate development. Chen et al. (2004) also found that different types of organization cultures and styles of organization leaders had significant effects on performance (return on investment, sales profitability, profit growth rate, and sales growth rate).

Finally, an organization's capabilities to learn, to innovate, and to be close to customers have also been identified in many studies as important factors affecting its dynamic capabilities and service capabilities. For example, Eisenhardt (2000) and Zollo and Winter (2002) both conducted an in-depth study of learning capabilities and found that learning capabilities and institutions within a company were the main factors affecting dynamic capabilities. King and Tucci (2002) also found that dynamic capabilities could be improved through learning and accumulating a large amount of experience. In addition to learning capabilities, innovation capabilities also affect the improvement of dynamic capabilities and service capabilities. Adams and Lamont (2003) found that the innovation capabilities of a firm had an important impact on the dynamic capabilities of a firm. Cázares et al. (2013) analyzed the financial data of listed companies and found that the technological innovation of a firm had a positive impact on the improvement of service capabilities. In addition, the capability to get close to customers is also considered to be an important factor affecting the service capabilities of firms. At this stage, the concept of "customer-centered" service is more and more recognized, and customers are the participants of firm service, and their attitudes and emotions in the process of receiving service have an important impact on customer satisfaction (Barbara, 2008). Customers' behavior and attitude not only affect themselves and the employees who provide service, but also affect other customers. Therefore, whether the organization can be customer-oriented, whether the staffs of the organization can get along with customers well, whether they have the capabilities to get close to customers are the important indicators to evaluate the service capabilities.

2.2.2.2 Customer-related factors

In addition to the provider's own factors, customer-related factors are gaining importance and customer are no longer considered as users of the firm's products and services, but as participants in the firm's value co-creation activities (Prahalad & Ramaswamy, 2000). As a result, some studies have taken a customer perspective and found that some characteristics of customers can have an impact on the dynamic capabilities and service capabilities of

organizations. For example, Zhang and Lu (2012) demonstrated that customer knowledge and market information have a facilitating effect on organization's service capabilities. By understanding customer knowledge, market information and choice intentions, organizations can accurately understand customers' needs and provide them with personalized products and services, and thus improve their capabilities in terms of facilities, treatment capabilities, responsiveness and convenience. Li (2013) also found a significant correlation between the level of customer knowledge and the level of service capabilities of companies, suggesting that companies need to make full use of customer knowledge to provide customers with a better service experience.

In addition, it has also been found that customer choice intention is an important factor influencing the improvement of the service capabilities and dynamic capabilities of firms. Customer choice intention means the tendency of customers to make repeated purchase or keep using services from same organization (Lin et al., 2016). Li (2018) study found that after fully understanding customer choice intention, organizations can provide personalized services to customers by integrating, reconfiguring and innovating firm resources to further optimize the design of products and services. Guan and Xie (2016) find that customer market information is the origin of customer choice intentions, and that organizations should develop corresponding publicity and promotion methods to enhance their organization image, attract more customers to accept their products and services, and then improve their service capabilities.

In summary, the dynamic and service capabilities of firms will be affected not only by the internal factors, but also by the characteristics of customers. On the one hand, the organization's own service culture, facility excellence, innovation capabilities, customer-friendliness and other factors will have an important impact on its dynamic capabilities and service capabilities. On the other hand, some characteristics of customers are also important factors affecting the dynamic capabilities and service capabilities of organizations, such as knowledge, market information, choice intentions and other factors, which will promote organizations to continuously improve and adjust themselves, so that the dynamic capabilities of organizations will change. Therefore, the important role of these factors in constructing dynamic and service capabilities of firms needs to be considered in an integrated and systematic manner.

Summarizing the research of previous scholars and combining the background of this research, we conceptualize customer factors influencing service capabilities and dynamic capabilities as customer market cognition, which include three dimensions: knowledge,

market information and choice intention.

2.2.3 Impacts of the dynamic and service capacities

2.2.3.1 Impacts of dynamic capabilities

The positive impact of dynamic capabilities on various aspects of the firm has been studied and verified by many scholars. Many scholars agree (Bocken & Geradts, 2020) that “by being concerned with change, dynamic capabilities are critical for corporations to craft, refine, and transform their business models”. In this sense, dynamic capabilities can provide firms with the effects of continuous innovation, gaining competitive advantages, and improving financial performance in a constantly changing and highly competitive market environment. Scholars found that dynamic capabilities have an positive impact on corporate performance (see Drnevich & Kriauciunas, 2011; Khalil & Belitski, 2020; Kwon, 2013; Lin & Huang, 2011; Lin & Wu, 2014; Wilden & Gudergan, 2015), but their conclusions on the way of impact are not uniform. Lin (2014) have found that the dynamic capabilities of the firm needs to be used as an intermediary variable. The research of Wilden and Gudergan (2015) prove that dynamic capabilities has a significant positive effect on the foundation of the firm, and then positively affects the performance of the firm. Zahra et al. (2006) point out that dynamic capabilities do not directly create competitive advantages, but indirectly influence competitive excellence by modifying the resource mix or practices of firms. Khalil and Belitski (2020) have found that different information technology governance strategies (as dynamic capabilities) have different effects on performance. Related research is shown in table 2.3.

On the whole, the impact of dynamic capabilities mainly includes two aspects: the impact on the organization’s own performance and the impact on customers. In terms of the impact on the organization’s performance, most studies have shown that the improvement of dynamic capabilities can drive the organization’s continuous improvement and innovation in the form of resource integration and reconstitution, thus achieving competitive advantages and improving performance. However, some studies show that dynamic capabilities do not directly contribute to firm performance, but need to act on mediating variables (e.g., customer satisfaction) to improve firm output and performance. In terms of impact on customers, most studies show that the improvement of firm dynamic capabilities has a significant contribution to customer satisfaction and service experience. Related studies are shown in table 2.3.

Table 2.3 Results of Outcomes of Dynamic Capabilities

Scholars	Study results
Drnevich and Kriauciunas (2011)	A company's dynamic capabilities can improve its performance.
Lin and Wu (2014)	It is verified that value-rich corporate resources positively affect firm performance, but the company's dynamic capabilities are needed as an intermediary variable.
Kwon (2013)	An organizational culture that is willing to take the initiative to learn positively affects the dynamic capabilities of the firm, and the dynamic capabilities of the firm positively affects firm performance.
Lin and Huang (2011)	The dynamic capabilities of a company can facilitate product innovation and performance improvement, as well as enable the company to adapt to changing market conditions.
He et al. (2006)	A study of data information for Chinese companies concludes that the dynamic capabilities of a company improve its performance.
Wilden and Gudergan (2015)	Dynamic capabilities have a significant positive effect on the underlying performance of the firm, which in turn positively affects firm performance.
Teece (2007)	In a rapidly changing environment, dynamic capabilities are the cornerstone for gaining competitive advantages.
Zahra et al. (2006)	Dynamic capabilities do not directly create competitive advantages, but in an indirect way by modifying the firm's resource mix or practices, changing some of the underlying behaviors to affect competitive advantages.
Cao et al. (2009)	Studies on Chinese firms suggested that the resource integration capabilities of a firm has a significant mediating effect on firm performance and customer satisfaction, and the dynamic capabilities of a firm will indirectly promote customer satisfaction.

2.2.3.2 Impacts of service capabilities

The positive impact of service capabilities on various aspects of firms has been studied and verified by many scholars. Related studies have found that the improvement of service capabilities helps to increase the profits obtained from business operations, contributes to the enhancement of corporate image, and contributes to the enthusiasm and loyalty of corporate employees.

(1) Service capabilities contributes to the improvement of profits obtained from business operations. First of all, the improvement of service capabilities of firms is conducive to the improvement of their service efficiency. Unlike other traditional manufacturing industries, the products produced by service-oriented firms are services, and their production and consumption are carried out at the same time, so the improvement of the efficiency of service firms will lead to the improvement of firm profits. Secondly, the improvement of firm service capabilities are conducive to reducing the cost of business operation and reducing expenditure cost for firms (Liu, 2014). Finally, the improvement of the service capabilities of the firm is

conducive to increasing the profitable income of the firm and maximizing the profit as much as possible (Liu, 2014).

(2) The service capabilities helps to improve the image of the organization (Feng & Ran, 2006). Within a service-oriented organization, customers always recognize the image of the organization in the market and society by perceiving the services of front-line employees. In the process of accepting the services provided by the organization, if the service personnel have a better ability to be close to the customer, make the customer aware of the excellent reliability of the organization and the service personnel, and provide them with customer-centered, professional and timely services, the customer is more likely to have high satisfaction with the service process, and the sense of identity and dependence on the organization will be greatly enhanced (Fida et al., 2020), so that the organization can maintain a strong competitive advantage in the changing and complex market environment (Nguyen et al., 2020). Therefore, the service capabilities have an important impact on the image of organizations, competitive advantages in the market, and customer satisfaction and loyalty.

(3) Service capabilities will help improve employee enthusiasm and loyalty (Lu, 2009). As mentioned above, the improvement of service capabilities will help to increase the profit of business operation and improve the image of the organization, which will also enhance the self-confidence and job satisfaction of employees, making them more interested in their own profession and willing to put more effort into their work. In addition, the improvement of organization service capabilities can make the service personnel provide services to customers with higher enthusiasm. All of these effects will lead to an increase in the cohesiveness of the entire organization, resulting in a better atmosphere and overall values, and a favorable impact on the culture of the organization.

2.2.4 Summary

First of all, regarding the concepts of dynamic capabilities and service capabilities, previous related studies have defined and measured them from different perspectives and dimensions, in which firm dynamic capabilities mainly included the capabilities of innovation, coordination, resource integration, resource reconstruction, resource acquisition and grasping opportunities, and service capabilities were mainly manifested on facility excellence, convenience, professional ability of communication between service personnel and customers, timeliness of service, and the way of providing services. Although some scholars argue that dynamic capabilities are common to some extent across different domains or nature of

organization, Teece's definition suggests that this theory is more of an extension of RBV, and thus dynamic capabilities are essentially related to the nature of the organization and are unique (Makadok, 2001; Teece, 2007). Arndt (2019) pointed out that research on dynamic capabilities in some rare fields is beneficial and helps new ideas emerge. Therefore, a study based on the specific market segment of aesthetic medicine in the Chinese cultural context would be a beneficial addition to the existing dynamic capabilities research.

Due to the different research perspectives and objects, researchers have no conclusion on the research dimensions of dynamic capabilities, but the definition and dimension division of dynamic capabilities are mostly based on Teece's research. This study measures dynamic capabilities from three dimensions: integration, agility and innovation. Integration capability refers to the hospital's ability to continuously integrate internal resources to achieve competitive advantage. Innovative capability refers to the hospital's ability to innovate in services, technology, and projects. Agility capability refers to the hospital's ability to mobilize medical professionals flexibly to meet the needs of patients. This research choosing these three dimensions because they are three abilities that appear repeatedly in the literature. In particular, Chinese scholar Min (2017) has demonstrated innovation ability and integration ability in county-level hospitals in China. Furthermore, the expert consultation and interviews further proves that these three abilities are the focus of patients' attention on the dynamic capabilities of medical aesthetic hospitals. Therefore, this study combines the opinions of scholars such as Min (2017), Oliver (2014) and Teece (2014), and selects three dimensions of integration, agility, and innovation to measure dynamic capabilities.

The conceptual definition of service capabilities and dynamic capabilities overlap to a certain extent, so it is more difficult to divide and measure the dimensions of service capabilities, which also prompts the necessity of rigorous conceptual exploration of the two capabilities. For example, Wu et al. (2010) defined service capabilities (or operational capabilities) on the basis of RBV (Barney, 1991; Penrose, 1959; Peteraf, 1993) into operational improvement, operational innovation, operational customer orientation, and operational responsiveness and operation reconfiguration, expanding the concept of operational capabilities to include dynamic capabilities. The current research divides organizational capabilities into service capabilities and dynamic capabilities, and service capabilities are the ability of the organization to maintain daily operations. There are few studies on the dimensional division and empirical measurement of medical service capabilities, so this study summarized the literature analysis (Chen 2018; Ke and Wang, 2020; Li, 2014; Luo and Ou, 2021; Xia et al., 2013) and based on interviews and expert

consultations, the service capabilities are divided into facility excellence, convenience, clinical ability, responsiveness and doctor-patient communication.

Secondly, the results of previous studies showed that the factors influencing the dynamic capabilities and service capabilities of firms included not only factors related to organization, such as their service culture, facility excellence, innovation capabilities, and the ability to be on intimate with customers, but also factors related to customers, such as customer knowledge and choice intention. As a matter of fact, there are relatively few studies focusing on the influence of customer-related factors on the dynamic capabilities and service capabilities of firms, and most of them analyze the influence of customer-related factors on the dynamic and service capabilities of firms through theoretical and qualitative methods, while less through empirical and quantitative methods.

Finally, regarding the results of the impact of dynamic capabilities and service capabilities, most studies show that the improvement of dynamic capabilities and service capabilities have a positive impact on firm performance, customer satisfaction, customer loyalty, organization image, employee enthusiasm, employee loyalty, organization competitive advantages, operating profit, and organization culture. However, researchers have not formed a unified understanding of the mechanism and path of dynamic capabilities on the formation of competitive advantage and the improvement of firm performance. Teece et al. (1997) have asserted that there is a direct relationship between dynamic capabilities and organization performance, but later researchers such as Zahra have argued that there is actually an indirect relationship between the two (Zahra et al., 2006). Zott argues that although firms have the same dynamic capabilities, different combinations of resources will eventually lead to differentiated levels of performance (Zott, 2003). Therefore, in the Chinese market, even if the products and services offered by aesthetic hospitals have a high degree of homogeneity, the acting path of their dynamic capabilities on competitive advantage and performance levels is of great research value.

2.3 Customer satisfaction

2.3.1 Concept of customer satisfaction

In the 1930s, Hoppe and Lewin conducted studies on the basic principles of satisfaction from the perspectives of sociology and experimental psychology respectively, and found that satisfaction was closely related to self-esteem, trust and loyalty, which was the earliest studies

related to customer satisfaction that could be traced. Around the 1950s, the marketing concept transformed from “product-centered” to “customer-centered”, and the direction and content of academic research on customer satisfaction changed along with the transformation of marketing concept. In the management practice of firms, customer satisfaction with services and products has become the focus of attention for management decision makers. From the 1960s to the beginning of the 21st century, the research on customer satisfaction started to emerge in the United States and was rapidly applied worldwide.

There is no consensus on the definition of customer satisfaction among researchers, but it is divided into three main categories according to the research perspective. The first definition considers satisfaction as the fulfillment of individuals at the psychological level, which is the subjective emotional judgment of customers. As one of the representatives of this view, Howard (1969) considers customer satisfaction as a psychological perception state, the result of customers' subjective judgment of whether the cost they pay is reasonable in relation to the value they receive from products and services. Oliver (1980) defines customer satisfaction as a psychological response that arises from the inconsistency between the customer's consumption experience and the expected outcome, as a result of the inconsistency between the previously expected service quality and the actual perceived service quality. The second definition regards satisfaction as the result of a cost-benefit analysis of the individual, preferring an objective rational analysis of the customer, such as Churchill and Surprenant (1982), who define customer satisfaction as an objective comparison of the cost of time, money, and effort spent by the customer in the process of purchasing a product or enjoying a service with the benefits obtained, i.e., a cost-benefit analysis. The third definition takes satisfaction as the result of comparing the expected value and the actual perceived value of an individual before and after purchasing a product or experiencing a service, which is more inclined to subjective judgments and feelings. For example, Fornell et al. (1996) define customer satisfaction as a subjective overall evaluation of the customer after purchasing a product or experiencing a service, while Kotler (1997) considers customer satisfaction as an emotional state formed after comparing the actual perceived utility (or result) of a product (or service) with the expected level.

2.3.2 Measurement of customer satisfaction

The measurement of customer satisfaction is the most extensive as well as the core content of customer satisfaction research. After about half a century of efforts by scholars in related

fields, scientific and mature models have been formed and widely used in the measurement of satisfaction. However, given that the definition of customer satisfaction has not yet been unified in the academic community, the measurement methods of customer satisfaction are divided into three major categories with different definitions, namely, direct customer satisfaction measurement, cost-benefit comparison customer satisfaction measurement and expectation-perception comparison customer satisfaction measurement, among which, the most widely used in the past studies are direct measurement and expectation-perception comparison measurement (Yu, 2019). Each of these two measurement paradigms is reviewed below.

2.3.2.1 Direct customer satisfaction measurement

Even though some objective factors may affect customers' judgments on product or service satisfaction, they are ultimately presented through customers' subjective feelings, so most studies choose to measure customers' subjective feelings to reflect the status of customer satisfaction. Customer satisfaction is the overall feeling of customers about different aspects of services and products, and most scholars classified the measurement of customer satisfaction into different dimensions to measure them separately. For example, Tandon et al., (2017) divided customer satisfaction into two dimensions, behavioral intention and purchase attitude, in their study of customer satisfaction in online shopping. Raposo et al., (2009) divided satisfaction into four dimensions for measurement in conducting a study of satisfaction with the quality of health care services, that is, nursing services, facilities, staff, and medical services. In the study of the impact of customer involvement on role behavior and customer satisfaction, Jiang et al. (2019) measured customer satisfaction in three dimensions: service satisfaction, need satisfaction, and correct decision making.

In addition, when Chinese scholars study the customer satisfaction of a particular service or product, they also classified the satisfaction into several dimensions and take direct measurements. For example, Shen (2013) measured the satisfaction of inpatients with cancer from the three aspects of satisfaction with price, service and overall impression. When analyzing the satisfaction of library users, Cao et al. (2013) divided the measurement items of user satisfaction into information resource satisfaction, information service satisfaction, information system satisfaction, and overall satisfaction.

According to the existing literature, the dimensions of customer satisfaction measurement may vary due to different research purposes and focuses. However, it is mainly to measure the extent to which the service or product satisfies customers' needs, which can be divided into

two categories. One is satisfaction with the service or product itself, such as service price and service quality, and the other is satisfaction with the elements related to the service or product, such as the service environment and service provider.

2.3.2.2 Customer satisfaction measurement based on expectation and perception comparison

Since the 1980s, the first national customer satisfaction index model was established in Sweden from the perspective of customer satisfaction measurement based on the comparison of expectation and perception, and then customer satisfaction measurement models were developed in various countries, in the order of the American Customer Satisfaction Index (ACSI) model, European Customer Satisfaction Index (ECSI) model, Chinese Customer Satisfaction Index (CCSI) model and Shanghai Customer Satisfaction Index (SCSI) model. This type of measurement method has become the mainstream trend of customer satisfaction measurement and is applied in different countries, industries or firms.

Most of the customer satisfaction models are established by structural equation model analysis to verify the logical connection between multiple constructs. The structural variables of the SCSI model include customer expectations, perceived value, customer satisfaction, customer complaints and customer loyalty, which are the basis of several other measurement models. The ACSI model adds perceived quality as antecedent variable of perceived value, and then affects customer satisfaction. The ECSI model also considers the influence of company image on satisfaction on the basis of the first two models, while subdividing perceived quality into perceived hardware quality and software quality. The CCSI model, which evaluates the overall corporate (brand) image, the brand of products or services provided by the company, the brand awareness, and the development potential of the brand, renames the corporate image in the ECSI model as brand image. On the basis of the above models, the SCSI model innovatively takes information as an antecedent variable affecting customer satisfaction and integrates the timeliness, accuracy and completeness of customer access to information (Tang, 2009).

The current study adopts direct customer satisfaction measurement and try to define patient satisfaction from three aspects, namely price, time and clinical outcome satisfaction. Definition and dimensions of patient satisfaction the current research accept is shown in table 2.4.

This study uses direct customer satisfaction measurement, trying to define patient satisfaction from three aspects: satisfaction with price, time, and clinical outcome.

2.3.3 Factors influencing customer satisfaction

Regarding the influencing factors of customer satisfaction, scholars have conducted theoretical and empirical studies on the key factors affecting satisfaction from different perspectives, and a series of research results have been obtained. According to the research purpose and content of this study, we focus on the service industry and aesthetic medicine industry, organizes and summarizes the influence of customer satisfaction, and classifies them into four major categories as follows:

The first category is related to factors reflecting the customer's own background, demographic characteristics (gender, age, economic level, health status). For example, Rogut (1996) found that patient satisfaction was closely related to patients' own background factors, specifically gender, age, economic income, type of health insurance, and physical condition. In addition, Hall et al. (1993) concluded that patient's own health status will directly affect his or her satisfaction with health care services, and they also found that the patient's final satisfaction outcome could be predicted based on his or her perceived health status.

The second category is related factors reflecting the service capabilities of the firm or medical institution, specifically environment, facilities, personnel, service attitude, and service process. For example, Ware et al. (1978) found that hospital environment, accessibility, medical professional's skills, medical service costs, and treatment effectiveness significantly affect patient satisfaction. Teisberg et al. (1994) also found that factors such as the environment of medical institutions, medical equipment, medical staff's attitude, and accessibility have a greater impact on patient satisfaction. Liu et al. (2014) also found that the convenience of access to medical care, the service attitude of medical staff and the medical environment are the main factors affecting patient satisfaction.

The third category is related to factors reflecting the dynamic capabilities of hospitals, specifically doctor-patient communication, service responsiveness, and service innovation. Smith et al. (1984) found as early as 1984 that patient's right to information (information about the patient's condition obtained from the health care provider as well as the hospital) and choice (patient participation in health care decisions, patient-centeredness) have significant influences on patient satisfaction. Andaleeb (1998) also proposed communication with patients, healthcare staff competence, healthcare staff behavior, facility quality, and perceived cost as important factors in explaining the five categories of hospital patient satisfaction. In addition, Li (2014) and Huang (2018) both suggested that innovation in healthcare services is an important initiative to continuously improve patient satisfaction.

The fourth category is the price factor, which specifically includes the cost of medical care, the discount rate and payment methods. Xing (2014) found that medical cost is the main factor that affects patients' evaluation of their satisfaction with medical services. Zheng et al. (2017) also found that patient satisfaction with medical expenses accounts for a large proportion of overall satisfaction, which suggests that patients are more concerned about the price of services compared to other aspects of medical services. Focusing on the aesthetic medicines industry, Yang (2018) found that aesthetic medicines patients are not only concerned about the characteristics of services and products but are also sensitive to the price of products or services.

2.3.4 Summary

The academic community has not yet reached a consensus on customer satisfaction and the definition of customer satisfaction. Customer satisfaction measurement methods can be classified into three categories: direct measurement, cost-benefit comparison and expectation-perception comparison, and various customer satisfaction measurement models have been formed on the basis of the last category. The analysis of these satisfaction measurement models reveals the commonalities among them, which also laterally reflects the common perception of customer satisfaction in academia. Firstly, the final presentation of customer satisfaction is a subjective emotional judgment, which is the satisfaction that customers can obtain at the psychological level after purchasing products or services. Secondly, customers' expectation of products and services determines the degree of customer satisfaction to a certain extent, and customer satisfaction is inversely proportional to customer expectation when other factors are controlled. Finally, the actual product or service quality experienced and evaluated by customers also affects the final satisfaction. In other words, when other factors are controlled constant, customer satisfaction is positively proportional to the perceived quality.

In summary, the researcher summarizes the main influencing factors of patient satisfaction. Firstly, patient satisfaction is ultimately expressed as a subjective judgment, so the patient's own background factors will affect the patient satisfaction with the service. Secondly, patient satisfaction is the result of a comprehensive comparison between expected service and perceived service, so the factors affecting expected service and perceived service will also indirectly affect satisfaction. The expectation judgment of service mainly comes from public praise, brand and previous service experience, and the perceived quality of

service mainly comes from environmental facilities, service attitude, service effect, technical ability and sense of involvement. In addition, service innovation, agility, communication and other factors that reflect the dynamic capabilities of the organization will also indirectly affect the perceived quality of service and thus customer satisfaction. Finally, constrained by the economic level, the price factor of the service is also one of the important factors affecting the customer satisfaction.

2.4 Organization competitive advantage

2.4.1 Concept of organization competitive advantage

According to Michael Porter, competitive advantage is the advantage that a certain entity (firm/country) has in certain aspects, which makes it easier or more profitable than other entities. Since the 1980s, the concept and theory of “competitive advantage” have been discussed and widely used in the field of strategic management. “Competitive advantage” is a broad and multi-level concept, which can be divided into product competitive advantage, firm competitive advantage and industrial competitive advantage according to different emphasis, application subject and application environment. In the international competitive environment, there is even a comparative analysis of national competitive advantage and firm competitive advantage research paradigms.

With the continuous development of theoretical research and practical application, the concept and connotation of competitive advantage have been evolving. According to some scholars, profitability is the ultimate manifestation of competitive advantage, and it is also the effective manifestation in practice (Powell, 2001). Grant (1999) argues that when there is competition in a market, firms that can consistently earn higher profits have a competitive advantage, and Barney (2002) argues that if the resources and profitability of an industry are in the hands of a few firms, those firms have a competitive advantage.

In addition to profits, Jiang et al. (2005) considered that competitive advantages also have influence on market share, which helps a firm to outperform its competitors and increase its profitability and market share. Wu (2010) defines the new corporate competitive advantage as the effectiveness of the human capital that a firm possesses over its competitors in the market. Hofer and Schendel (1978) argue that firm competitive advantage refers to the more unique market potential obtained after the integration of resources. Baron and Besanko (1999) argue that competitive advantage is the ability to outperform in a competitive environment and to

create higher value for customers and increase satisfaction.

2.4.2 Factors influencing organizational competitive advantage

According to the different sources of influencing factors, the competitive advantage of firms can be divided into two categories, namely the external factors of firms, which can be extracted from the external theory, and the internal factors, which is implied by the core theory of firms.

In general, the external environment that affects a company's competitive advantage is the industrial structure and market operation. Porter (2004) suggests that there are five factors that affect the competitive situation of the industry (industrial attractiveness), namely the threat of new entrants, the bargaining power of buyers (customers), the threat of substitutes (or services), and the threat of suppliers, the bargaining power of suppliers, and the confrontation between existing competitors. The intensity of competition and profit potential of the industry can be assessed and studied through the analysis of these five aspects. In traditional industrial economics, economists have deeply explored the influence of market structure on the behavior and performance of manufacturers. "A monopoly position can bring excess profits" has become a well-known basic theorem. From this perspective, Porter believes that the basic principle of corporate competition is to find ways to maintain monopoly. Based on this logic, he develops three general strategies: low-cost strategy, specialization strategy and differentiation strategy. According to Besanko (1999), whether a company can achieve competitive advantage depends on the competitors and the industry. In addition, Liu (2011) found through an empirical study of modern service industry firms that the linkages between firms and other firms as well as external market environment factors can have significant effects on the market competitiveness of firms. Focusing on retail firms, Huang and Sun (2014) further analyzed the factors influencing the competitiveness of firms in the Internet environment, and found that with the application of e-commerce, the relationship between firms and their suppliers and distributor has great effect on the gaining of sustained competitiveness. In addition to the above-mentioned factors in the external environment of firms, institutions, cultures, factors, endowments, division of labor chains and even national policies can influence the profitability of industries. Some scholars have also added factors such as business clusters, location choice, and business ecosystem as external influences.

Internal resources and capabilities are important factors affecting the competitive advantage. Barney (1991) argues that the rareness of internal resources is an important

guarantee for a firm to develop a lasting competitive advantage, and therefore, a firm's competitive advantage is derived from its internal resources. The resource-based view (RBV) emphasizes the importance of resources and believes that valuable, rare and inimitable resources and organizations are the basis of a firm's competitive advantage, while Teece (2007) emphasizes the importance of capabilities and believes that dynamic capabilities (DC) are the basis of a firm's competitive advantage. Cardeal and António (2012) built on this foundation and found that both resources and capabilities play an important role in a firm's competitive advantage (Figure 2.1). They argued that in a dynamic and changing market environment, the value of resources tends to depreciate rapidly. Although resources are important, the ability to allocate resources (dynamic capabilities) is more important, and a firm's capabilities are organizational processes (including skills, expertise, know-how, management), while dynamic capabilities can enable a firm to transform existing resources into its own competitive advantage in a developing and changing market environment. They found through empirical research that no individual resource has the characteristics of valuable, rare, and inimitable (VRI), and only when a firm combines various resources can it form a resource bundle with VRI characteristics, which brings sustainable competitive advantage to the firm, i.e., only when a firm has dynamic capabilities can it integrate internal and external resources to form a resource with VRI characteristics and thus maintain a sustainable competitive advantage. In addition, several studies show that technological innovation capabilities are an important source of competitive advantage for firms under both static and dynamic conditions. Under static conditions, the competitive advantage from innovation tends to be passive, mostly to maintain the existing competitive advantage. Under dynamic conditions, technological innovation is an active "creative destruction" that helps companies to escape from difficulties or bring more significant competitive advantages, and to gain sustainable competitive advantages through continuous self-renewal.

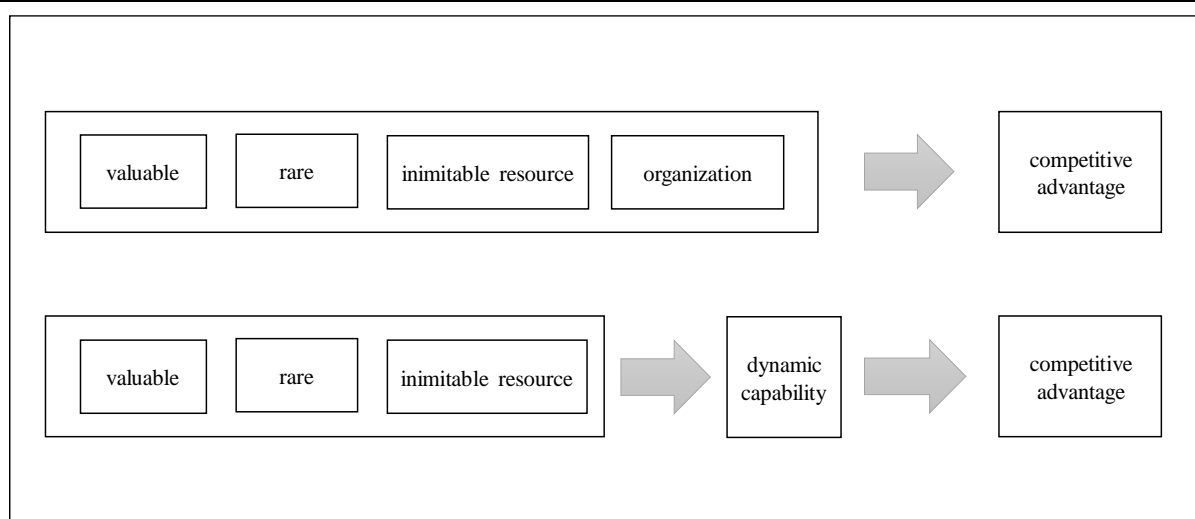


Figure 2.1 Resource Base View/Dynamic Capabilities View Path of Competitive Advantage

In addition, corporate culture is also an important component of competitive advantages. For example, through the investigation and study of 311 companies, Klein (2011) concluded that a flexible and adaptable corporate culture has a competitive advantage in the market competition, and Mahrokian et al. (2010) also found that corporate culture permeates all aspects of corporate strategy formulation and implementation, product development, and internal management, and has a significant impact on a company's competitive advantage in the market. Besides, corporate development strategy, marketing strategy and internal management also exert great influence on the competitive advantage of a company. For example, Krstic and Becic (2011) found that a reliable marketing strategy needs to consider the risks and challenges faced by a company, and that only the practical implementation of a scientific marketing strategy can enable a company to gain a competitive advantage in the market. Choi et al. (2012) found through an empirical study of Samsung Company that the implementation of Six Sigma management did help optimize process management, improve quality, and ultimately lead to an increase in corporate competitiveness.

In order to further theorize and conceptualize the specific influencing factors found in empirical studies, some scholars have conducted a series of theoretical studies. For example, Xu and Wang (2003) summarized sources of competitive advantage from three theoretical perspectives and concluded that there are three main types of studies on the sources of firms' competitive advantage: market structure, resource base, and firm capabilities. The market structure theory focuses on the analysis from the external structure of the firm, arguing that the profitability of the firm is crucial, while achieving a competitive advantage position in the industry is also quite important. Therefore, this theory believes that the external industry structure and the market position of the firm determine the competitive advantage of the firm.

The resource-based view focuses on resource differentiation, arguing that there are differences in resources and accumulation among firms, but ignores the dynamic role of resource allocators, which has certain limitations (Yu, 2002). Some scholars also recognize that the internal characteristics and capabilities of firms are more controllable and stable compared with external factors, and give birth to the new capability's theory: coordination, learning, human capital, organizational capital and organizational capital together become important influencing factors of the competitive advantage of firms.

2.4.3 Summary

Competitive advantage is an important premise for sustainable development of organizations. Early studies on competitive advantage mainly focused on sustained competitive advantage, and later scholars propose short-term competitive advantage and differentiated them, which enriches the relevant research content and research theories.

According to the different internal and external environment, different content and different subjects of the influencing factors of organization competitive advantage, different classification results have been obtained from different perspectives. However, the core capabilities, dynamic capabilities, resources and industrial structure are the frequently mentioned influencing factors, which have been discussed and analyzed by many scholars. In general, the influencing factors of organization competitive advantage are diversified, not only from internal or external sources, but also the result of the interaction and interaction of multiple factors, regardless of whether the discussion is about sustained competitive advantage or short-term competitive advantage. With the broadening and deepening of related research, more and more influencing factors are included in the discussion and analysis, which fills the theoretical gap and broadens the research horizon.

2.5 Chapter summary

In recent years, with the development of social economy and the changes of people's aesthetic concepts, the demand for aesthetic medicine service has been continuously released and the aesthetic medicines industry has been developing rapidly, accompanied by the increasing number of aesthetic hospitals and the gradual improvement of relevant policies, which not only stimulates the market vitality and promotes the standardized operation and competition in the industry, but also carries huge competitive pressure to the hospitals. How to better explore potential opportunities, stabilize the current favorable situation and expand the market,

to improve patient satisfaction, and to enhance the competitive advantages of the organization have become practical problems to be solved by hospital managers, as well as a major difficulty in solving the existing dilemma of aesthetic hospitals and properly adjusting the operation planning and firm positioning. Among the existing studies, improving the dynamic capabilities and service capabilities of hospitals has reached a consensus in the study of organization development strategies, and enhancing patient satisfaction and hospital competitive advantages has been an important research content and research goal for scholars and hospital managers, but the following deficiencies are still found after collating the existing literature.

First of all, there are still many disagreements in the research related to organization capabilities and competitive advantages, and the empirical research on dynamic capabilities are still in the initial stage, and whether the existing measurement methods and survey tools are applicable to the aesthetic medicine industry still needs further verification.

Secondly, most of the existing studies on the influencing factors of organization competitive advantage start from the variables related to the organization itself and consider the influence of factors such as organizational structure characteristics, organization culture and organization management on competitive advantage, and it is difficult to directly transplant the existing studies to the aesthetic medicine industry. Therefore, researchers should consider various influencing factors based on the perspective of synergy between organizations and patients and consider how to play a positive role of patients in order to promote the improvement of hospitals' competitive advantages.

Finally, most of the existing studies on organization capabilities, customer satisfaction and firm competitive advantages analyze the relationship between individual variables and their influencing factors based on cross-sectional data and have not yet included multiple variables into the model to explore the effects of moderation and mediation effects among the variables, so as to fully reveal the relationships among the variables.

China's aesthetic medicine industry is growing rapidly, while hospital managers are under tremendous competitive pressure. Given the fundamental characteristics of aesthetic medicine services, patient engagement is an important factor in service delivery and the achievement of desired goals. The key to gaining competitive advantages is how to improve the dynamic capabilities and service capabilities of aesthetic hospitals from the patient's perspective, and thus create superior service value together with the patient. Research on business (or hospital) management in the aesthetic medicines field has to some extent neglected research on strategic management, and there are gaps in the introduction of theoretical perspectives,

methods and measurement models. One of the important motives of this study is to fill the above research gaps. At the same time, based on the scenario of the Chinese aesthetic medicine service market, we believe that the output of this study will also provide a meaningful complement to the study of organizational dynamic capabilities.

2.6 Definitions of variables included in this study

According to the literature analysis, it is necessary to further define the key variables and their sub-constructs involved herein, to determine the scope and boundary of this research. This study involves five key variables, which are patient market cognition, dynamic capabilities, service capabilities, patient satisfaction and competitive advantages. To accurately measure the above five key variables, different variables need to be divided into sub-constructs. The definitions and sources of different variables and their sub-constructs are shown in Table 2.4.

Table 2.4 Variables Definitions

Construct	Subconstruct	Definition of Construct	Source Literature
Patient market cognition		The patient's cognitive ability and degree of knowledge of market information about the type, price, and quality of the purchased product or service, as well as their willingness to choose the product or service based on their existing knowledge.	Ellis (2015)
	Knowledge	Patient's understanding and acceptance of aesthetic medicine knowledge.	Ellis (2015)
Patient Market Cognition	Market information	As the information receiver, how much do patients know about the marketing information of aesthetic hospitals.	Ellis (2015)
	Choice intention	The tendency of patients to make repeated purchase or keep using services from same hospital.	Ellis (2015)
Dynamic capabilities		The ability of a hospital to continuously perceive the external environment through organizational learning and knowledge innovation, and to integrate and update organizational resources in response to environmental changes, thus helping the organization to adapt to the	Sun et al. (2021)

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Construct	Subconstruct	Definition of Construct	Source Literature
		dynamically changing market environment.	
Dynamic capabilities	Integration	The ability of a hospital to continuously combine its internal resources to achieve competitive advantage.	Lin and Wu (2014); Min (2017)
	Agility	The ability of hospitals to flexibly mobilize medical professionals' resources to meet the needs of patients.	Felipe et al. (2016)
	Innovation	Innovation ability of hospital in service, technology, project.	Teece (2014); Wang and Ahmed (2007)
Service capabilities		Service capabilities, also known as operational capabilities, is the ability of a hospital to have appropriate resources and mobilize the initiative of resources to deliver services to patients.	Markovich et al. (2021); Story et al. (2017)
	Facility Excellence	The environment and equipment that affect patients' first perception of aesthetic hospitals, include the advanced level and completeness of equipment.	Ke and Wang (2020) Xia et al. (2013)
	Convenience	The timeliness, appropriateness and acceptability of patients' access to services at aesthetic hospitals.	Gan and Zhao (2011)
Service capabilities	Clinical ability	Professional's skills and knowledge of the doctor.	Hawes and Rao (1985)
	Responsiveness	The willingness and readiness of healthcare professionals to provide services, and the ability to answer patients' questions in time.	Chen (2018)
	Doctor-patient communication	Communication of personal basic information, diagnosis, treatment plan and preference related to diagnosis and treatment.	Sun et al. (2021)
Patient satisfaction		The feelings formed by patients comparing the perception and expectation of the service provided by the aesthetic hospital, the quantitative result of patient satisfaction.	Bloemer and Kasper (1995)
Patient satisfaction	Time	Patient satisfaction with the waiting time and the time spent before and during service.	Wang and Zhang (2015)

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Construct	Subconstruct	Definition of Construct	Source Literature
Competitive advantage	Price	Patient satisfaction with the cost of using the product or receiving the service.	Jeaheng et al. (2020); Zheng et al. (2017)
	Clinical outcome	The degree of satisfaction of patients with the results of clinical services provided by the hospital.	Wang and Hang (2016)
		The degree to which an aesthetic hospital is perceived as superior to its alternative targets, which is a unique attribute that sets it apart from its rivals.	Shih et al. (2008)
Competitive advantages	Value congruence	Under the same conditions, compared with other aesthetic hospitals, this hospital has more preferential prices and advantages.	Sweeney and Soutar (2001)
	Rareness	Under the same conditions, compared with other aesthetic hospitals, this aesthetic hospital has rare advantages in service, product and technology.	Teece (2014)
	Inimitability	The aesthetic hospital has unique advantages in service, product and technology, which is difficult for other aesthetic hospitals to copy.	Teece (2014)

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Chapter 3: Research Model and Hypotheses

According to the research purpose and research questions, the focus of this chapter is to introduce and illustrate theoretical model and hypotheses of the research. This chapter is divided into three sections, which proceeds as follows. The first section illustrates the theoretical model used in the research, analyzes the connotation and interaction of different constructs in the model, and provides theoretical support for the later empirical research. This is followed by the second section which expounds the linkage between patient market cognition and dynamic capabilities and service capabilities. Next, the linkage between patient satisfaction, competitive advantages (as the outcomes) and dynamic and service capabilities.

3.1 Research model

Due to the increasing intensity of market competition, the internal resources and capabilities of aesthetic hospitals no longer meet the needs of organization innovation (Cui & Wu, 2015). Meanwhile, patients are at the top of the aesthetic medicine market and are important stakeholders of hospitals, no longer just playing the role of mere products or services buyers in this innovation process but having an increasingly important influence (Anning-Dorson, 2018). Hospitals need to establish mechanisms to identify and access patient knowledge and information from external sources to support their innovation activities. Patients can access market information from external sources and understanding how much information patients own can help hospitals seek and grasp the market opportunities, respond quickly to changes in patient preferences, and thus improve hospital's dynamic and service capabilities. From a behavioral perspective, patient engagement can help aesthetic hospitals quickly understand patient market information (Fang et al., 2008). Patient engagement in the aesthetic medicine field can be concretely in input in knowledge, market information and spending. Based on interview and literature, patient engagement in the aesthetic medicine industry can be measured by a composite latent variable (high-order variable) of patient market cognition including patient knowledge, market information, and choice intention. Therefore, one of the objectives of this research is to investigate the effect of patient market cognition on the dynamic and service capabilities of aesthetic hospitals. In addition, it argues that hospital's dynamic and service capabilities not only affect patient satisfaction, but also influence

hospitals' competitive advantages.

This research, based on the research framework of dynamic capabilities proposed by Sun et al. (2021) and Wilden et al. (2016), constructs a theoretical model on the Relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages (Figure 3.1) to explore potential factors influencing patient satisfaction and competitive advantages from the perspective of patients.

In this model, we create five high-order constructs (patient market cognition, dynamic capabilities, service capabilities, patient satisfaction and competitive advantages) based on the theory of knowledge-based view and dynamic capability theory and puts forward six research hypotheses. Among them, the independent variable is patient market cognition, the intermediate variable is the dynamic capabilities and service capabilities of hospitals, and the result variable is patient satisfaction and competitive advantages. This study assumes that patient market cognition affects patients' perceptions of hospital's dynamics and service capabilities. In addition, the better the patients perceive the dynamic capabilities and service capabilities of the hospitals, the more pleased they will be with the provided services, and the more they can sense competitive advantages (Zeng et al., 2013).

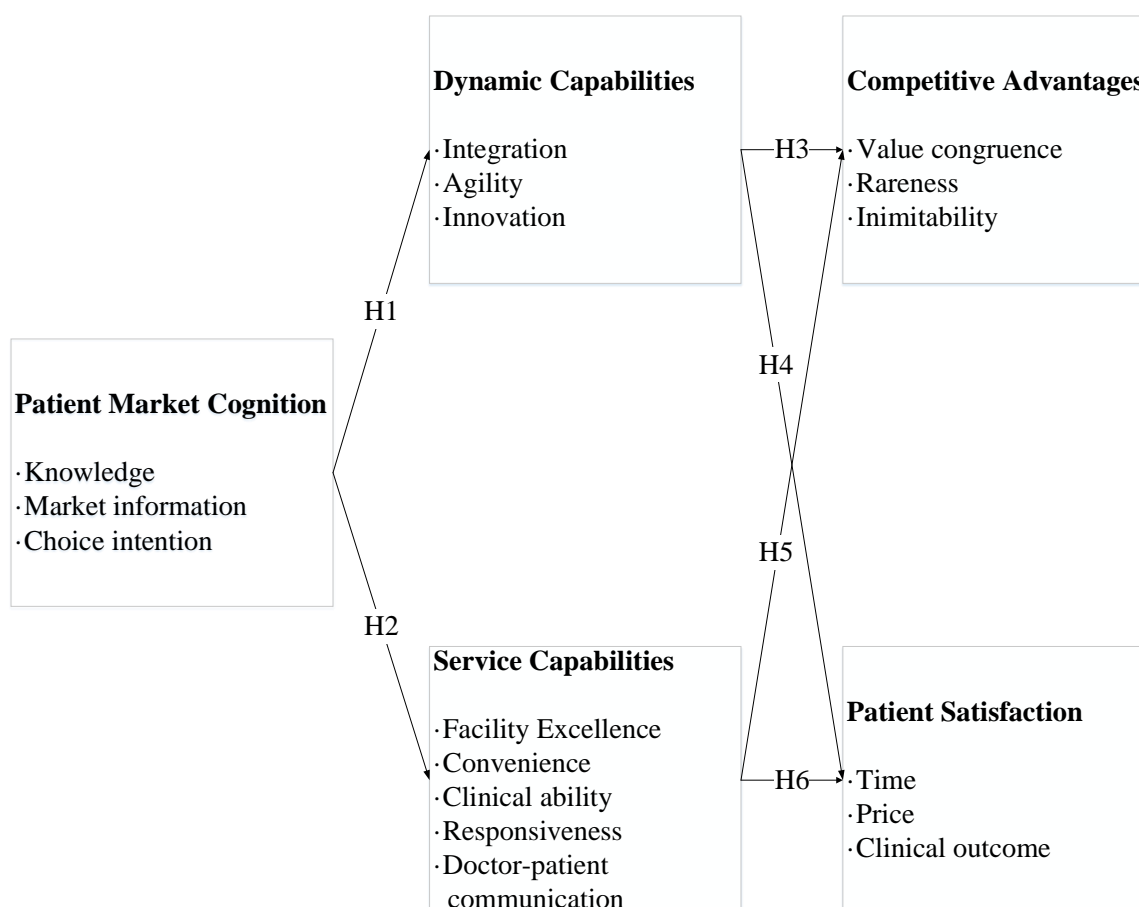


Figure 3.1 Research Model

3.2 Relationships among patient market cognition, dynamic and service capabilities of aesthetic hospitals

Based on the perspective of patients, this research initially identifies the important factors affecting the service capabilities of aesthetic hospitals; and combined with semi-structured interviews and expert consultation, the research finally argues that patient market cognition can influence the service capabilities of aesthetic hospitals. Patient market cognition refers to patients' understanding and cognitive ability of the type, price, quality and other market information of products or services, as well as their intention to choose products or services based on their existing knowledge (Bonney et al., 2016; Zeithaml, 1988; Zhang, 2007;). As discussed in Chapter 2, patient market cognition is composed of patient's knowledge, market information and choice intention.

Knowledge refers to patient's knowledge about products or services and their own needs (Alvaro et al., 2018). Knowledge, as a resource, has become an important element for organizations to compete and create value. Traditional strategic management can not break through organizational boundaries, resulting in the inability to further improve organizational capabilities, but the emergence of patient/customer centered service model has proven to be a good resolution to the problem (Falasca et al., 2017; Li, 2013) Empirical studies have shown that the richer customers' knowledge is, the better they know about the products or services, and the stronger their ability to perceive organization reaction to market changes and customer needs, so organizations not only need to improve their dynamic capabilities, but also need to improve patient market cognition to better meet patient needs and improve patient satisfaction (Falasca et al., 2017; Li, 2013).

Market information refers to the information of products or services available to patients, including brand reputation, publicity and ratings (Wang et al., 2017). The more market information a patient can access and the better the organization handles the marketing of products or services, the more sensitive the patient is to the hospital's dynamic capabilities (Huang & Chang, 2008; Teece, 2007).

Choice intention refers to patients' willingness or tendency to choose a product or service (Chiang & Dholakia, 2003; Dutta-Bergman, 2005; Oliver, 1999). Customers with habitual shopping behaviors are more likely to form dependence and trust on certain products, services and professionals, and recognize the dynamic capabilities of the organization (Li, 2018).

According to the above analysis, it is found that patient knowledge, market information

and choice intention have a positive effect on the dynamic capabilities of aesthetic hospitals. Therefore, the following hypothesis is put forward:

H1: Patient market cognition has a positive impact on the dynamic capabilities of aesthetic hospitals.

The theory of value co-creation suggests that customers/patients are not only the buyers and users of products and services, but also the participants of service value co-creation activities (Prahalad & Ramaswamy, 2000). Customers' participation in organization value co-creation activities can help organizations obtain sustainable competitive advantages in the market (Prahalad & Ramaswamy, 2000). The sustainable development of organization is inseparable from the participation of customers and understanding the characteristics and needs of customers can help organizations improve their ability to provide products or services (Johansson et al., 2019).

A large number of empirical studies have shown that customer knowledge and market information from outside the organization can contribute to enhance organization's service capabilities (Migdadi, 2021). In our research context, the richer the patients' knowledge and market information, the stronger they perceive hospital's service capabilities. Therefore, aesthetic hospitals should produce personalized and customized products or services for patients according to their understanding of aesthetic medicine knowledge and specific needs, and make marketing plans according to patients' market information, and choose reasonable publicity and communication channels to attract potential patients.

Intention is a concept of social psychology. The intention to visit a doctor refers to a series of ideological tendencies on how to make effective use of medical resources based on comprehensive consideration of internal factors of personal characteristics and external factors of medical environment when an individual needs medical service (Ajzen, 1991). Patient choice intentions are related to their consumption habits and the initial evaluation of the service. Patients who tend to experience multiple services to choose from ("picky customers") and patients who are unwilling to shop around have different effects on service capabilities of an organization. The former has higher requirements for hospital service capabilities, and may have a lower evaluation of hospital capabilities, thereby affecting the service provision and service capabilities of aesthetic hospitals (Zhao, 2014).

To sum up, patient knowledge, market information and choice intention have a positive effect on the service capabilities of hospitals. Therefore, the following hypothesis is put forward:

H2: Patient market cognition has a positive impact on the service capabilities of aesthetic

hospitals.

3.3 Impacts of dynamic capabilities and service capabilities on patient satisfaction and competitive advantages

Dynamic capability view (DCV) in the field of strategic management is a further development of resource-based view (RBV) (Abrantes et al., 2021; Hill et al., 2014). According to RBV, when an organization's resources have the characteristics of value congruence, scarcity, inimitability and non-substitutability, it can maintain its competitive advantage by implementing a new value creation strategy (Helfat & Peteraf, 2003). The dynamic capability theory extends RBV to the dynamic market, which holds the view that the change of the market is rapid and unpredictable, and having appropriate and specific resources is not enough for a company to maintain a competitive advantage (Eisenhardt & Martin, 2000; Teece et al., 1997). The dynamic capabilities of an organization, i.e., the abilities to integrate, construct and restructure resources, is the key to maintain a competitive advantage in a constantly changing market environment (Rindova & Kotha, 2001; Teece, 2007; Zollo & Winter, 2002).

An organization's competitive advantages are unique attributes that distinguishes it from its rivals and reflects its ability to satisfy customer needs and values (Barney, 1991). It can be measured by value congruence, rareness and inimitability (Dierickx & Cool, 1989). Some scholars (Fabrizio et al., 2021; Li & Liu, 2014; Teece et al., 1997) believe that the dynamic capabilities of an organization can promote the organization to maintain sustainable competitive advantages, and the competitive advantages come from the integration of resources, agility to environmental changes, acquisition and innovation of resources, knowledge and technology. The dynamic capabilities of an organization are multi-dimensional and multi-structured (Xin, 2011).

To study the impact and mechanism of dynamic capabilities of an organization, it is necessary to understand the connotation of the dimensions of dynamic capabilities. According to previous studies on the measurement dimensions of organizational dynamic capabilities, the mainstream view is to classify dynamic capabilities into three dimensions, namely, integration, agility and innovation capabilities (Yuan et al., 2019). Integration capabilities refers to the capabilities of aesthetic hospitals to achieve competitive advantage through continuous integration, construction and reorganization of internal resources (Teece et al., 1997); agility capabilities refers to the ability of medical staff to timely respond to patient

needs (Luo & Ou, 2021; Teece, 1998; Wang & Ahmed, 2007). innovation capabilities refers to the capabilities of aesthetic hospitals in service, technology, clinical project innovation (Liao et al., 2009; Li, 2014). The empirical study shows that the improvement of integration, agility and innovation capabilities can help organizations obtain sustainable competitive advantage (Wu, 2010).

From the above analysis, hospital's dynamic capabilities which are manifested in integration, agility and innovation positively influence on hospital's competitive advantages. Therefore, the following hypothesis is put forward:

H3: Dynamic capabilities of aesthetic hospitals have a positive impact on their competitive advantage.

With the further development and growth of the aesthetic medicine industry, competition among aesthetic hospitals has become more intense. Moreover, patients are becoming more and more familiar with medical aesthetic services, and their requirements and expectations for aesthetic hospitals are getting higher and higher (Xu et al., 2001). Therefore, it is necessary to focus on improving the dynamic capabilities of hospitals, by understanding the needs of patients, providing them with the products and services they need, as well as personalized services, in order to improve patient satisfaction and achieve the goal of pleasing and retaining patients (Koskinen et al., 2013). By integrating and optimizing internal and external resources, providing timely, effective, high-quality feedback on patient needs, and using organization knowledge and technology to re-engineer and create new technologies, services and programs, aesthetic hospitals can better improve patient satisfaction, which helps them retain patients and realize more value.

Patient satisfaction refers to the psychological perception generated by comparing the actual perception of product performance or service quality with the psychological expectation. If the performance of product or service quality is better than the expectation, the customer will be satisfied and vice versa (Lee et al., 2018; Ngo & Nguyen, 2016; Yang, 2018). Dynamic capabilities are the guarantee of improving service quality, which will further affect customer satisfaction. Many empirical studies show that the improvement of dynamic capabilities can significantly promote the improvement of customer satisfaction. For example, Zheng (2018) took hotel service as an example to analyze the relationship among dynamic capabilities, driving force of service innovation and customer satisfaction, and the results showed that customer-oriented dynamic capabilities can significantly promote business innovation and improve customer satisfaction.

To sum up, the improvement of organization dynamic capabilities can significantly

improve innovation and service quality, and lead to the improvement of customer satisfaction. Therefore, the following hypothesis is put forward:

H4: Dynamic capabilities of aesthetic hospitals have a positive impact on patient satisfaction.

Although the purpose of aesthetic hospitals is to make profits, the services they provide belong to medical services, which share the characteristics and nature of general hospitals. The service capabilities of hospitals are one of the important sources of hospitals' competitive advantages (Chen, 2018). A large number of studies have defined and measured health service capabilities from different dimensions, for example, Dressendorfer et al. (2005) evaluated health service capabilities from three dimensions, including infrastructure, organizational collaboration, and policy and regulation. Broucke et al. (2010) argued that health service capabilities are reflected in four dimensions: infrastructure, problem solving, knowledge transformation, and organizational network. Buykx et al. (2012) constructed health service capability evaluation indices from infrastructure, care coordination, organizational collaboration, financial management, and human resources.

Based on literature and interview, this study summarized the evaluation dimensions of aesthetic hospital service capabilities: facility excellence, convenience, clinical ability, responsiveness, and doctor-patient communication. Facility excellence refers to the environment and equipment of aesthetic hospitals. The utilization and output level of facilities determine the value generation of competitive advantages. Facility excellence plays an important role in the development of aesthetic hospitals and enhance their competitive advantage (Chiang & Dholakia, 2003). Convenience refers to the timeliness, appropriateness and acceptability of services provided to patients in aesthetic hospitals (Wei & Jiao, 2008). Convenience affects the flow of patients.

In other words, patients are more willing to choose hospitals with more convenient services. Therefore, service convenience affects the competitive advantage of aesthetic hospitals (Li, 2018). Clinical ability refers to the medical staff's level of professional knowledge and ability to diagnose and treat diseases (Qu & Ye, 2016; Zeng et al., 2008). The clinical ability is main core value service of aesthetic hospitals. The stronger the clinical ability of aesthetic hospitals, the easier it is to attract patients and charge higher service prices than other hospitals, to obtain premium payment, thus forming the competitive advantage of aesthetic hospitals (Yang, 2011). Responsiveness refers to the willingness or readiness of medical staff to provide services (Hu, 2018; Parasuraman et al., 1985; Pflum, 2015; Wang & Huang, 2015). In the service process, the service efficiency of medical staff, such as timely

response to the difficulties and problems encountered by patients, affects the service capabilities of beauty hospitals, and in turn affects their competitive advantages (Liu, 2013). Doctor-patient communication refers to the mutual communication between doctors and patients in personal basic information, disease diagnosis and treatment and communication on the emotional level (Liu, 2014). Research shows that barrier-free doctor-patient communication can reduce doctor-patient disputes and create a relaxed environment for treatment, thus affecting the core competitive advantages of the hospital (Liu et al., 2008).

To sum up, the service capabilities, including facility excellence, convenience, clinical ability, responsiveness and doctor-patient communication, affect the competitive advantages of hospitals. Therefore, the following hypothesis is put forward:

H5: Service capabilities of aesthetic hospitals have a positive impact on their competitive advantages.

Patient satisfaction is patients' psychological reaction when the product or service meets their own needs, which is mainly affected by the product characteristics and service capabilities (Chung & Wirtz, 1998; Zou, 2008). Foreign scholars have clarified the antecedents and consequences of customer satisfaction by building customer satisfaction index models, including SCSB, ACSI, ECSI and CCSI models (Huo, 2004; Jones & Suh, 2000), the most universal of which is CCSI model. The model includes six latent variables, namely brand image, expected quality, perceived quality, perceived value, customer satisfaction and customer loyalty. The antecedent variables include brand image, expected quality, perceived quality and perceived value; the intermediary variable is customer satisfaction; and the outcome variable is customer loyalty (Liu, 2013).

According to previous studies, the service capabilities of medical organizations have a great impact on patient satisfaction. For example, Zhuang (2012) found that the well-appointed and advanced performance of hospital services facilities help healthcare professionals to better diagnose and treat patients, so that patients can recover more quickly, thereby enhancing patient satisfaction and building trust. Hwang et al. (2020) also found that a logical and considerate treatment process is the premise of patient satisfaction, especially access to medical services, which has a significant impact on patient satisfaction. In addition, studies have also showed that doctors' communication skills and responsiveness to patient needs have a significant impact on patient satisfaction during healthcare delivery. For example, Zhang's research (2016) revealed that having timely access to consultation and treatment can help patients ease their fear, maintain a positive attitude, and improve satisfaction. In addition, studies have found that timely communication between medical staff and patients can enable

doctors to understand the patient's understanding and acceptance of diagnosis and treatment methods in a timely manner, and help patients follow medical advice and recover quickly (Ou, 2011). Therefore, doctor-patient communication can not only improve patient satisfaction, but also promote the rehabilitation of patients (Ou, 2011).

Therefore, the following hypothesis is put forward:

H6: Service capabilities of aesthetic hospitals have a positive impact on patient satisfaction.

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Chapter 4: Research Methods

This chapter describes the research methods and process. The previous chapters have explained the research model, definitions and dimensions of variables. Chapter 4 describes the research methodology employed in this study (section 4.1), discusses the characteristics of the sample hospitals and the reasons for choosing the sample hospitals (section 4.2); and discusses the process of measurement questionnaire development (section 4.3), measurement validation and modification using a pilot sample (section 4.4), as well as the final study sample data characteristics and collection procedure (section 4.5). This chapter mainly uses IBM SPSS 24.0 software for descriptive statistical analysis, reliability analysis, validity analysis, and exploratory factor analysis.

4.1 Overview of research methods

This work employed various research methods such as literature analysis, semi-structured interviews, expert consultation, questionnaire survey and structural equation modelling to measure and evaluate the antecedents and outcomes of dynamic and service capabilities of aesthetic hospital patients in the context of China's rapidly changing policy environment and numerous choices for patients, and to explore how hospitals can maintain patient satisfaction from a patient perspective to ensure hospital's competitive advantage to achieve long-term development. The main research methods are as follows.

(1) Literature research

We searched English research databases such as Web of Science, PubMed, Scopus, and Chinese full-text journal databases such as CNKI, VIP, VANFANG, and supplemented with search engines such as Google Scholar and Baidu to find literature on dynamic capabilities, service capabilities, and customer satisfaction. This study used literature management software Zotero to organize and summarize the theoretical research results of patient market cognition, dynamic capabilities, service capabilities, patient satisfaction and competitive advantages. In addition, government websites such as the General Office of the State Council and the National Health and Welfare Commission were also adopted to collect policy documents related to the development of aesthetic hospitals. In this work, we first summarized the current development status, dilemma and policy orientation of the aesthetic

hospitals to determine the research questions and importance of this research. Secondly, we reviewed studies on dynamic capabilities and service capabilities of aesthetic hospitals, factors influencing patient satisfaction and factors influencing competitive advantages of organizations to understand the evolution of their definitions and dimensions. Finally, we analyzed the relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantage from the theoretical level, proposed the theoretical model and research hypotheses of this study, constructed a research framework, and provided a theoretical basis for the subsequent research.

(2) Semi-structured interviews with patients

Semi-structured interviews were employed to collect information of patient's attitudes and understanding of factors influencing patient satisfaction and hospital competitive advantages, dynamic and service capabilities, as well as the dimensions of the above-mentioned constructs and market cognition. Based on the preliminary literature analysis, an interview outline was developed, including open-ended questions and multiple-choice questions. On December 17, 2020, 10 patients were interviewed using the interview outline.

(3) Expert consultation

Expert consultation refers to consulting experts related to the research topic to give guidance and advice on the study based on their expertise and experience from previous evaluations. Based on outcomes of literature review, this study consulted experts to obtain opinions of research model, variable dimensions and questionnaire design. Specifically, 12 experts in business management and health management were invited to evaluate the face validity of the questionnaire, the importance of the content, and the accuracy of the expression of the measurement items, with the aim of guaranteeing the clarity of each item and ensuring the consistency, applicability, and ease of understanding of the variables measured.

(4) Questionnaire survey

As a commonly used method in social surveys, questionnaire surveys collect information to be understood by issuing questionnaires, so as to collect a large amount of reliable information in a short period of time. In this study, questionnaire survey was employed to collect research data, mainly through face-to-face field surveys. Huashan Lian Tian Mei Aesthetic Hospital and Victoria Aesthetic Hospital, which are top two largest aesthetic hospitals in Hangzhou, were selected. Respondents were patients who had visited or received services at the hospitals (including non-paying patients). After the questionnaire was compiled, a survey team was organized to collect data. A pilot sample data of 204 valid questionnaires

were collected from December 18, 2020 to December 19, 2020. After conducting exploratory factor analysis (EFA), questionnaire was modified and the final study sample of 891 usable questionnaires were collected from December 20, 2020 to December 26, 2020.

(5) Principal component analysis

Principal component analysis is a multivariate statistical method to examine the correlation between multiple variables. In the questionnaire development stage, according to the principal component analysis procedure, the reliability and validity of each question item were calculated (fulfilled by SPSS software), the representativeness of the question items was evaluated, and factor loadings were analyzed using factor loading matrix. By comparing the calculated values with the test criteria, the items that did not meet the requirements were deleted or modified, and those that met the requirements were retained, thus improving the quality of the questionnaire, and ensuring that each item could better measure the desired content of the study and laying the foundation for the subsequent final questionnaire survey.

(6) Structural equation modelling

Structural equation modelling is a common social science method for multivariate data analysis, which is often used in confirmatory factor analysis, higher-order factor analysis, path and causality analysis. In this study, after the reliability test, a structural equation modelling based on PLS (Partial least squares regression) was employed to verify the measurement and relationships in the model. Structural equation modelling procedures are as follows.

First, measurement model tests. Confirmatory factor analysis was used to validate the research model. Because of the complexity of the model, the measurement model tests were divided into first-order and second-order variable reliability and validity analysis. Second, Structural model tests. The structural model was examined in this study using SMART PLS 3.0 software. The evaluation of formative structural model mainly adopts three criteria: the R^2 of the endogenous variables, the estimates of the path coefficients, and the effect size (f^2) of the hypothesized relationships.

4.2 Characteristics of the two aesthetic hospitals

Founded in 1983, Lian Tian Mei Group is the largest aesthetic medicine company in Zhejiang Province, China. Headquartered in Hangzhou (the capital of Zhejiang Province), the company built the first batch of aesthetic hospitals in China, ranking first in Zhejiang Province in terms of revenue scale for the past five years. As a high-end brand company in the aesthetic medicine industry, the company currently has two wholly-owned beauty hospitals, Huashan

Lian Tian Mei Aesthetic Hospital and Victoria Aesthetic Hospital, with a total business area of 30,000 square meters and more than 500 employees. The two hospitals are qualified for Class IV surgery and are both 5A qualified aesthetic hospitals in China. These two aesthetic hospitals have been growing steadily for five consecutive years, with an annual revenue scale of 800 million and a net profit of 70 million RMB.

In this study, two aesthetic hospitals under Lian Tian Mei Group were selected as the research samples due to two considerations. Firstly, the two hospitals are under same policy background compared with other Chinese aesthetic hospitals, and their internal advantages, development space and capital operation are representative. Secondly, the hospitals are located in Zhejiang Province, which has the highest per capita disposable income in mainland China. On one hand, it provides sufficient economic support for the development of non-basic medical services, and on the other hand, it also makes aesthetic hospitals face a more competitive market environment.

4.3 Questionnaire development

Questionnaire is a measurement tool, which contains a set of questions that reflect the level of latent variables and aims to reveal the level of theoretical variables that cannot be easily measured by direct methods (Tan, 2017). The first step in developing a valid, scientific measurement tool lies in determining the range of variables (constructs), which requires reviewing the literature in advance (Churchill, 1979). Through a comprehensive literature review and referring to the opinions of scholars, questions can be scientifically selected and aligned with the construct properties. Thus, the resulting questions ensure a certain level of reliability and validity.

4.3.1 Questionnaire design process

The variables to be tested in this study include patient market cognition, dynamic capabilities, service capabilities, patient satisfaction, and competitive advantages. They are all obtained by revising well-established scales.

In this study, the development process of the variable measurement questionnaire followed the in-depth development procedure (Brocato et al., 2012) and well-established research guidelines (Wetzels et al., 2009). Four overall phases are included (Karpen et al., 2015): 1) generation of initial pool of measurement items, 2) qualitative assessment of measurement items, 3) measurement testing and purification using development sample, and

4) measurement validation using final study sample and hypothesis verification. In Section 2.6 of Chapter II, the researcher has set forth the definition of each variable. This Chapter presents Phase 1 to 3, while Phase 4 describes the sample composition in this chapter and the results of the empirical analysis are presented in Chapter V. Table 4.1 summarizes the various stages of data collection and provides descriptions of multiple samples.

Table 4.1 Initial Development and Final Validation of Questionnaire

Measurement questionnaire development process	Specific research content
Step 1: Generation of initial pool of measurement items	--Literature analysis + semi-structured interviews - Informal discussion and qualitative analysis to evaluate clarity of items and conciseness of language
Step 2: Qualitative assessment of measurement items	--12 experts evaluated face validity, content importance, and accuracy of measurement item presentation - 8 research team members evaluated clarity of items, consistency of measurement items and constructs, applicability of measurement items (translated), and ease of understanding of measurement items.
Step 3: Measurement testing and purification using development sample	Study 1: patients n=204; sample source: two aesthetic hospitals in Hangzhou - exploratory factor analysis - reliability analysis, validity analysis
Step 4: Measurement validation using final study sample	Study 2: Patient n=891, sample source: two aesthetic hospitals in Hangzhou - confirmatory factor analysis - Convergent validity, discriminant validity analysis - Hypotheses verification

4.3.2 Measure adapted from existing scales

The measurement items of 16 variables of patient's knowledge, market information, choice intention, integration capability, agility capability, innovation capability, facility excellence, convenience, clinical ability, responsiveness, doctor-patient communication, time satisfaction, price satisfaction, clinical outcome satisfaction, value congruence, rareness, and inimitability in this study were obtained from the relevant Chinese and English literature. Therefore, this study translated the scale and asked two doctoral students in marketing and health management to back-translate and revise it again until the back-translation matched the original English descriptions to ensure that the translation of the measurement items was accurate.

The research model, variable affiliation, variable definitions, and measurement items of the study were sent by e-mail to 15 experts in the field of business management and health management, and 12 experts sent back their opinions. After generation of initial pool of measurement items and questionnaire evaluation, a total of 100 measurement items were

generated. The measurement items for each variable and the source of them are summarized in Table 4.2.

Relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages

Table 4.2 Measurement Items After Qualitative Assessment

High order construct	Variable	Item	Source
Patient market cognition	Knowledge	<ol style="list-style-type: none"> 1. I usually focus on collecting the latest international aesthetic medicine products / technologies / services. 2. I can collect some information about side effects of disease treatment such as nausea and vomiting. 3. I often set aesthetic medicine improvement goals for myself, depending on my situation. 	Gilly et al. (1998); Kong (2020)
	Market Information	<ol style="list-style-type: none"> 1. I have many relatives and friends who often receive aesthetic medicine services. 2. This hospital has a good reputation. 3. I often see advertisements for this hospital. 4. I often receive messages about aesthetic services from this hospital. 5. I have relatives and friends who recommend this hospital for aesthetic service. 	Yan (2015); Yi and Gong (2013)
	Choice Intention	<ol style="list-style-type: none"> 1. Based on my situation, I would like to go to the same aesthetic hospital for all aesthetic medicine services. 2. Based on my situation, I hope to see the same doctor every time. 3. Based on my situation, I would like to use the same brand of aesthetic medicine products or techniques. 4. Based on my situation, I need to ask the doctor to evaluate and recommend the aesthetic treatment plan frequently. 5. Based on my situation, I often need to go to the aesthetic hospital to use medical beauty equipment for aesthetic treatment. 6. Based on my situation, I often need to go to aesthetic hospital to do medical beauty projects. 	Sweeney and Soutar (2001); Yang (2018)
Dynamic Capabilities	Integration	<ol style="list-style-type: none"> 1. During the treatment process, the healthcare professionals are responsible for different steps coordinated well together. 2. The healthcare professionals can combine different products to meet my medical aesthetic needs when designing the plan. 3. The healthcare professionals can consider and analyze all my medical/aesthetic medicine history comprehensively when designing the plan. 4. The healthcare professionals can make full use of a wide range of equipment data when designing the plan. 5. The healthcare professionals can consider my different medical/aesthetic medicine needs in a comprehensive manner when designing the plan. 	Schilke (2014); Yin (2019)
	Agility	<ol style="list-style-type: none"> 1. During the treatment process, the medical staff could find that I felt pain in time. 2. When I feel pain, the healthcare professionals can take effective measures to help me stop the 	Wang and Ahmed (2007); Luo and Ou (2021)

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High order construct	Variable	Item	Source
		<p>pain in time.</p> <p>3. During the treatment, the healthcare professionals can detect my allergy or other reactions in time.</p> <p>4. When I have allergies or other reactions, the healthcare professionals can adjust the plan in time.</p> <p>5. During the treatment process, the healthcare professionals can promptly detect my scruple.</p> <p>6. When I have scruple, the healthcare professionals can explain it clearly in time.</p> <p>7. During the treatment process, the healthcare professionals can promptly find out if my medical program needs to be adjusted temporarily.</p> <p>8. The healthcare professionals can discuss with me when my aesthetic medicine program needs to be adjusted on an ad hoc basis.</p>	
	Innovation	<p>1. The healthcare professionals use the latest international medical products/technology.</p> <p>2. The healthcare professional's medical service concept is very innovative.</p> <p>3. The technical level of the healthcare professionals is much higher than other hospitals.</p> <p>4. This hospital often introduces new medical aesthetic products/services.</p> <p>5. This hospital is ahead of other hospitals in the application of new medical aesthetic technology.</p>	Li (2014); Teece (2014)
	Facility Excellence	<p>1. The medical equipment of the hospital is very advanced.</p> <p>2. The dress of healthcare professional is professional and neat.</p> <p>3. The environment of the hospital is clean and tidy.</p> <p>4. The signs of the hospital's department facilities are very clear.</p>	Ke and Wang (2020); Xia et al. (2013)
Service Capabilities	Convenience	<p>1. I can easily make an appointment to the time I need.</p> <p>2. I can easily make an appointment with the doctor I want to see.</p> <p>3. In the hospital, I can easily find my way.</p> <p>4. Every step of aesthetic medicine project in the hospital is very convenient and easy.</p> <p>5. Whenever I need them, I can easily find hospital staff to help me.</p>	Peters et al. (2008)
	Clinical Ability	<p>1. My doctor can do medical beauty diagnosis and treatment for me.</p> <p>2. When the doctor gave me medical treatment, I feel very safe.</p> <p>3. My doctor's medical treatment and behavior show me his/her great confidence.</p> <p>4. My doctor has a good knowledge of aesthetic medicine.</p>	Liang (2020)

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High order construct	Variable	Item	Source
	Responsiveness	5. My doctor is trustworthy. 6. My doctor is very experienced. 1. The healthcare professional can answer my questions quickly. 2. The healthcare professionals will not be too busy to answer my questions in time. 3. I always get a timely answer when I contact the hospital. 4. It is easy for me to take my opinion to the hospital 5. The hospital can answer and solve my questions in a timely manner.	Mercer et al. (2004)
	Doctor-patient Communication	1. The healthcare professional can clearly explain the professional information about the treatment. 2. The healthcare professional can clearly explain the purpose / expected effect of the treatment. 3. The healthcare professional can explain the price clearly. 4. Healthcare professionals can clearly explain the risks of treatment. 5. The healthcare professional can clearly explain the drug (use purpose, general effect, treatment cycle and adverse reactions). 6. The healthcare professional can clearly explain the comfort experience in the treatment. 7. The healthcare professional can clearly explain the precautions after treatment. 8. The healthcare professionals can clearly explain the method of self-observation / maintenance / adjustment after treatment.	Ji et al. (2015); Mercer et al. (2004)
	Time	1. I am satisfied with the waiting time before seeing the doctor. 2. I am satisfied with the time spent to discuss the medical treatment plan with the doctor. 3. I am satisfied with the time spent on the actual aesthetic medicine treatment program. 4. I am satisfied with the total time spent in the hospital.	Ayodeji and Rjoub (2021)
Patient Satisfaction	Price	1. I am satisfied with the different price levels of the hospital's aesthetic medicine services. 2. I am satisfied with the price of the aesthetic medicine services I received. 3. I am satisfied with the price (value for money) of the aesthetic medicine services I received.	Jeaheng et al. (2020); Zheng et al. (2017)
	Clinical Outcome	1. I am satisfied with the individualized aesthetic medicine services provided specifically for me. 2. I am satisfied with the full range of aesthetic medicine services that can be done at this hospital. 3. I am satisfied with the safety of the treatment. 4. I am satisfied with the efficiency of the healthcare professional. 5. I am satisfied with the quality of the service	Yan et al. (2011)

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High order construct	Variable	Item	Source
		attitude of the healthcare professional.	
		6. I am satisfied with the professional and technical level of healthcare professionals.	
		7. I am satisfied with the treatment effect.	
		1. Compared with other aesthetic hospitals, the reputation of this hospital can better meet my requirements.	
		2. Compared with other aesthetic hospitals, the personalized aesthetic medicine service provided by this hospital can better meet my requirements.	
		3. Compared with other aesthetic hospitals, this hospital has a full set of various aesthetic medicine projects that can better meet my requirements.	
		4. Compared with other aesthetic hospitals, the price of this hospital can better meet my requirements.	
	Value congruence	5. Compared with other aesthetic hospitals, the hospital environment/infrastructure of this hospital can better meet my requirements.	Sweeney and Soutar (2001)
		6. Compared with other aesthetic hospitals, the safety of diagnosis and treatment in this hospital can better meet my requirements.	
		7. Compared with other aesthetic hospitals, the service attitude and quality of this hospital can better meet my requirements.	
		8. Compared with other aesthetic hospitals, the professional and technical level of this hospital can better meet my requirements.	
Competitive Advantage		9. Compared with other aesthetic hospitals, the clinical reliability and treatment effect of this hospital can better meet my requirements.	
		1. The reputation of this hospital is at the top and unique in the aesthetic medicine market.	
		2. The personalized aesthetic medicine service provided by this hospital is relatively rare and unique in the medical aesthetics market.	
		3. The full set of various aesthetic medicine projects provided by this hospital is relatively rare and unique in the medical aesthetics market.	
		4. The customer price of this hospital is relatively rare and unique in the aesthetic medicine market.	
	Rareness	5. The hospital environment/infrastructure of this hospital is relatively rare and unique in the aesthetic medicine market.	London and Beatty (1993)
		6. Diagnosis and treatment safety of this hospital is relatively rare and unique in the aesthetic medicine market.	
		7. The quality of service attitude of this hospital is relatively rare in the aesthetic medicine market.	
		8. The level of professional skills is relatively rare in the aesthetic medicine market.	
		9. The quality of service attitude of this hospital is	

High order construct	Variable	Item	Source
	Inimitability	<p>relatively rare in the aesthetic medicine market.</p> <ol style="list-style-type: none"> 1. It is difficult for other aesthetic hospitals to imitate/copy the reputation of this hospital. 2. It is difficult for other aesthetic hospitals to imitate/copy the personalized aesthetic medicine service provided by this hospital. 3. It is difficult for other aesthetic hospitals to imitate/copy the full set of services provided by this hospital for various aesthetic medicine projects. 4. It is difficult for other aesthetic hospitals to imitate/copy the customer prices that this hospital has. 5. It is difficult for other aesthetic hospitals to imitate/copy the hospital environment/infrastructure of this hospital. 6. It is difficult for other aesthetic hospitals to imitate/copy the medical safety of this hospital. 7. It is difficult for other aesthetic hospitals to imitate/copy the quality of service attitude of this hospital. 8. It is difficult for other aesthetic hospitals to imitate/copy the professional and technical level of this hospital. 9. It is difficult for other aesthetic hospitals to imitate/copy the reliability of the diagnosis and treatment effect of this hospital. 	Barney (1991)

4.4 Measurement validation and modification using a pilot sample

Because the model of this study is sophisticated and not developed by modifying a mature model, it is crucial to apply standardized procedure to test the reliability and validity of the questionnaire and conduct exploratory factor analysis, so that the development of the questionnaire can be modified and optimized accordingly to lay the foundation for the subsequent final questionnaire survey. The questionnaire used for measurement development is shown in Annexes A, and the questionnaire modified by measurement development is shown in Annexes B.

4.4.1 Sample collection and data collation

Two aesthetic hospitals in Hangzhou were selected for the measurement testing. Data were collected from December 18, 2020, to December 19, 2020. A total of 204 valid patient questionnaires were collected. Of these, 94% were female; more than 85% were younger than

40 years old; over 40% had a college degree or below; more than 30% had skin laser; over 30% had facial plastic surgery; over 30% spent more than 10,000 RMB for the current service; 49% learned about the hospital through Internet; over 40% learned about the hospital in 2020; 60% had accepted services less than 3 times. The characteristics of the sample used for questionnaire development is shown in Table 4.3.

Table 4.3 Characteristics of the Sample Used for Questionnaire Development

Variables		Counts (n)	Frequency (%)
Gender	Male	12	5.9
	Female	192	94.1
Age	≤25	64	31.4
	26-30	68	33.3
	31-39	50	24.5
	≥40	22	10.8
Aesthetic medicine project	Facial plastic surgery	63	30.9
	Body plastic surgery	6	2.9
	Injection filling	41	20.1
	Skin Laser	62	30.4
	Skin care	20	9.8
Amount of consumption	Other types	12	5.9
	4000 RMB and below	112	54.9
	4001-10000 RMB	23	11.3
	More than 10000 RMB	69	33.8
Channel of knowing the hospital	Offline advertising	27	13.2
	Online advertising	100	49.0
	Relatives and recommend	70	34.3
Highest education	Other channels	7	3.4
	College degree and below	85	41.7
	Bachelor degree	103	50.5
First time consumption	Master degree and above	16	7.9
	2017 and before	46	22.5
	In 2018	32	15.7
Consumption times in the last year	In 2019	40	19.6
	In 2020	86	42.2
	Twice and less	122	59.8
	More frequently than twice	82	40.2

4.4.2 Reliability and validity assessment

The reliability and validity testing were performed by conducting principal component analysis using SPSS software. Firstly, the KMO values of the sample was tested to check whether the samples were suitable for factor analysis. The value of KMO is between 0 and 1. When the sum of squares of simple correlation coefficients between all variables is much larger than the sum of squares of partial correlation coefficients, the value of KMO is closer to 1. It means the correlation between the variables is strong and the variables are suitable for factor analysis. Conversely, when the sum of the squares of the simple correlation coefficients between all variables is close to 0, the value of KMO is close to 0. It means that the

correlation between the variables is weak, and the variables are unsuitable for factor analysis. A KMO value of 0.9 or more indicates that the sample is very suitable for factor analysis, a KMO value of 0.8 indicates that it is suitable for factor analysis, and 0.7 indicates that the suitability of factor analysis on the sample is general.

Reliability refers to the consistency, stability, and reliability of measurement. The higher the value, the more reliable the measurement. Reliability is measured by composite reliability (CR) and Cronbach's α values. Cronbach's α value is the average of the half-reliability coefficients obtained by all possible item division methods of the scale and is the most commonly used reliability testing method. Usually, Cronbach's α value is between 0 and 1. If it does not exceed 0.6, it is generally considered that the internal consensus reliability is insufficient. When it reaches 0.7-0.8, the scale has considerable reliability, and when it reaches 0.8-0.9, it indicates that the reliability of the scale is very good. CR is the reliability of a new composite variable composed of the sum of more than one variable. If CR is greater than 0.7, it meets the testing standard. Validity refers to the accuracy and usefulness of measurement, which are generally measured using the average variance extraction value (AVE) of each latent variable and the factor loading (FL) of each measured variable. The AVE value reflects the discriminative validity of each latent variable. When the AVE value is greater than 0.50, it means that the latent variable has good discriminative validity. Factor loading reflects the convergent validity of each latent variable. When FL value is greater than 0.50, it indicates that the measured variable has good convergence validity. Reliability and validity evaluation criteria for measurement development are shown in Table 4.4.

Table 4.4 Reliability and Validity Evaluation Criteria

Evaluation perspective	Evaluation content	Test standards
Suitability for factor analysis	KMO	Above 0.9 means very suitable; 0.8 means suitable; 0.7 means average
Reliability	Composite Reliability (CR)	>0.7
	Cronbach's alpha	>0.7
Convergent validity	Factor loading (FL)	>0.5
	Average variance extracted (AVE)	>0.5
Discriminant validity	No factor cross-loading	items with loadings upper than 0.3 on only 1 factor

According to the content of the questionnaire, this study divides the measurement items into five groups for reliability and validity tests: 1) patient market cognition: knowledge, market information, and choice intention; 2) dynamic capabilities: integration, agility, innovation; 3) service capabilities: facility excellence, convenience, clinical ability,

responsiveness, doctor-patient communication; 4) patient satisfaction: time, price, clinical outcome; 5) competitive advantages: value congruence, rareness, inimitability. Exploratory factor analysis was done with 204 patient questionnaires and the results are as follows:

(1) Patient market cognition

When performing exploratory factor analysis, factor cross-loading occurred, and 5 items were removed. Firstly, items under market information: ① I have many relatives and friends who often receive aesthetic medicine services; ④ I often receive messages about aesthetic medicine service information from this hospital. Secondly, items under choice intention: ④ Based on my situation, I need to ask the doctor to evaluate and recommend the aesthetic treatment plan frequently; ⑤ Based on my situation, I often need to go to the aesthetic hospital to use medical beauty equipment for aesthetic treatment ; ⑥ Based on my situation, I often need to go to aesthetic hospital to do medical beauty projects. The KMO value after deletion is 0.819 and the reliability and validity results are shown in Table 4.5, which meets the criteria.

(2) Dynamic capabilities

When performing exploratory factor analysis, factor cross-loading occurred, and 6 items were deleted. Firstly, items under integration: ④ The healthcare professionals can make full use of a wide range of equipment data when designing the plan; ⑤ The healthcare professionals can consider my different medical/aesthetic medicine needs in a comprehensive manner when designing the plan. Secondly, items under agility: ① When I feel pain, the healthcare professionals can take effective measures to help me stop the pain in time; ② During the treatment, the healthcare professionals can detect my allergy or other reactions in time; ③ When I have the allergy or other reaction, the healthcare professionals can adjust the plan in time. Lastly, item under innovation: ① The healthcare professionals use the latest international medical products/technology. The KMO value after deletion is 0.940, and the results of reliability and validity are shown in Table 4.5, which satisfied the criteria.

(3) Service Capabilities

When performing exploratory factor analysis, factor cross-loading occurred, and four items were deleted. Firstly, items under convenience: ③ In the hospital, I can easily find my way; ⑤ Whenever I need them, I can easily find hospital staff to help me. Secondly, items under responsiveness: ① The healthcare professional can answer my questions quickly; ② Healthcare professionals will not be too busy to answer my questions in time. The KMO

value after deletion is 0.944, and the reliability and validity results are shown in Table 4.5, which satisfy the criteria.

(4) Patient satisfaction

Patient satisfaction includes time, price, and clinical outcome satisfaction. When performing exploratory factor analysis, factor cross-loading occurred, and 3 items were removed. Firstly, items under price satisfaction: ① I am satisfied with the different price levels of the hospital's aesthetic medicine services. Secondly, clinical outcome satisfaction: ① I am satisfied with the individualized aesthetic medicine services provided specifically for me, ② I am satisfied with the full range of aesthetic medicine services that can be done at this hospital. The KMO value after deletion is 0.930, and the results of reliability and validity testing were shown in Table 4.5, which satisfied the criteria.

(5) Competitive advantages

Competitive advantages include value congruence, rareness, and inimitability. When performing exploratory factor analysis, results showed factor cross loading and small factor loadings, and 6 items were deleted. Firstly, items under value congruence: ① Compared with other aesthetic hospitals, the reputation of this hospital can better meet my requirements; ② Compared with other aesthetic hospitals, the personalized aesthetic medicine service provided by this hospital can better meet my requirements; ③ Compared with other aesthetic hospitals, this hospital has a full set of various aesthetic medicine projects that can better meet my requirements; ④ Compared with other aesthetic hospitals, the price of this hospital can better meet my requirements. Secondly, items under rareness: ⑤The hospital environment/infrastructure of this hospital is relatively rare and unique in the aesthetic medicine market. Lastly, items under inimitability: ① It is difficult for other aesthetic hospitals to imitate/copy the reputation of this hospital. The KMO value after deletion is 0.948, and the reliability and validity testing results are shown in Table 4.5, which satisfy the criteria.

Table 4.5 Reliability and Validity Test Results

High order construct	Variable	Question item	FL	AVE	CR	α value
Patient market cognition	Knowledge	1. I usually focus on collecting the latest international aesthetic medicine products / technologies / services.	0.828	0.752	0.901	0.836
		2. I can collect some information about side effects of disease treatment such as nausea and	0.947			

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High order construct	Variable	Question item	FL	AVE	CR	α value
Dynamic Capability	Market Information	vomiting.				
		3. I often set aesthetic medicine improvement goals for myself, depending on my situation.	0.821			
		2. This hospital has a good reputation.	0.688			
		3. I often see advertisements for this hospital.	0.866	0.661	0.852	0.741
	Choice Intention	5. I have relatives and friends who recommend this hospital for aesthetic service.	0.871			
		1. Based on my situation, I would like to go to the same aesthetic hospital for all aesthetic medicine services.	0.813			
		2. Based on my situation, I hope to see the same doctor every time.	0.889	0.635	0.837	0.707
	Integration	3. Based on my situation, I would like to use the same brand of aesthetic medicine products or techniques.	0.673			
		1. During the treatment process, the healthcare professionals are responsible for different steps coordinated well together.	0.848			
		2. The healthcare professionals can combine different products to meet my medical aesthetic needs when designing the plan.	0.943	0.677	0.860	0.908
		3. The healthcare professionals can consider and analyze all my medical/aesthetic medicine history comprehensively when designing the plan.	0.649			
	Agility	4. When I have allergies or other reactions, the healthcare professionals can adjust the plan in time.	0.840			
5. During the treatment process, the healthcare professionals can promptly detect my scruple.		0.861				
6. When I have scruple, the healthcare professionals can explain it clearly in time.		0.968	0.741	0.934	0.948	
7. During the treatment process, the healthcare professionals can promptly find out if my medical program needs to be adjusted temporarily.		0.759				
8. The healthcare professionals can discuss with me when my aesthetic medicine program needs to be adjusted on an ad hoc basis.		0.862				

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High order construct	Variable	Question item	FL	AVE	CR	α value				
Service Capability	Innovation	2. The healthcare professional's medical service concept is very innovative.	0.588	0.723	0.910	0.923				
		3. The technical level of the healthcare professionals is much higher than other hospitals.	0.918							
		4. This hospital often introduces new medical aesthetic products/services.	0.846							
		5. This hospital is ahead of other hospitals in the application of new medical aesthetic technology.	0.993							
		1. The medical equipment of the hospital is very advanced.	0.739							
	Facility Excellence	2. The dress of healthcare professional is professional and neat.	0.905	0.750	0.923	0.899				
		3. The environment of the hospital is clean and tidy.	0.912							
		4. The signs of the hospital's department facilities are very clear.	0.896							
		1. I can easily make an appointment to the time I need.	0.963							
	Convenience	2. I can easily make an appointment with the doctor I want to see.	0.859	0.650	0.841	0.828				
		4. Every step of aesthetic medicine project in the hospital is very convenient and easy.	0.535							
		1. My doctor can do medical beauty diagnosis and treatment for me.	0.893							
	Clinical Ability	2. When the doctor gave me medical treatment, I feel very safe.	0.820	0.701	0.934	0.960				
		3. My doctor's medical treatment and behavior show me his/her great confidence.	0.841							
		4. My doctor has a good knowledge of aesthetic medicine.	0.879							
		5. My doctor is trustworthy.	0.825							
		6. My doctor is very experienced.	0.760							
		Responsiveness	3. I always get a timely answer when I contact the hospital.				0.721	0.744	0.896	0.939
			4. It is easy for me to take my opinion to the hospital				0.926			
			5. The hospital can answer and solve my questions in a timely manner.				0.925			
Doctor-patient communication		1. The healthcare professional can clearly explain the professional information about the treatment.	0.799				0.690	0.946	0.963	
		2. The healthcare professional can clearly explain the purpose / expected effect of the treatment.	0.709							
	3. The healthcare professional can	0.728								

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High order construct	Variable	Question item	FL	AVE	CR	α value	
Patient Satisfaction	Time	explain the price clearly.					
		4. Healthcare professionals can clearly explain the risks of treatment.	0.968				
		5. The healthcare professional can clearly explain the drug (use purpose, general effect, treatment cycle and adverse reactions).	0.793				
		6. The healthcare professional can clearly explain the comfort experience in the treatment.	0.916				
		7. The healthcare professional can clearly explain the precautions after treatment.	0.838				
		8. The healthcare professionals can clearly explain the method of self observation / maintenance / adjustment after treatment.	0.862				
		1. I am satisfied with the waiting time before seeing the doctor.	0.985				
		2. I am satisfied with the time spent to discuss the medical treatment plan with the doctor.	0.722				
				0.720	0.910	0.916	
			3. I am satisfied with the time spent on the actual aesthetic medicine treatment program.	0.797			
			4. I am satisfied with the total time spent in the hospital.	0.868			
			2. I am satisfied with the price of the aesthetic medicine services I received.	0.977			
			3. I am satisfied with the price (value for money) of the aesthetic medicine services I received.	0.830	0.822	0.902	0.906
			3. I am satisfied with the safety of the treatment.	0.736			
		4. I am satisfied with the efficiency of the healthcare professional.	0.878				
	Clinical outcome	5. I am satisfied with the quality of the service attitude of the healthcare professional.	0.924	0.725	0.929	0.934	
		6. I am satisfied with the professional and technical level of healthcare professionals.	0.958				
		7. I am satisfied with the treatment effect.	0.734				
Competitive Advantage	Value Congruence	5. Compared with other aesthetic hospitals, the hospital environment/infrastructure of this hospital can better meet my requirements.	0.930				
		6. Compared with other aesthetic hospitals, the safety of diagnosis	0.891	0.723	0.928	0.950	

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High order construct	Variable	Question item	FL	AVE	CR	α value
		and treatment in this hospital can better meet my requirements.				
		7. Compared with other aesthetic hospitals, the service attitude and quality of this hospital can better meet my requirements.	0.901			
		8. Compared with other aesthetic hospitals, the professional and technical level of this hospital can better meet my requirements.	0.808			
		9. Compared with other aesthetic hospitals, the clinical reliability and treatment effect of this hospital can better meet my requirements.	0.701			
		1. The reputation of this hospital is at the top and unique in the aesthetic medicine market.	0.728			
		2. The personalized aesthetic medicine service provided by this hospital is relatively rare and unique in the medical aesthetics market.	0.985			
	Rareness	3. The full set of various aesthetic medicine projects provided by this hospital is relatively rare and unique in the medical aesthetics market.		0.679	0.892	0.930
		4. The customer price of this hospital is relatively rare and unique in the aesthetic medicine market.	0.666			
		2. It is difficult for other aesthetic hospitals to imitate/copy the personalized aesthetic medicine service provided by this hospital.	0.769			
		3. It is difficult for other aesthetic hospitals to imitate/copy the full set of services provided by this hospital for various aesthetic medicine projects.	0.724			
		4. It is difficult for other aesthetic hospitals to imitate/copy the customer prices that this hospital has.	0.629			
	Inimitability	5. It is difficult for other aesthetic hospitals to imitate/copy the hospital environment/infrastructure of this hospital.		0.647	0.935	0.955
		6. It is difficult for other aesthetic hospitals to imitate/copy the medical safety of this hospital.	0.860			
		7. It is difficult for other aesthetic hospitals to imitate/copy the quality of service attitude of this hospital.	0.731			
		8. It is difficult for other aesthetic hospitals to imitate/copy the	0.974			
			0.881			

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High order construct	Variable	Question item	FL	AVE	CR	α value
		professional and technical level of this hospital.				
		9. It is difficult for other aesthetic hospitals to imitate/copy the reliability of the diagnosis and treatment effect of this hospital.	0.816			

4.5 Final study sample data collection

4.5.1 Data collection methods and procedures

This study used the questionnaire survey method to collect sample data, and mainly used face-to-face field survey to collect questionnaires. Two large aesthetic hospitals in Hangzhou were selected, and the respondents were patients who had visited or consulted at the hospitals. After the questionnaires were prepared, a survey team was organized and questionnaires were distributed in the hospitals from December 20, 2020 to December 26, 2020. A total of 914 patient questionnaires were collected, among them 891 questionnaires were usable. There are 73 items in this research questionnaire, and SEM-PLS analysis generally requires 5 or 10 times the total number of items. If calculated according to 10 times the number of questions, the minimum sample size required is 730, so the sample size of this study meets the requirements.

4.5.2 Characteristics of the final study sample

A total of 914 questionnaires were distributed, and 891 responses were usable, a response rate of 98.0%. Of these, 94% were female; more than 85% were younger than 40 years old; over 50% had a college degree or below; more than 30% had skin laser; over 20% had facial plastic surgery; 25% had injection filling; over 30% spent more than 10,000 RMB for the current service; 43% learned about the hospital through Internet; over 40% learned about the hospital in 2020; 59% had accepted services less than 3 times. See Table 4.6 for details.

Table 4.6 Characteristics of the Study Sample

Variable		Counts (n)	Frequency (%)
Gender	Male	56	6.3
	Female	835	93.7
Age	≤25	224	25.1
	26-30	285	32.0
	31-39	249	28.0
	≥40	133	14.9
Aesthetic medicine project	Facial plastic surgery	218	24.5
	Body plastic surgery	18	2.0
	Injection filling	223	25.0
	Skin laser	297	33.3
	Skin care	95	10.7
Amount of consumption	Others	40	4.5
	4000 RMB and below	448	50.3
	4001-10000 RMB	159	17.8
	More than 10000 RMB	284	31.9
Channel of knowing the hospital	Offline advertising	104	11.7
	Online advertising	381	42.8
	Relatives and recommend	380	42.6
Highest education	Other channels	26	2.9
	College degree and below	474	53.2
	Bachelor degree or above	417	46.8
First time consumption	2018 and before	345	38.7
	In 2019	160	18.0
Consumption times in the last year	2020 and beyond	386	43.3
	Twice and less	526	59.0
	More frequently than twice	365	41.0

4.5.3 Sample difference test between the two hospitals

This study conducted field survey from two aesthetic hospitals in Hangzhou. The fact that two hospitals locating in different districts is conducive to reducing common method biases (CMB), which are widely found in questionnaire method survey research and arise from artificial covariation among variables caused by the same data source or scorer, the same survey measurement environment, the context of question item measurement, and the characteristics of the question items themselves, which may confounding and potentially misleading research findings, and is a form of systematic error (Zhou & Long, 2004). Controlling for common method bias is generally done by measuring different sources, or by

separating measurements in terms of time and space. The sample selected for this study is divided into two districts in Hangzhou, and the measurements are separated spatially, which can reduce CMB better.

However, the conclusions drawn from the analysis of the samples of the two hospitals may be caused by the different external environment of the two hospitals or the large demographic-sociological differences of the survey respondents. Therefore, this study examines the demographic-sociological characteristics of the two samples before using the two-hospitals sample for empirical analysis.

Among the survey respondents, a total of 595 response were collected at Hospital A, and a total of 296 response were collected at Hospital B. In terms of gender, there were 37 males and 558 females in Hospital A, 19 males and 277 females in Hospital B. The chi-square test of the two samples show that $\chi^2=0.013$, $P=0.908$, suggesting no significant difference for respondents in gender between the two groups ($P>0.05$). In terms of age, 157 people were 25 years old and below, 181 people were 26-30 years old, 167 people were 31-39 years old, 90 people were 40 years old and above in Hospital A, while there were 67, 104, 82, 43 people in Hospital B respectively. The results of the chi-square test show that $\chi^2=2.537$, $P=0.469$, and there is no significant difference for respondents in age between the two groups ($P>0.05$). In terms of educational background, 326 people had a college's degree or below, and 269 people had a bachelor's degree or above in Hospital A, while there were 148 and 148 people in Hospital B respectively. The chi-square test results show that $\chi^2=1.821$, $P=0.177$, and there is no significant difference for respondents in education background between the two groups ($P>0.05$). In terms of aesthetic medicine consumption items, there were 143, 12, 156, 190, 68, 26 respondents for facial plastic surgery, body plastic surgery, injection filling, skin laser, skin care and other types in Hospital A, while 75, 6, 67, 107, 27, 14 respondents in Hospital B respectively. The chi-square test results show that $\chi^2=3.249$, $P=0.662$, indicating no significant difference for patients in consumption items between the two groups ($P>0.05$). As for the sum of consumption, 304 patients spent less than 4000 RMB, 94 patients spent 4001-10000 RMB, 197 spent more than 10000 RMB in Hospital A, while there were 144, 65, 87 people in Hospital B respectively. The chi-square test results show that $\chi^2=5.296$, $P=0.071$, and there is no significant difference for respondents in the sum of consumption between the two groups ($P>0.05$). In terms of the way they were informed about the hospital, there were 68, 250, 259, 18 respondents from offline advertising, online advertising, relatives and recommend, other channels in Hospital A, and 36, 131, 121, 8 people in Hospital B respectively. The chi-square test results show that $\chi^2=0.719$, $P=0.869$, suggesting no

significant difference for respondents in the way they were informed about the hospital between the two groups. As for the time of first consumption, there were 226 respondents in 2018 and before, 115 respondents in 2019, 254 patients since 2020 in Hospital A, while there were 119, 45, 132 patients in Hospital B respectively. The chi-square test results show that $\chi^2=2.290$, $P=0.318$, suggesting there is no significant difference for respondents in the time of first consumption between the two groups ($P>0.05$). In terms of the times of consumption in the most recent year, there were 355 respondents received less than 2 times services, 240 patients more than 2 times in Hospital A, while there were 171 and 125 patients in Hospital B respectively. The chi-square test results show that $\chi^2=0.293$, $P=0.588$, indicating no significant difference for respondents in the times of consumption in the most recent year between the two groups ($P>0.05$). See Table 4.7 for details.

Table 4.7 Test of Key Characteristics of Respondents from the Two Hospitals

Characteristic	Classification	Frequency between groups (person)		χ^2	P
		Hospital A (n=595)	Hospital B (n=296)		
Gender	Male	37	19	0.013	0.908
	Female	558	277		
Age	≤25	157	67	2.537	0.469
	26-30	181	104		
	31-39	167	82		
Highest education	≥40	90	43	1.821	0.177
	College degree and below	326	148		
Aesthetic medicine project	Bachelor degree or above	269	148	3.249	0.662
	Facial plastic surgery	143	75		
	Body plastic surgery	12	6		
	Injection filling class	156	67		
	Skin Laser Class	190	107		
Amount of consumption	Skin care	68	27	5.296	0.071
	Others	26	14		
	4000 RMB and below	304	144		
Channel of knowing the hospital	4001-10000 RMB	94	65	0.719	0.869
	More than 10000 RMB	197	87		
	offline advertising	68	36		
Channel of knowing the hospital	Online advertising	250	131	0.719	0.869
	Relatives and recommend	259	121		
	Other channels	18	8		

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Characteristic	Classification	Frequency between groups (person)		χ^2	P
		Hospital A (n=595)	Hospital B (n=296)		
First time consumption	2018 and before	226	119	2.29	0.318
	In 2019	115	45		
	2020 and beyond	254	132		
Consumption times in the last year	Twice and less	355	171	0.293	0.588
	More frequently than twice	240	125		

4.5.4 Sample representativeness test

Convenience sampling was used in this study, and it was necessary to test whether the sample was representative for the group to avoid the problem of sample representativeness bias associated with non-random sampling. A chi-square test was used to test the Hospital A sample against the population and the Hospital B sample against the population, and the results reveal no significant difference between the sample and the population ($P > 0.05$). The population refers to all patients who have visited the hospital in 2020.

There were 595 patients in the sample of Hospital A, and 37556 patients in the population. In terms of gender, there were 37 males and 558 females in the Hospital A sample, and 2866 males and 34690 females in the population. The chi-square test of the sample and the population show that $\chi^2 = 1.663$, $P = 0.197$, so there is no significant difference for respondents in the gender between the sample and the population in Hospital A ($P > 0.05$). In terms of age, 157 respondents were 25 years old and below, 181 respondents were 26-30 years old, 167 respondents were 31-39 years old, 90 people were 40 years old and above in the Hospital A sample, while there were 9426, 12018, 10516, 5596 people respectively in the population. The chi-square test results show that $\chi^2 = 8.65$, $P = 0.834$, so there is no significant difference for patients in the age between the sample and the population in Hospital A ($P > 0.05$). In terms of aesthetic medicine consumption items, the sample included 143, 12, 156, 190, 68, 26 respondents in facial plastic surgery, body plastic surgery, injection filling, skin laser, skin care, and other types, and there were 21987, 1795, 22436, 29884, 9603, 4038 patients in the population respectively. The chi-square test results show that $\chi^2 = 1.050$, $P = 0.958$, so there is no significant difference for patients in the consumption items between the sample and the population in Hospital A ($P > 0.05$). As for the sum of consumption, 304, 94, and 197 patients spent 4000 RMB or less, 4001-10000 RMB, and 10000 RMB or more in the sample, and

19156, 6579, and 11821 respectively in the population. The chi-square test results show that $\chi^2=1.487$, $P=0.475$, suggesting no significant difference for patients in the amount of consumption between the sample and the population in Hospital A ($P>0.05$). In terms of the way they were informed about the hospital, there were 68, 250, 259, and 18 patients learning about the hospital from offline advertising, online advertising, relatives and recommend, and other channels in the sample respectively, and there were 4994, 15774, 15099, and 1689 patients in the population respectively. The chi-square test results show that $\chi^2=5.988$, $P=0.112$, and there is no significant difference for patients in the way they were informed about the hospital between the sample and the population in Hospital A ($P>0.05$). As for the time of first consumption, 226 patients first visited the hospital in 2018 and before, 105 in 2019, 254 since 2020; and 14234, 8060, 15262 patients in the population respectively. The results of the chi-square test show that $\chi^2=1.851$, $P=0.396$, and there is no significant difference for patients in the time of first consumption between the sample and the population in Hospital A ($P>0.05$). In terms of the times of consumption in the most recent year, there were 355 and 240 people with 2 times or less and more than 2 times in the sample respectively, and 20922 and 16634 people in the population respectively. The chi-square test results show that $\chi^2=3.714$ $P=0.054$, so there is no significant difference for patients in the times of consumption in the most recent year between the sample and the population in Hospital A ($P>0.05$). See Table 4.8 for details.

There were 296 and 32416 patients in the sample and population of Hospital B respectively. In terms of gender, there were 19 males and 277 females in Hospital B sample, 3142 males and 29274 females in the population. The chi-square test of the sample and the population show that $\chi^2=3.601$, $P=0.058$, so there is no significant difference for patients in the gender between the sample and the population in Hospital B ($P>0.05$). In terms of age, 67 patients were 25 years old and below, 104 patients were 26-30 years old, 82 patients were 31-39 years old, 43 patients were 40 years old and above in the Hospital B sample, and there were 6636, 10573, 9576, 5631 patients in the population respectively. The chi-square test results show that $\chi^2=2.944$, $P=0.400$, so there is no significant difference for patients in the age between the sample and the population in Hospital B ($P>0.05$). In terms of aesthetic medicine consumption items, the sample included 75, 6, 67, 107, 27, 14 patients in facial plastic surgery, body plastic surgery, injection filling, skin laser, skin care, and other types respectively; and 17442, 1423, 17798, 23707, 7618, 3205 patients in the population respectively. The chi-square test results show that $\chi^2=2.185$, $P=0.823$, so there is no significant difference for patients in the consumption items between the sample and the

population in Hospital B ($P>0.05$). As for the sum of consumption, 144, 65, and 87 patients spent 4000 RMB or less, 4001-10000 RMB, and 10000 RMB or more in the sample respectively, and 16441, 5685, and 10290 patients in the population respectively. The chi-square test results show that $\chi^2=4.022$, $P=0.134$, so there is no significant difference for patients in the amount of consumption between the sample and the population in Hospital B ($P>0.05$). In terms of the channels patients were informed about the hospital, there were 36, 131, 121, and 8 patients in the sample who learned about the hospital through offline advertisements, online advertisements, and recommendations from relatives and friends, while there were 3793, 14874, 12818 and 931 patients in the population respectively. The chi-square test results show that $\chi^2=0.384$, $P=0.943$, and there is no significant difference for patients in the way they were informed about the hospital between the sample and the population in Hospital B ($P>0.05$). As for the time of first consumption, 119 patients first visited the hospital in 2018 and before, 45 in 2019, 132 since 2020; and 11805, 5521, 15090 patients in the population respectively. The results of the chi-square test show that $\chi^2=1.971$, $P=0.373$, and there is no significant difference for patients in the time of first consumption between the sample and the population in Hospital B ($P>0.05$). In terms of the times of consumption in the most recent year, 171 patients had consumed in the hospital for 2 times or less and 125 people more than 2 times in the sample respectively; and 18068 and 14348 patients in the population respectively. The chi-square test results show that $\chi^2=0.491$, $P=0.483$, so there is no significant difference for patients in the times of consumption in the most recent year between the sample and the population in Hospital B ($P>0.05$). See Table 4.8 for details.

Table 4.8 Test of Key Characteristics Between the Study Sample and the Population

Institution	Characteristic	Classification	Intergroup frequency (person/person-time)		χ^2	P
			A sample of institution	Overall		
hospital A	Gender	Male	37	2866	1.66	0.19
		Female	558	34690	3	7
	Age	≤ 25	157	9426		
		26-30	181	12018	0.86	0.83
		31-39	167	10516	5	4
		≥ 40	90	5596		
Aesthetic medicine project	Facial plastic surgery	143	21987	1.05	0.95	
	Body plastic	12	1795		8	

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Institution	Characteristic	Classification	Intergroup frequency (person/person-time)		χ^2	P
			A sample of institution	Overall		
Hospital B	Amount of consumption	surgery				
		Injection filling	156	22436		
		Skin Laser	190	29884		
		Skin care	68	9603		
		Others	26	4038		
		4000 RMB and below	304	19156		
		4001-10000 RMB	94	6579	1.487	0.475
		More than 10000 RMB	197	11821		
		Offline advertising	68	4994		
		Channels knowing the hospital	Online advertising	250	15774	5.988
		Relatives and recommend	259	15099		
		Other methods	18	1689		
	First time consumption	2018 and before	226	14234		
		In 2019	115	8060	1.851	0.396
		2020 and beyond	254	15262		
	Consumption times in the last year	Two times and less	355	20922	3.714	0.054
		More than two times	240	16634		
	Gender	Male	19	3142	3.601	0.058
		Female	277	29274		
	Age	≤ 25	67	6636		
26-30		104	10573	2.944	0.400	
31-39		82	9576			
≥ 40		43	5631			
Aesthetic medicine project	Facial plastic surgery	75	17442			
	Body plastic surgery	6	1423			
	Injection filling class	67	17798	2.185	0.823	
	Skin Laser Class	107	23707			
	Skin care	27	7618			
	Other classes	14	3205			
Amount of	<4000 RMB	144	16441	4.02	0.13	

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Institution	Characteristic	Classification	Intergroup frequency (person/person-time)		χ^2	P
			A sample of institution	Overall		
	consumption	4001-10000 RMB	65	5685	2	4
		>10000 RMB	87	10290		
		Offline advertising	36	3793		
	Channels knowing the hospital	Online advertising	131	14874	0.384	0.943
		Relatives and recommend	121	12818		
		Other methods	8	931		
	First time consumption	2018 and before	119	11805	1.971	0.373
		In 2019	45	5521		
		2020 and beyond	132	15090		
	Consumption times in the last year	Two times and less	171	18068	0.491	0.483
More than two times		125	14348			

Chapter 5: Results

This chapter is divided into three parts: the first part summarizes the results of the reliability and validity analysis of the first-order variables of the research model; the second part summarizes the results of the reliability and validity analysis of the second-order variables of the research model; and the third part summarizes the results of the structural equation model analysis of the research model. The study found that, firstly, the questionnaire meets the reliability and validity requirements of the first-order factors and second-order variables without removing the question items; secondly, the six hypotheses proposed in the study are validated.

The results of the first-order variable reliability and validity analysis are as follows. 1) Reliability: the CR values of all latent variables are greater than the standard of 0.7, indicating that the measurement model of each latent variable reaches a high level of reliability. 2) Content validity: the questionnaire is developed according to standard procedure to ensure the content validity. 3) Convergent validity: all first-order factor loading are above 0.5 and AVE are greater than 0.5, which meets the requirements of convergent validity. 4) Discriminant validity: factors causing cross-loading were removed in the questionnaire development stage; the square roots of AVE of latent variables are greater than correlation coefficient among all latent variables, and the HTMT values of all first-order latent variables are less than 0.85, which meets the discriminant validity criteria of first-order variables.

Results of the reliability analysis of second-order variables are as follows. 1) Significance of factors within second-order variables: the β coefficients of the first-order factors to second-order factors are statistically significant, while all t-values are above 1.96, suggesting the validity of the formative relation of patient market cognition, dynamic capabilities, service capabilities, patient satisfaction and competitive advantages. 2) Convergent validity of the second-order constructs: for the second-order constructs, to establish convergent validity, the correlations between the first-order factors should be significant. The current research generated two correlation matrices using latent variable scores and found that the correlations between the factors at the same level and the correlations between the factors at different levels for patient market cognition, dynamic capabilities, service capabilities, patient satisfaction and competitive advantages are significant. 3) Discriminant validity among all

independent factors: this study assessed the discriminant validity among all independent factors (second-order variables) using HTMT ratios. All HTMT ratio values are below the 1.00 threshold.

Results of structural equation model are as follows. 1) Explained variance. The total variance explained by the model is sufficient: the model explains 28% of dynamic capabilities, 30% of service capabilities, 58% of competitive advantages, and 67% of patient satisfaction. 2) Hypothesis testing. Results showed that six hypotheses proposed in this study are all supported. Results showed that patient market cognition have significant effects on dynamic capabilities ($\beta=0.528$, $p<0.001$) and service capabilities ($\beta=0.550$, $p<0.001$), lending support to H1 and H2. Results also showed that dynamic capabilities have significant effects on patient satisfaction ($\beta=0.425$, $p<0.001$) and competitive advantages ($\beta=0.425$, $p<0.001$), supporting H3 and H4. The results also showed that service capabilities have significant effects on patient satisfaction ($\beta=0.423$, $p<0.001$) and competitive advantages ($\beta=0.365$, $p<0.001$), supporting H5 and H6. 3) Mediating effects. Results showed that patient market cognition has significant effects on patient satisfaction and competitive advantages through dynamic capabilities and service capabilities. Dynamic capabilities and service capabilities fully mediate patient market cognition and patient satisfaction. However, dynamic capabilities and service capabilities complementarily mediate patient market cognition and competitive advantages, suggesting that patient market cognition can directly influence competitive advantages. Comparatively, patient market cognition has a stronger effect on patient satisfaction than competitive advantages with path coefficients of 0.457 (sum of two indirect effects, $0.528*0.425+0.550*0.423$) and 0.425 (sum of two indirect effects, $0.528*0.425+0.550*0.365$) respectively. This result suggested that patient market cognition influences patient satisfaction indirectly and competitive advantage directly.

5.1 Structural equation model evaluation criteria

The research model of current study is complicated with many paths and high-order variables, so a PLS-based structural equation model method need to be employed to analyze it. The main objective of this study is to examine the hypothesized relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages. The examination of the hypothesized relationship must be based on reliable measurement instruments for the variables. To this end, two objectives shall be achieved: 1) examine the measurement model, and 2) examine the structural model.

Anderson and Gerbing (1988) referred to this as a two-step process. The measurement model has been examined in the measurement development stage; however, it still needs a further validation of confirmatory factor analysis using study sample. According to the procedure of higher-order variable analysis, the measurement model is examined in two steps, first-order variable reliability and validity analysis and higher-order variable reliability and validity analysis, and finally the structural model examination. The evaluation criteria for the first-order variables, higher-order variables, and structural model (Wong, 2013) are shown in Table 5.1.

Table 5.1 Structural Equation Model Evaluation Criteria

Evaluation Indices	Evaluation Content	Test Criteria	
First-order measurement model evaluation	Reliability	Composite Reliability (CR) >0.7	
	Convergent validity	Factor loading (FL)	>0.5 (Hair, 1998)
		Average variance extracted value (AVE)	>0.5
	Discriminant validity	No factor cross-loading	FL < 0.3 on the other factors The AVE is greater than the square of the correlation coefficients between all the latent variables
		Fornell-Larcker criterion	<0.85 (Henseler et al., 2015)
Second-order measurement model evaluation	Relative importance of variables	HTMT the effects from the first- to second-order factors β coefficient: $p < 0.05$, $t > 1.96$	
	Internal convergent validity of 2nd-order variables	correlations among indicators (in our case, factors) of the same construct should be significant $p < 0.05$	
	Discriminant validity of 1st-order variables within constructs	the correlations among indicators should be stronger within constructs than across them Comparison between the correlation coefficients	
	Discriminant validity among variables	HTMT <1.0	
Structural model evaluation	R ² of endogenous latent variables	R ² values provide the percentage of explained variance of endogenous latent variables (Barclay et al., 1995; Suggested thresholds are 0.19 for weak, 0.33 for moderate, and 0.67 for substantial explanation (Chin, 1998).	

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Evaluation Indices	Evaluation Content	Test Criteria
	Chin & Gopal, 1995)	
Bootstrap coefficient test after using latent variable scores	Construct t-statistics using Bootstrap self-sampling method to test the significance of coefficients	β Coefficient $p < 0.05$, $t > 1.96$.
Total effects	The sum of the direct and indirect effects among latent variables is useful in interpreting variable relationships.	They should be sizable.
Effect size using (Cohen, 1988) f^2	$f^2 = (R^2_{\text{included}} - R^2_{\text{excluded}}) / (1 - R^2_{\text{included}})$	Suggested thresholds are 0.02 for small, 0.15 for medium, and 0.35 for large effects (Cohen, 1988).

5.2 Reliability and validity tests of first-order variables

5.2.1 Reliability tests

As shown in Table 5.2, the CR values of all latent variables are greater than the 0.7 threshold, indicating that the measurement models of each latent variable reached a high level of reliability.

Table 5.2 CR Values for Each Latent Variable

Latent variable	Composite reliability (CR)
Knowledge	0.88
Market information	0.76
Choice intention	0.80
Integration	0.91
Agility	0.95
Innovation	0.94
Facility excellence	0.90
Convenience	0.87
Clinical Ability	0.96
Responsiveness	0.92
Doctor-patient communication	0.96
Time	0.92
Price	0.91
Clinical outcome	0.93
Value Congruence	0.95

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Rareness	0.94
Imitability	0.96

5.2.2 Validity tests

As the reader can see during measurement validation and modification using a pilot sample, this study designed a measurement questionnaire formed on the basis of literature, interviews and expert consultations, as a way to guarantee the content validity of the formal questionnaire. Therefore, the convergent validity and discriminant validity of the questionnaire are the focus at this stage.

5.2.2.1 Convergent validity

In the confirmatory factor analysis stage, the item loadings are greater than the 0.5 threshold, this result indicates there is no need to delete the question items. As shown in Table 5.3, all first-order factor loadings are greater than 0.5 and AVE values are greater than 0.5, which meets the convergent validity requirements. All factor loadings of the model are shown in Figure 5.1.

Table 5.3 Factor Loadings and AVEs

Patient market cognition			
AVE	0.703	0.510	0.577
Knowldg1_p	0.830		
Knowldg2_p	0.843		
Knowldg3_p	0.843		
MaktInfor2_p		0.728	
MaktInfor3_p		0.713	
MaktInfor5_p		0.701	
Choice1_p			0.780
Choice2_p			0.711
Choice3_p			0.785
Dynamic capabilities			
AVE	0.762	0.770	0.806
DyInte1_p	0.852		
DyInte2_p	0.875		
DyInte3_p	0.891		
DyAgility4_p		0.866	
DyAgility5_p		0.883	
DyAgility6_p		0.870	
DyAgility7_p		0.888	
DyAgility8_p		0.879	
DyInno2_p			0.923
DyInno3_p			0.891
DyInno4_p			0.887

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DyInno5_p					0.889
Service capabilities					
AVE	0.684	0.685	0.774	0.790	0.730
Facility1_p	0.826				
Facility 2_p	0.838				
Facility 3_p	0.804				
Facility 4_p	0.841				
Convenc1_p		0.785			
Convenc2_p		0.821			
Convenc4_p		0.874			
CliniAbi 1_p			0.859		
CliniAbi 2_p			0.882		
CliniAbi 3_p			0.894		
CliniAbi 4_p			0.882		
CliniAbi 5_p			0.884		
CliniAbi 6_p			0.878		
Respon3_p				0.922	
Respon 4_p				0.873	
Respon 5_p				0.872	
Communi1_p					0.845
Communi2_p					0.858
Communi3_p					0.784
Communi4_p					0.860
Communi5_p					0.840
Communi6_p					0.885
Communi7_p					0.884
Communi8_p					0.875
Patient satisfaction					
AVE	0.745		0.826		0.738
TimeSat1_p	0.822				
TimeSat2_p	0.866				
TimeSat3_p	0.897				
TimeSat4_p	0.865				
PricSat2_p			0.877		
PricSat3_p			0.939		
Clinical3_p					0.852
Clinical4_p					0.875
Clinical5_p					0.843
Clinical6_p					0.860
Clinical7_p					0.864
Competitive advantages					
AVE	0.788		0.795		0.758
VCongru 5_p	0.882				
VCongru 6_p	0.922				
VCongru 7_p	0.892				
VCongru 8_p	0.921				
VCongru 9_p	0.908				
Rare1_p			0.904		
Rare2_p			0.921		

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Rare3_p	0.926	
Rare4_p	0.858	
Rare5_p	0.888	
Rare6_p	0.873	
Inimita2_p		0.873
Inimita 3_p		0.874
Inimita 4_p		0.796
Inimita 5_p		0.867
Inimita 6_p		0.899
Inimita 7_p		0.851
Inimita 8_p		0.900
Inimita 9_p		0.902

Notes: Knowldg= knowledge, MaktInfor = market information, Choice= choice intention, DyInte=integration, DyAgilityp=agility, DyInno=innovation, Facility=facility excellence, Convenc=convenience, CliniAbi=clinical ability, Respon=responsiveness, Communi=doctor-patient communication, TimeSat =time satisfaction, PricSat=price satisfaction, Clinical =clinical outcome satisfaction, VCongru =value congruence, Rare =rareness, inimita =Inimitability

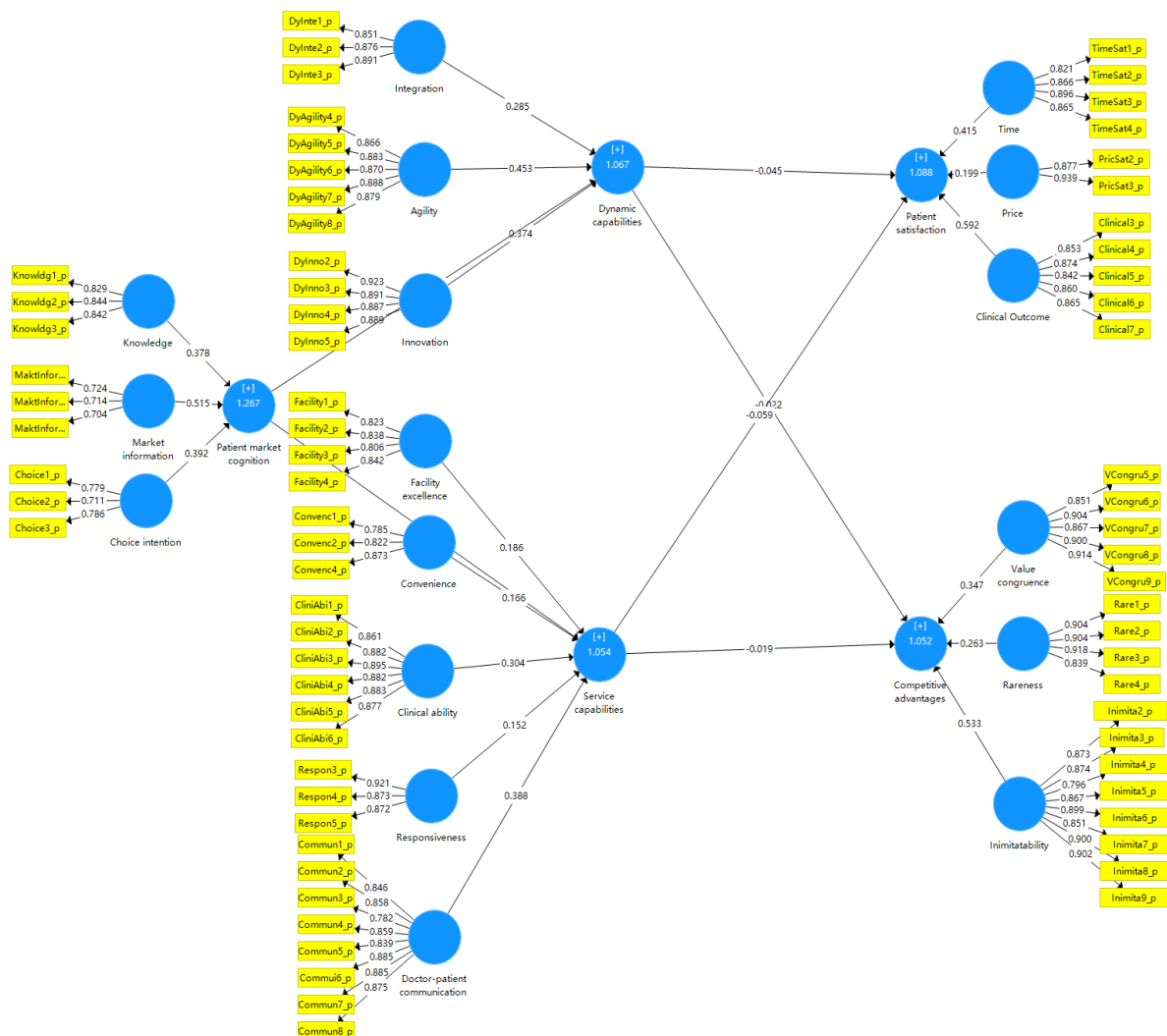


Figure 5.1 Factor Loadings

Notes: Knowldg=knowledge, MaktInfor=market information, Choice=choice intention, DyInte=integration, DyAgility=agility, DyInno=innovation, Facility=facility excellence, Convenc=convenience, CliniAbi=clinical ability, Respon=responsiveness, Communi=doctor-patient communication, TimeSat =time satisfaction, PricSat

5.2.2.2 Discriminant validity

For variance-based structural equation model (e.g., partial least squares), the Fornell-Larcker criterion and cross-loading checking are the primary methods for evaluating discriminant validity (Fornell & Larcker, 1981). During exploratory factor analysis phase, multiple items that caused cross-loadings have been removed, so the cross-loading problem can be considered to have been solved. The data on the right-angle line in Table 5.4 represent the square roots of AVE, and the results showed that all square roots of AVEs are greater than the correlation coefficients between all latent variables. The HTMT values of all first-order latent variables are less than 0.85. With the above information, the discriminant validity criteria of first-order variables are satisfied.

5.3 Reliability and validity tests of second-order variables

5.3.1 Relative importance of indicators

To validate the second-order constructs of patient market cognition, dynamic capabilities, service capabilities, patient satisfaction and competitive advantages, this study followed the guidelines discussed by Loch et al. (2003) and Marakas et al. (2007). Firstly, we assessed the importance of the factors, which includes only the effect of the factors from first to second order. As can be seen in the Table 5.5, all β coefficients are statistically significant (all p-values are below 0.05), while all t-values are greater than 1.96. All these results indicate the validity of the formative factors of patient market cognition, dynamic capabilities, service capabilities, patient satisfaction and competitive advantages and per se.

Table 5.4 Discrimination Validity

Fronell-Larcker Criterion

	I	VC	PS	DIC	DAC	DIGC	SR	OS	SC	TS	CMI	CCI	CK	R	CA	DTA	DPC	SF
I	0.871																	
VC	0.754	0.888																
PS	0.631	0.590	0.909															
DIC	0.691	0.657	0.674	0.898														
DAC	0.668	0.676	0.675	0.817	0.877													
DIGC	0.631	0.644	0.673	0.777	0.875	0.873												
SR	0.595	0.573	0.627	0.706	0.760	0.776	0.889											
OS	0.657	0.750	0.787	0.713	0.763	0.768	0.694	0.859										
SC	0.591	0.600	0.540	0.674	0.702	0.688	0.734	0.629	0.828									
TS	0.611	0.633	0.746	0.686	0.673	0.672	0.630	0.808	0.642	0.863								
CMI	0.584	0.500	0.465	0.601	0.512	0.537	0.543	0.473	0.642	0.504	0.714							
CCI	0.471	0.405	0.404	0.500	0.450	0.470	0.412	0.378	0.493	0.412	0.727	0.760						
CK	0.389	0.292	0.346	0.406	0.334	0.349	0.350	0.318	0.426	0.394	0.666	0.514	0.839					
R	0.808	0.740	0.647	0.656	0.595	0.610	0.576	0.614	0.552	0.590	0.540	0.471	0.367	0.892				
CA	0.982	0.910	0.677	0.732	0.711	0.685	0.636	0.733	0.636	0.666	0.598	0.492	0.388	0.923	0.809			
DTA	0.584	0.632	0.591	0.681	0.767	0.739	0.770	0.708	0.767	0.591	0.554	0.456	0.300	0.534	0.637	0.880		
DPC	0.633	0.696	0.676	0.706	0.746	0.755	0.674	0.786	0.595	0.690	0.471	0.430	0.314	0.620	0.705	0.682	0.854	
SF	0.503	0.576	0.418	0.588	0.655	0.687	0.639	0.593	0.783	0.501	0.615	0.503	0.337	0.487	0.566	0.728	0.590	0.827

HTMT

	I	VC	PS	DIC	DAC	DIGC	SR	OS	SC	TS	MI	CI	CK	R	CA	CA	DPC	FE
I																		
VC	0.753																	
PS	0.632	0.590																
DIC	0.691	0.657	0.674															
DAC	0.669	0.677	0.675	0.816														
DIGC	0.632	0.645	0.673	0.776	0.875													
SR	0.595	0.573	0.627	0.706	0.759	0.775												
OS	0.657	0.75	0.787	0.713	0.764	0.768	0.693											

Relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages

SC	0.591	0.599	0.539	0.673	0.701	0.687	0.734	0.627									
TS	0.611	0.632	0.747	0.686	0.672	0.672	0.63	0.807	0.642								
MI	0.583	0.499	0.464	0.600	0.511	0.536	0.542	0.472	0.641	0.503							
CI	0.471	0.404	0.403	0.499	0.449	0.468	0.411	0.377	0.493	0.411	0.725						
CK	0.391	0.293	0.347	0.406	0.334	0.350	0.351	0.318	0.428	0.395	0.666	0.513					
R	0.810	0.740	0.650	0.657	0.595	0.610	0.577	0.614	0.552	0.591	0.539	0.471	0.368				
CA	0.98	0.914	0.679	0.732	0.712	0.687	0.636	0.734	0.636	0.667	0.597	0.491	0.388	0.925			
CA	0.583	0.631	0.590	0.681	0.767	0.738	0.769	0.708	0.764	0.590	0.552	0.456	0.300	0.534	0.638		
DPC	0.634	0.696	0.677	0.706	0.745	0.755	0.673	0.786	0.593	0.690	0.470	0.429	0.315	0.621	0.707	0.681	
FE	0.503	0.577	0.418	0.587	0.655	0.688	0.639	0.593	0.78	0.500	0.613	0.502	0.337	0.487	0.567	0.729	0.589

Notes: I=inimitability, VC=value congruence, PS=price satisfaction, DIC= innovation capability, DIGC= integration capability, DAC= agility capability, VS=value congruence, SR=service responsiveness, CS=clinical satisfaction, SC=service convenience, TS=time satisfaction, MI=patient market information, CI=choice intention, K=knowledge, R=rareness, CA=competitive advantages, CA=clinical ability, DPC=doctor-patient communication, FE=facility excellence

Table 5.5 Relative Importance of Indicators

Second order variable	Relationship	Type	Initial coefficient	Mean value coefficient	Standard deviation	t-value	p-value
patient market cognition	knowledge→patient market cognition	1st- to 2nd-order	0.364	0.363	0.017	21.952	<0.001
	market information→patient market cognition	1st- to 2nd-order	0.526	0.527	0.022	23.631	<0.001
	choice intention→patient market cognition	1st- to 2nd-order	0.393	0.393	0.019	20.646	<0.001
dynamic capabilities	integration→dynamic capabilities	1st- to 2nd-order	0.279	0.279	0.009	32.344	<0.001
	agility→dynamic capabilities	1st- to 2nd-order	0.458	0.458	0.010	47.778	<0.001
	innovation→dynamic capabilities	1st- to 2nd-order	0.374	0.374	0.005	72.332	<0.001
	facility excellence→service capabilities	1st- to 2nd-order	0.168	0.169	0.007	25.076	<0.001
Service Capabilities	convenience→service capabilities	1st- to 2nd-order	0.154	0.155	0.007	23.681	<0.001
	clinical ability→service capabilities	1st- to 2nd-order	0.299	0.299	0.006	48.770	<0.001
	responsiveness→service capabilities	1st- to 2nd-order	0.147	0.147	0.005	31.111	<0.001
patient	doctor-patient communication →service capabilities	1st- to 2nd-order	0.424	0.424	0.009	49.625	<0.001
	time→patient satisfaction	1st- to 2nd-order	0.425	0.425	0.007	58.500	<0.001

Relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages

Second order variable	Relationship	Type	Initial coefficient	Mean value coefficient	Standard deviation	t-value	p-value
satisfaction	price→patient satisfaction	1st- to 2nd-order	0.187	0.187	0.007	28.099	<0.001
	clinical outcome→patient satisfaction	1st- to 2nd-order	0.501	0.500	0.007	73.082	<0.001
competitive advantages	value congruence→competitive advantages	1st- to 2nd-order	0.333	0.333	0.004	77.700	<0.001
	rareness→competitive advantages	1st- to 2nd-order	0.258	0.258	0.004	64.957	<0.001
	inimitability→competitive advantages	1st- to 2nd-order	0.551	0.551	0.007	79.344	<0.001

5.3.2 Internal convergent validity of second-order variables

For the second-order variables, to establish convergent validity, this study generated two correlation matrices using latent variable scores, as seen in Table 5.6, and the correlations between the first-order factors are significant.

Table 5.6 Correlation Between the First-order Factors

Patient market cognition		knowledge	market information	choice intention		
knowledge		1				
market information		0.660**	1			
choice intention		0.514**	0.727**	1		
Dynamic capabilities		integration	agility	innovation		
integration		1				
agility		0.875**	1			
innovation		0.777**	0.760**	1		
Service capabilities		facility excellence	convenience	clinical ability	respon-s iveness	doctor-patient communication
facility excellence		1				
convenience		0.783**	1			
clinical Ability		0.728**	0.767**	1		
responsiveness		0.639**	0.734**	0.770**	1	
doctor-patient communication		0.590**	0.595**	0.682**	0.674**	1
Patient Satisfaction		time	price	clinical outcome		
time		1				
price		0.746**	1			
clinical outcome		0.808**	0.787**	1		
Competitive advantages		value congruence	rareness	Imitability		
value congruence		1				
rareness		0.740**	1			
inimitability		0.754**	0.808**	1		

Note: **The correlation is significant at the 0.01 level(two-tailed)

5.3.3 Discriminant validity of independent variables

This study assessed the discriminant validity between all independent factors (second-order variables) using the HTMT ratio. To pass this test, the HTMT ratios need be less than 1.00.

Table 5.7 shows that all the HTMT values are less than 1.00.

Table 5.7 Discrimination Validity of Independent Variables——HTMT

	dynamic capabilities	service capabilities	patient satisfaction	patient market cognition	competitive advantages
dynamic capabilities					
service capabilities	0.884				
patient satisfaction	0.820	0.817			

Relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages

	dynamic capabilities	service capabilities	patient satisfaction	patient market cognition	competitive advantages
patient market cognition	0.573	0.596	0.487		
competitive advantages	0.762	0.751	0.751	0.525	

5.3.4 Descriptive results of variables

The mean value and standard deviation of each variable were calculated to show patient's evaluation of the aesthetic hospitals (see table 5.8).

In terms of five high-order constructs, patients evaluated service capabilities the highest with a score of 6.14 ± 0.82 (standard deviation is 0.82). Among the five sub-constructs under service capabilities, patients perceived facility excellence the best (6.26 ± 0.85), and convenience the worst (6.08 ± 0.97), indicating that the connection and transition between processes needs to be smoother.

Patients evaluated market cognition the lowest among five high-order constructs with a score of 5.05 ± 1.56 . Among the three sub-constructs that constitute patient market cognition, market information has the highest score of 5.65 ± 1.25 while choice intention has the lowest score of 5.41 ± 1.13 , suggesting that consumers (or patients) can access multiple sources of market information actively or passively and their intention to choose a single institution to receive services is not particularly strong.

The score of dynamic capabilities is 6.06 ± 0.92 , which is in the middle of five high-order constructs. The scores of integration, agility and innovation are 6.02 ± 0.99 , 6.14 ± 0.93 and 5.96 ± 1.04 respectively. Among them, agility capability had the highest score and the lowest standard deviation, and dynamic innovation had the lowest score and the highest standard deviation, revealing that the medical professionals can quickly perceive changes in symptoms during treatment for patients and hospitals still have room for improvement in technology, product and service innovation.

The scores of time, price and clinical outcome satisfaction are 5.95 ± 1.17 , 5.83 ± 1.23 and 6.17 ± 0.97 respectively, and the score of patient satisfaction is 6.03 ± 0.99 . Among them, patients rated clinical outcome as the highest and price as the lowest in the evaluation of satisfaction, indicating that compared with the price, the quality and safety of aesthetic treatment can better meet the needs of patients.

The scores of value congruence, rareness and inimitability are 6.18 ± 1.17 , 5.81 ± 1.11 and 5.98 ± 1.06 respectively, and the score of competitive advantages is 6.01 ± 0.95 . Among the

three sub-constructs, patients rated value congruence as the highest and rareness as the lowest in the evaluation of competitive advantages, indicating that although the hospital's reputation and services match the patient's value requirements, the services and technologies are not uncommon.

Table 5.8 Descriptive Results of Variables

Variable	Mean	Standard deviation
Patient market cognition	5.05	1.56
Knowledge	5.62	1.23
Market information	5.65	1.25
Choice intention	5.41	1.13
Dynamic capabilities	6.06	0.92
Integration	6.02	0.99
Agility	6.14	0.93
Innovation	5.96	1.04
Service capabilities	6.14	0.82
Facility excellence	6.26	0.85
Convenience	6.08	0.97
Clinical ability	6.19	0.94
Responsiveness	6.13	1.00
Doctor-patient communication	6.10	0.97
Patient satisfaction	6.03	0.99
Time	5.95	1.17
Price	5.83	1.23
Clinical outcome	6.17	0.97
Competitive advantages	6.01	0.95
Value congruence	6.18	0.95
Rareness	5.87	1.11
Inimitability	5.98	1.06

5.3.5 Multicollinearity test and common method deviation test

To avoid the influence of multicollinearity, we calculated the variance inflation factor (VIF) for all variables, and the results showed that all VIF values are less than the 3.3 threshold, so it can be assumed that the findings of this research are not affected by multicollinearity. Since this study used questionnaire, although we collected data of patient samples from two hospitals with different geographical locations, there is a possibility of common method bias because all the constructs in the questionnaire were measured by the same respondents. This work follows Kock's suggested approach of $VIF \leq 3.3$ for all factors, where the model can be

considered less affected by common method bias (Kock, 2015), and this study satisfied that requirement.

5.4 Structural equation model analysis results

5.4.1 Methods for assessing formative structural models

Henseler et al. (2009) said that “publications addressing CBSEM (e.g., Rigdon, 1998) often refer to structural models and measurement models or (observed) indicator variables; whereas those focusing on PLS path modelling (e.g., Lohmöller, 1989) use the terms inner model and outer model or manifest variables for similar elements of the causal model.” Therefore, like CBSEM (covariance-based structural equation modelling), the evaluation of both the measurement and structural aspects of PLS path models is possible. However, the main difference between CBSEM and PLS-SEM is that PLS does not use fit indices (Braunscheidel & Suresh, 2009).

After measurement model tests (reliability and validity examination), the structural model was examined in this study using SmartPLS 3.0 software, and the results of the structural equations and the path coefficients are shown in Figure 5.2. The evaluation of formative structural model mainly adopted three criteria: 1) the R^2 of the endogenous variables, 2) the estimates of the path coefficients, and 3) the effect size (f^2) of the hypothesized relationships (see Table 5.1 for details and references).

R^2 provides an indicator of the predictive power of structural models by examining the explain variance of the dependent endogenous variable (Barclay et al., 1995; Chin & Gopal, 1995). Chin (1998) states R^2 values as weak at 0.19, moderate at 0.33, and substantial at 0.67. However, R^2 values are affected by the number of antecedent variables modeled in a predictive relationship, therefore lower values can be expected when only one or two antecedent variables are modeled (Henseler et al., 2009). Braunscheidel and Suresh (2009) conducted further research on R^2 and found that R^2 values of 0.165 is acceptable at early stages and Rai et al. (2006) describes R^2 values of 0.186 and 0.197 have been adequate at latter stages.

The bootstrapping procedure was employed to develop estimates of the statistical significance of the theorized model parameters. This study set 3000 bootstrap subsamples to conduct the procedure.

5.4.2 Structural model analysis results

The structural model results are displayed in Figure 5.2 and a summary of the results is provided in Table 5.9. The values showed in Figure 5.2 include the path coefficients and corresponding t-values. To reiterate, good model fit is established with acceptably high R^2 values and significant path coefficients (Braunscheidel & Suresh, 2009). Overall, the current model demonstrates good fit when considering these criteria. Four dependent variables (latent constructs) demonstrate an R^2 values above 0.197 which Rai, Patnayakuni, and Seth (2006) suggests moderate explanatory power. In the current study, the total variance explained by the model (shown in the center of the endogenous variables) is adequate: the model can explain 27.9% variance of dynamic capabilities (the dependent endogenous variable), 30.3% variance of service capabilities, 66.6% variance of patient satisfaction, and 57.8% variance of competitive advantages.

All the six hypothesized path coefficients provide strong statistical evidence of positive relationships among the variables under study. H1, H2, H3, H4, H5 and H6 are all supported by statistically significant path coefficients, significant f^2 values, and significant total effect coefficients on the dependent variable patient satisfaction and competitive advantages. The significant path coefficients supported the hypothesized linkages among the variables. In the analysis results of section 5.3, it can be found that the external model (2nd-order construct) of the structural model is valid. In summary, the evidence showed that the overall model fit is satisfied.

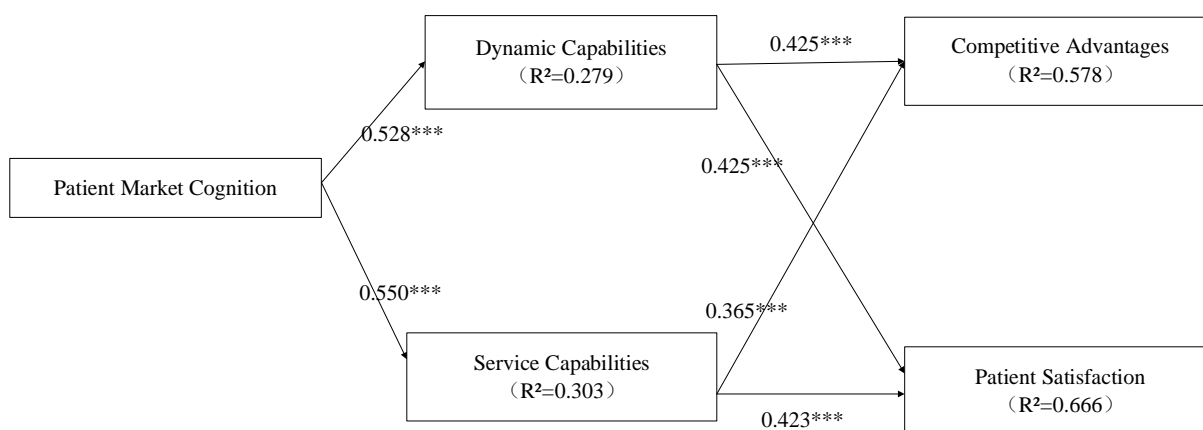


Figure 5.2 Test Results of the Structural Equation Model

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The proposed model has six statistically significant hypotheses at the $p < 0.01$ level: H1, H2, H3, H4, H5 and H6. An overall analysis of the R^2 values, path coefficients, total effects and the f^2 values for effect size suggests good model fit. See table 5.9. These tests provide not

only statistical validation of the model and proposed hypotheses, but are also capable of lending valuable insights for researchers and practitioners. These insights are now briefly discussed as the statistical results are interpreted for each hypothesis. For further discussion, see section 6.1.

Table 5.9 Hypotheses, and Path Coefficient, and Test Results

Hypothesized Relationship	Direct Path Coef.	Direct Path T-stat	Standard Deviation	P-value	f ² value	Supported
H1: PMC→DC	0.528	19.847	0.027	<0.001	0.387	Verified
H2: PMC→SC	0.550	21.476	0.026	<0.001	0.434	Verified
H3: DC→CA	0.425	6.310	0.067	<0.001	0.115	Verified
H4: DC→PS	0.425	7.413	0.057	<0.001	0.146	Verified
H5: SC→CA	0.365	5.737	0.064	<0.001	0.086	Verified
H6: DC→PS	0.423	7.418	0.057	<0.001	0.147	Verified
Total Effects PMC→PS	0.457	20.004	0.023	<0.001	Null	Verified
Effects PMC→CA	0.425	16.235	0.026	<0.001	Null	Verified

Note: PMC = patient market cognition; DC = dynamic capabilities; PS = patient satisfaction; SC = service capabilities; CA = competitive advantages.

The brief discussion of structural model analysis begins with Hypothesis 1 and Hypothesis 2.

H1: Patient market cognition has a positive impact on the dynamic capabilities of aesthetic hospitals.

H2: Patient market cognition has a positive impact on the service capabilities of aesthetic hospitals.

The current study demonstrates that patient market cognition has significant effects on both dynamic capabilities and service capabilities, with path coefficients of 0.528 and 0.550, respectively.

The statistical analysis displayed in table 5.9 provides support for Hypothesis 1 (path coefficient 0.528, R² 0.279, f² 0.387), indicating that patient market cognition plays a meaningful role in directly affecting dynamic capabilities. The path coefficient between patient market cognition and dynamic capabilities is found to be highly significant and positive ($\gamma=0.528$, $t=19.847$), suggesting that patient market cognition has a direct positive impact on dynamic capabilities. The significant factor loadings provide evidence that patient market cognition consists of knowledge, market information and choice intention. See table 2.4. This signifies that when patient market cognition is high, the cognitive level and understanding of patients holding towards aesthetic market can principally be described as

knowledgeable and informative, tending to choose fixed institutions to receive services (after information screening). Hypothesis 1 finds that this will affect the patient's perception of the hospital's dynamic capabilities. The significant path coefficient on dynamic capabilities signifies two folds implications. Firstly, when a patient has rich aesthetic knowledge and information, the more the patient can perceive the hospital's ability to dynamically meet his or her needs. Secondly, when potential customers have more and more knowledge and information, the organization will have higher dynamic capabilities to meet customer needs. This implies for example, when patient market cognition is high, hospital leadership will emphasize dynamic integration, response, and innovation capability.

The statistical analysis displayed in table 5.9 provide support for Hypothesis 2 (path coefficient 0.550, R^2 0.303, f^2 0.434), indicating that patient market cognition plays a meaningful role in directly affecting service capabilities. The path coefficient between patient market cognition and service capabilities is found to be highly significant and positive ($\gamma=0.550$, $t=21.476$), suggesting that patient market cognition had a direct positive impact on service capabilities. As discussed with Hypothesis 1, the significant factor loadings provide evidence that patient market cognition consists of knowledge, market information and choice intention. See table 2.4. This signifies that when patient market cognition is high, the cognitive level and understanding of patients holding towards aesthetic market can principally be described as knowledgeable and informative, tending to choose fixed institutions to receive services (after information screening). Hypothesis 2 finds that this would influence the patient's perception of the hospital's service capabilities.

The significant factor loadings on service capabilities provide evidence signifying that when a hospital fosters these capabilities, they will be characterized by facility excellence, convenience, clinical ability, responsiveness, doctor-patient communication. See table 2.4. This suggests for example, that when patient market cognition is high, hospital leadership will emphasize facility excellence, convenience, clinical ability, responsiveness, doctor-patient communication.

Next is a discussion of the implications related to Hypothesis 3 and 4.

H3: Dynamic capabilities of aesthetic hospitals have a positive impact on their competitive advantage.

H4: Dynamic capabilities of aesthetic hospitals have a positive impact on patient satisfaction.

The current study demonstrates that dynamic capabilities of aesthetic hospitals have a positive effect on competitive advantages and patient satisfaction, with path coefficients of

0.425 and 0.425 respectively.

The statistical analysis displayed in table 5.9 provide support for Hypothesis 3 (path coefficient 0.425, f^2 0.115), indicating that dynamic capabilities play a meaningful role in directly affecting competitive advantages. The path coefficient between dynamic capabilities and competitive advantages is found to be highly significant and positive ($\gamma=0.425$, $t=6.310$), indicating that dynamic capabilities had a direct positive impact on competitive advantages. The significant factor loadings provide evidence that competitive advantages consist of value congruence, rareness, and imitability. See table 2.4. This signifies that when dynamic capabilities are high, the patient's judgment on the position of the aesthetic hospital in the market can principally be described as value congruence, rareness, and imitability.

The statistical analysis displayed in table 5.9 provide support for Hypothesis 4 (path coefficient 0.425, f^2 0.146), indicating that dynamic capabilities play a meaningful role in directly affecting patient satisfaction. The path coefficient between dynamic capabilities and patient satisfaction is found to be highly significant and positive ($\gamma=0.425$, $t=7.413$), indicating that dynamic capabilities had a direct positive impact on patient satisfaction. As discussed with Hypothesis 1, the significant factor loadings provide evidence that dynamic capabilities consist of integration, agility and innovation capabilities. See table 2.4. Hypothesis 4 finds that dynamic capabilities influence the patient's satisfaction with the service.

The significant factor loadings on patient satisfaction provide evidence signifying that when a patient evaluates the experience and satisfaction of the aesthetic service, it would be characterized by time, price and clinical outcome satisfaction. See table 2.4. This suggests for example, that when hospital dynamic capabilities are high, patients will be satisfied with time, price and clinical outcome performance of the hospital.

Next is a discussion of the implications related to Hypothesis 5 and 6.

H5: Service capabilities of aesthetic hospitals have a positive impact on their competitive advantages.

H6: Service capabilities of aesthetic hospitals have a positive impact on patient satisfaction.

The current study shows that service capabilities of aesthetic hospitals have a direct positive impact on hospital competitive advantages and patient satisfaction, with path coefficients of 0.365 and 0.423 respectively.

The statistical analysis displayed in table 5.9 provide support for Hypothesis 5 (path coefficient 0.365, f^2 0.086), indicating that service capabilities play a meaningful role in

directly affecting competitive advantages. The path coefficient between service capabilities and competitive advantages is found to be highly significant and positive ($\gamma=0.365$, $t=5.737$) indicating that service capabilities have a direct positive impact on competitive advantages. The significant factor loadings provide evidence that service advantages consist of facility excellence, convenience, clinical ability, responsiveness, doctor-patient communication. See table 2.4. This signifies that when service capabilities are high, the patient's judgment on the position of the aesthetic hospital in the market can principally be described as value congruence, rareness, and imitability.

The statistical analysis displayed in table 5.9 provide support for Hypothesis 6 (path coefficient 0.423, f^2 0.147), indicating that service capabilities played a meaningful role in directly affecting patient satisfaction. The path coefficient between service capabilities and patient satisfaction is found to be highly significant and positive ($\gamma=0.423$, $t=7.418$), indicating that service capabilities have a direct positive impact on patient satisfaction. As discussed with Hypothesis 2, the significant factor loadings provide evidence that service capabilities consist of facility excellence, convenience, clinical ability, responsiveness, doctor-patient communication. See table 2.4. Hypothesis 6 finds that service capabilities would influence the patient's satisfaction of service.

The significant factor loadings on patient satisfaction provide evidence signifying that when a patient evaluates the experience and satisfaction of the aesthetic service, it would be characterized by time satisfaction, price satisfaction and clinical satisfaction. See table 2.4. This suggests for example, that when hospital service capabilities are high, patients will be satisfied with time, price and clinical performance of the hospital.

The above discussions are about specific direct effects. Next is a discussion of the implications related to total effects of patient market cognition to competitive advantages and patient market cognition to patient satisfaction.

The current study demonstrates that patient market cognition has a positive effect on competitive advantages and patient satisfaction, with path coefficients of 0.457 and 0.425. The statistical analysis displayed in table 5.9 provide support for significant total effects, indicating that patient market cognition plays a meaningful role in indirectly affecting competitive advantages and patient satisfaction. The path coefficient between patient market cognition and competitive advantages and the path coefficient between patient market cognition and patient satisfaction are found to be highly significant and positive ($\gamma=0.457$, $t=20.004$; $\gamma=0.425$, $t=16.235$), implying that: when patient market cognition is high, the patient's judgment on the position of the aesthetic hospital in the market can principally be

described as value congruence, rareness, and imitability; when patient market cognition is high, patients will be satisfied with time, price and clinical performance of the hospital.

5.4.3 Mediating effect

Although the mediating effects analysis framework proposed by Baron and Kenny in 1986 is considered as the “standard” framework, there have been more and more challenges in recent years (Zhao et al., 2010). Based on previous tests of mediating effects (Zhao et al. 2010), developed a new procedure for testing mediating effects that only indirect mediating effects need to be considered, as shown in Figure 5.3. Therefore, this study followed the bootstrap analysis, the latest method proposed by Zhao et al. (2010) for testing mediating effects, to provide more accurate confidence interval estimates by finding the percentile of bias correction through simulation studies, setting 5000 bootstrap subsamples in SmartPLS 3.0 software.

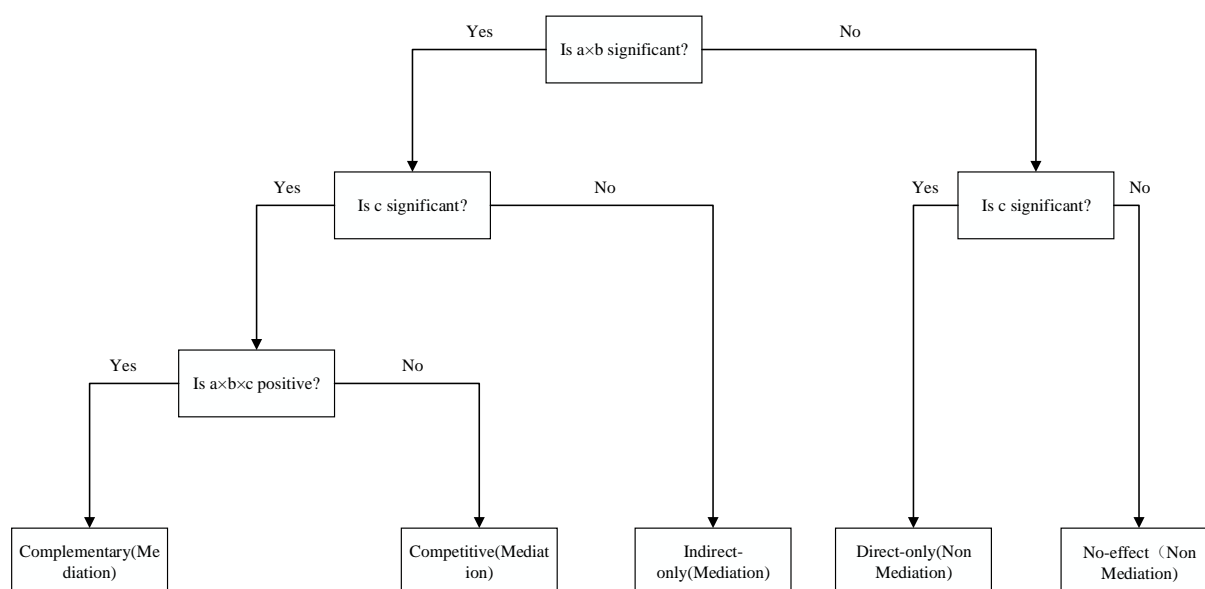


Figure 5.3 Types of Mediating Effects

Source: Zhao et al. (2010)

This study analyzed the mediating effects of dynamic capabilities and service capabilities according to method described in Zhao et al. (2010) To examine the mediation role of service capabilities and dynamic capabilities, we tested the direct relationship between patient market cognition and those two capabilities. As shown in Table 5.10, the impacts of patient market cognition on patient satisfaction are fully mediated by dynamic capabilities or service capabilities. Because the direct effects of patient market cognition on competitive advantages are significant, the relationship between patient market cognition and competitive advantages is complementary mediated by dynamic capabilities or service capabilities. The specific

results are shown in Table 5.10.

Table 5.10 Test Results of Mediating Effects

Relationships	Initial coefficient	Mean value coefficient	Standard deviation	t-value	p-value	Mediating Type
PMC→DC→PS	0.224	0.224	0.032	7.006	<0.001	Full mediation
PMC→SC→PS	0.233	0.233	0.034	6.915	<0.001	Full mediation
PMC→PS	0.048	0.049	0.027	1.769	0.077	
PMC→DC→CA	0.224	0.224	0.04	5.632	<0.001	Complementary mediation
PMC→SC→CA	0.201	0.201	0.037	5.500	<0.001	Complementary mediation
PMC→CA	0.146	0.145	0.032	4.559	<0.001	

Note: PMC = patient market cognition; DC = dynamic capabilities; PS = patient satisfaction; SC = service capabilities; CA = competitive advantages.

5.4.4 Summary

This section analyzes the important antecedents and their influencing mechanisms that affect patient satisfaction and competitive advantages of aesthetic hospitals, and then provides an in-depth understanding of what factors can promote or hinder patient satisfaction and competitive advantages and explores the role of dynamic capabilities and service capabilities on patient satisfaction and competitive advantages. The R^2 value is 0.279 for dynamic capabilities, 0.303 for service capabilities, 0.666 for patient satisfaction, and 0.578 for competitive advantages, suggesting that the model can adequately explain the research model. The main findings of this study are as follows:

Patient market cognition (including patient knowledge, market information and choice intention) can significantly and positively affect dynamic capabilities and service capabilities and through these two mediating variables significantly and positively affect patient satisfaction and competitive advantages. Dynamic capabilities and service capabilities fully mediate patient market cognition and patient satisfaction.

However, dynamic capabilities and service capabilities complementarily mediate patient market cognition and competitive advantages, indicating that patient market cognition can directly influence competitive advantages. The effects of patient market cognition on patient satisfaction are stronger than competitive advantages with path coefficients of 0.457 (sum of two indirect effects, i.e., $0.528*0.425+0.550*0.423$) and 0.425 (sum of two indirect effects, $0.528*0.425+0.550*0.365$) respectively. These results suggest that increasing patient's

knowledge, market information and choice intention will increase patient satisfaction and competitive advantages. These results deepen the understanding of the factors influencing patient satisfaction and competitive advantages of aesthetic hospitals.

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Chapter 6: Discussion

6.1 Interpretations of study results

6.1.1 Measurement and evaluation of dynamic and service capabilities of aesthetic hospitals

This study contributes to the professional services field by conceptualizing the patient perspective of dynamic capabilities and service capabilities of aesthetic hospitals, identifying the dimensions they encompass and developing measurement scales. The aforementioned work builds on a comprehensive examination of the literature and semi-structured interviews with patients to present a complete picture of what constitutes the dynamic capabilities and service capabilities of aesthetic hospitals from the patient perspective. Organizational capabilities are the ability to deploy a range of resources to achieve set goals (Story et al., 2017). Further researches divide capabilities into operational capabilities, which focus on daily operations and survival of the company, and dynamic capabilities, which focus on the flexibility of operational capabilities (Markovich et al., 2021; Story et al., 2017). This study develops the concept of operational capabilities (i.e., service capabilities) and dynamic capabilities from patient perspective.

6.1.1.1 Measurement of dynamic capabilities

In a systematic review on dynamic capabilities published by Schilke et al. (2018), the dimensional classification of dynamic capabilities is summarized, generally being classified according to procedures, practices, functions, hierarchies, or granularity of analysis, and the empirical results of this study demonstrate that the classification of dynamic capabilities according to procedures into integration, agility, and innovation in the aesthetic medicine services domain is plausible. This study defines and measures from the patients' point of view, so the measurement dimensions and scales are closer to patient perception than previous studies. The dynamic capabilities scale developed by Wilden et al. (2013) is considered the closest study to Teece (Huang & Chang, 2008; Markovich et al., 2021; Teece, 2007), which measures a company's ability to perceive, capture, and reallocate resources in terms of the extent to which the company uses best processes or best practices to meet customers'

changing needs. The current study converts dynamic capabilities into the ability of companies to meet demand dynamically and innovate continuously as perceived by customers in the process of service provision.

The first dimension is dynamic integration capabilities, which refers to the ability of a hospital to continuously adapt its internal resources to develop competitive advantages (Min, 2017). As a knowledge-intensive and technology-intensive organization, overall operation and management and survival in the medical competitive industry cannot be separated from the indispensable factors of production, such as human, material, financial and management resources, which can bring income to the hospital (Yao & Ben, 2021). It means that hospital managers need to reasonably integrate, establish and reconfigure the existing medical resources Eisenhardt and Martin (Eisenhardt & Martin, 2000; Teece et al., 1997) in order to achieve unified and efficient management and gain competitive advantages when dealing with fierce market competition.

The second dimension is dynamic agility capabilities, which refers to the ability of hospitals and healthcare professionals to respond and meet patients' needs promptly, and the ability to solve problems of patients in time. In marketing, both the 4P and 4C theories are essentially customer-centered (Kang, 2018). In the current era of experience economy, customers are more and more concerned about their good experience in products or services, while their needs are in constant change. Therefore, this requires organizations to quickly perceive and identify the needs of customers, then combine their own situation and external conditions, timely and accurately response to customer demand, which is a cycle of continuous improvement of the dynamic management process (Priem et al., 2018), but also the necessary ability to develop competitive advantages and obtain excessive profits (Kaul & Luo, 2018).

The third dimension is dynamic innovation capabilities, which refers to the hospital's ability to innovate in services, technologies, and programs (Li, 2014; Teece, 2014) . In a dynamic and changing business environment, hospitals need to make responds to multiple challenges from technological advances, changing demands, and increasing competition, which means that they must continuously and efficiently innovate in technology and management (Bernardes & Hanna, 2009; Zhao & Liu, 2020). Previous literature has applied the dynamic capabilities theory to the field of hospital management, suggesting that innovation capabilities are critical to the survival and development of hospitals, and that how to have good innovation capabilities to adapt to dynamic changes in the competitive environment is a problem that hospitals must face in the development process (Janssen et al.,

2016).

6.1.1.2 Measurement of service capabilities

Scholars mainly define and measure service capabilities in two ways, the first way is to compare before and after customers receive the services, such as the study by Wilden and Gudergan (2017), while the other is to classify them according to function, process, and stage, such as the study by (Kuo et al., 2017). The current study verified that it is credible and reliable to classify service capabilities according to function into five dimensions: facility excellence, convenience, clinical ability, responsiveness, and doctor-patient communication.

The first dimension is facility excellence. In general, medical services, large medical equipment has become an important tool for hospitals to provide quality services, and the quality and excellence of equipment and facilities not only affects the hospital's treatment efficiency and operating costs, but also directly influence patient satisfaction and diagnostic accuracy. In other words, when the number of equipment is insufficient or the detection is poor, it is easy to cause conflicts between doctors and patients (Du et al., 2018). The service facilities of aesthetic hospitals, especially the treatment facilities, are updated at a faster pace, and informed patients will have higher and higher requirements for the service facilities (Du et al., 2018).

The second dimension is service convenience, which refers to the convenience of patients in the process of receiving services. In healthcare services, convenience saves patients' time and energy, which enhances patients' evaluation of products and service attitude and service capabilities (Yang & Zhuang, 2014), and even brings higher returns and more market opportunities to hospitals (Seiders et al., 2000). According to previous studies, the convenience of healthcare services and supporting social process can have a significant impact on patient satisfaction (Li & Guo, 2019).

The third dimension is diagnosis and treatment ability, which refers to the ability of medical personnel to be professional and knowledgeable and can make patients trust them (Hawes & Rao, 1985). In a study of patients' trust and choice of doctors, Zhu and Zhu (2011) found that doctors who are skilled in clinical operations, have comprehensive patient-doctor communication, and have solid theoretical knowledge are more likely to gain patients' trust. Therefore, improving doctors' diagnosis and treatment ability is the key to improving institutional service capabilities and patient satisfaction (Niu et al., 2016). Previous studies have also shown that in aesthetic hospitals, the better the practitioner is at diagnosis and treatment, the easier it is to attract patients and charge higher prices for services than in

general institutions, and to obtain premium compensation.

The last two dimensions are service responsiveness, which focuses on the willingness and readiness of healthcare professionals to provide services and the ability to answer questions from patients in a timely manner, and doctor-patient communication, which emphasizes the communication between healthcare professionals and patients regarding basic personal information, diagnosis, treatment options and preferences related to treatment (Liu et al., 2019). Both are important concepts in the context of patient-centered care: “responding accurately to the wants, needs and preferences of each patient” (Liu et al., 2019).

6.1.1.3 Evaluation of dynamic and service capabilities

In this study, patients had a high evaluation of the dynamic capabilities of aesthetic hospitals (6.06/7), with agility capabilities scoring the highest (6.14) and innovation capabilities the lowest (5.96). The score indicates that the dynamic capabilities of the survey sample aesthetic hospitals are recognized by patients in terms of both allocating resources, responding to the latest needs and applying innovative technologies. In terms of the importance of each dimension, patients consider dynamic agility capabilities to be the most important, followed by dynamic innovation capabilities, and finally dynamic integration capabilities. This finding suggests that managers of aesthetic hospitals should pay attention to the construction of dynamic agility capabilities on the one hand, and strengthen the shortcoming of dynamic innovation capabilities on the other hand (Varma et al., 2020).

Patients' evaluation of the hospital's service capabilities are slightly higher than its dynamic capabilities, with a score of 6.14, of which the highest score is for facility excellence (6.26) and the lowest score is for service convenience (6.08), indicating that the hardware facilities of the hospitals of the sample aesthetic hospitals can meet patients' needs, but the management is relatively poor in terms of service convenience and service responsiveness for patients, especially the time for patients to make appointments for consultation. In terms of the importance of each dimension, patients consider the explanation and communication from doctors and other professionals to be the most important, followed by the ability to treat, which is related to the special attributes of the aesthetic medicine industry - aesthetic medicines is “a highly involved, risky and invasive medical practice and a product of professional skills,” (Chang et al., 2020). Dynamic agility capabilities, which emphasizes the ability to mobilize resources flexibly to meet patients' needs for diagnosis and treatment and doctor-patient communication, which emphasizes the exchange of knowledge resources between professionals and patients, are the most important aspects of patients' evaluation of

hospital capabilities. This finding is consistent with Liu et al.'s findings on a patient-centered healthcare framework: patients value communication with medical professionals regarding general, professional, and clinical knowledge (Liu et al., 2019), which demonstrates the similarity between aesthetic medicine patients' and general patients' concerns on healthcare services.

6.1.2 Impacts of dynamic and service capabilities on patient satisfaction and competitive advantage

The current study shows that dynamic capabilities and service capabilities of aesthetic hospitals have a direct and positive impact on patient satisfaction and hospital competitive advantages. Most of the previous studies consider the impact of dynamic capabilities on company performance in terms of corporate profit, solvency, and competitive advantages, and the findings are inconsistent. For example, Wilden and Gudergan (2015) and Eisenhardt and Martin (2000) found that dynamic capabilities do not have direct impact on company outcome, contrarily increase corporate costs by enhancing dynamic capabilities, which results in lower profits; the impact of dynamic capabilities on company performance depends more on the market environment, and the positive impact of dynamic capabilities on company performance is found in the case of strong market competition. In contrast, Markovich et al. (2021) argued that dynamic capabilities provide the motivation to innovate and thus improve company performance regardless of the company's external environment. Teece et al. argued that dynamic capabilities are the most appropriate way to build long-term advantages in a highly competitive market (Abrantes et al., 2021; Teece et al., 2016). Our study finds that in the highly competitive market environment in which Chinese aesthetic hospitals operate, the dynamic capabilities of the hospital are critical to their survival and are a direct antecedent of patient satisfaction and competitive advantage generation. This finding can be further validated in future studies by selecting a sample of aesthetic hospitals in different economic environments and competitive intensities. Many studies on service capabilities of hospitals or clinics have been conducted in the medical field, and service capabilities are mostly measured from the perspective of service volume. It is generally believed that service capabilities affects customers' judgment of organization image and thus corporate competitive advantage on the one hand (Chen, 2018; Koskinen et al., 2013), and can improve the efficiency of institutional services and ultimately corporate profits on the other hand (Koskinen et al., 2013). In the aesthetic medicines field where public and private resources jointly occupy the

market, service volume is not a particular important factor for patients to consider. Similar to Yang's study (2011), the current study finds that service capabilities, represented by doctors' treatment ability, is an important driving force for company's competitive advantage.

6.1.3 Relationships among patient market cognition, dynamic and service capabilities of aesthetic hospitals

The current study demonstrates that patient market cognition has a positive effect on both dynamic capabilities and service capabilities, with path coefficients of 0.528 and 0.550, respectively. In the field of strategy research, scholars generally discuss the antecedents of dynamic capabilities from organizational, human resource and environmental factors, among which environmental factors include the dynamic nature of the external environment, uncertainty, and the stage of renewal and iteration. Patient market cognition is an important aspect of environmental factors, and the degree of patient's knowledge and information is an important product under the influence of the external dynamic environment. In other words, the more competitive the external environment is, the faster the products and services are updated and iterated, the more publicity and advertising information of aesthetic hospitals will be pushed, and the faster the patients' knowledge and information will be updated, corresponding to which the dynamic abilities and service capabilities of aesthetic hospitals are more excellent. This study explores the reasons for this from the perspective of patient perception. Aesthetic medicine patients have both an understanding of current cutting-edge aesthetic medicine technologies and services through the update of market information and knowledge, and make judgments about whether the services provided by the target hospitals are cutting-edge, so that patients' expectations before receiving services and service confirmation and experience evaluation after using them are close to each other. Previous studies have shown that expectations and confirmation situations have an impact on customers' perceived service or product performance (Braunscheidel & Suresh, 2009). The current study further shows that the more market information the customer has, the better the customer perceives dynamic capabilities and service capabilities of the company.

In addition, patient market cognition positively influences patient satisfaction and competitive advantage through a company's dynamic capabilities and service capabilities. Previously, scholars have explored the fundamental basis of how customers respond to corporate marketing activities, unlocking key clues to the internal "black box" of customer buying behavior (Cotte et al., 2005). It has been argued that product knowledge is not only an

important customer resource, but also a key factor in the “black box” of customer behavior, and one of the ways in which companies conduct marketing campaigns to increase brand publicity (Lou, 2019). To a certain extent, patients choose aesthetic hospitals with better prices, rareness, and comprehensive advantages that are difficult to be copied by other hospitals, as a result of their choice after integrating their own resources and knowledge.

This study establishes that patient market cognition consists of three dimensions, namely, knowledge, market information, and choice intention. Among the three dimensions, market information is the most important one with a coefficient of 0.526, followed by choice intention and knowledge with coefficients of 0.393 and 0.364, respectively. Market information reflects various information about the hospital collected by patients in the market, including ratings, publicity, and reviews (Falasca et al., 2017; Wang et al., 2017). Knowledge is the degree of awareness and acceptance of knowledge related to aesthetic medicine products or services (Falasca et al., 2017); choice intention is the subjective probability or likelihood of patients purchasing the same aesthetic medicine product and doctor (Lin et al., 2016; Oliver, 1999). Loyal patients are more likely to get used to a specific hospital or doctor and have good perception of a company’s dynamic capabilities and service capabilities.

6.2 Research implications

The terminological concepts and measurement validation of dynamic capabilities and service capabilities from the patient perspective proposed in this study have important theoretical implications. Establishing a clear definition and operationalizing is an important step in scientific research (Bernardes & Hanna, 2009). The use of the terminological distinction between service capabilities (or operational capabilities) and dynamic capabilities in previous studies of organization capabilities are often ambiguous or generalized (Schilke et al., 2018), especially at lower levels of abstraction, making the common use of these different concepts difficult. Furthermore, the measurement and evaluation of dynamic capabilities and service capabilities are often sought from the organization’s own objective indicators (Schilke et al., 2018), whereas for aesthetic medicine services patients who being involved in co-creation and assessment of value, this approach may lead to unreliable results from empirical studies. This study also points to the importance of using patient perspective performance indicators in dynamic capabilities studies.

Our study provides important empirical evidence on the factors influencing dynamic capabilities, for which the researcher develops a new conceptualization of patient market

cognition and verifies that it has an impact on hospital capabilities. Consistent with the patient perspective on hospital capabilities, this study looks for aspects of patients' knowledge, market information, and choice intentions that may influence the factor aspects of hospital capabilities. Adopting patients' perspective is groundbreaking, for current research still revolves around organization factors to our knowledge. Future research could conduct joint studies of customer-side factors and organization-side factors to further explore the mechanisms that influence them.

The current study provides a model of relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages to explore the influence of patient market cognition on patient satisfaction and hospital competitive advantage during the formation of hospitals' dynamic capabilities and service capabilities, which both enriches the application of dynamic capabilities theory in the medical field and extends the influencing factors and analysis paths of patient satisfaction and organizations' competitive advantage by incorporating companies' service capabilities.

Previous studies have not explored the relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction and hospital competitive advantages. This research bridges that gap by empirical testing those relationships. Future research can build on this study to further investigate additional relationships.

6.3 Practical implications

Research on patient market cognition has provided aesthetic hospitals reference information for their "customization" and marketing strategy planning. The research on patient market cognition seems to be more common in the operational literature of marketing in the theoretical study of patient's purchase decisions. In the cognitive modeling framework, the output of information suitable for customers' decision-making rules will affect consumption decision-making, which is usually the focus of business level research. Based on this, our research constructs patient market cognition to link patients' own characteristics to the information and knowledge transfer of the hospital and to provide some insights into the determination of marketing strategies for aesthetic hospitals.

For managers, this research provides guidance on the importance of hospital capabilities and how to leverage them. The results of the analysis of the aesthetic medicine industry, one of the highest representatives of market-oriented entrepreneurial operations in China's health services industry, can also provide new ideas and references for the operation of other health

services industries. Firstly, in the aesthetic medicine market, where the intensity of competition is high, dynamic capabilities can provide a basis for hospitals to adapt to competitive pressures and survive. When sufficient dynamic capabilities exist, the development of organization service capabilities should be encouraged. Secondly, the importance of patient perceptions should be considered for prioritizing the development of dimensions of hospital capabilities, especially dynamic agility capabilities and communication between doctors and patients. Thirdly, this research provides the conceptualizations and measurement tool that managers need to assess the as-is levels, and to set up the to-be goals, of patient satisfaction, hospital competitive advantages, hospital dynamic capabilities and service capabilities, and patient market cognition. These insights may turn into corporate performance systems and standardized service processes.

6.4 Study limitations and future research directions

The samples in this study cover patients of all levels of consumption with a single consumption amount ranging from 2,000 RMB to 50,000 RMB in two aesthetic hospitals in Hangzhou. However, the samples in this study may not be representative of all aesthetic patients in China due to China's vast territory, uneven economic development in different regions, and the income disparity. According to statistical results, from 1979 to 2015, per capita consumption expenditure in eastern China increased from RMB 213.99 to RMB 19,636.60, an increase of about 90.77 times, with an average annual growth rate of 13.78%; while per capita consumption expenditure in western China increased from RMB 153.69 to RMB 7681.04, with an average annual growth rate of 11.82%. By economic construction and geographical advantages, the average consumption level of residents in the eastern region of China (the sample data were collected from this region) is significantly higher than that in the western region. And according to Elizabeth's (2018) research on how national culture and pragmatism affect the residents of France, Japan, and the United States towards sustainable consumption, it is found that different national cultures will affect residents' consumption behavior, historical and cultural heritage, and terror differences in human sentiments and living habits will significantly affect residents' consumption concepts and customer cultural values. Therefore, in the field of medical cosmetology, region, economy, and culture may also have an impact on patient intentions and the strategic choice of aesthetic hospitals. The survey samples in this study may have insufficient heterogeneity. Future research can select patient samples from medical and aesthetic institutions in different regions and scale to further verify

the model.

Respondents in this study took a self-assessment method to answer the questionnaire based on their experience and cognition. Among them, 53.2% of the population with the highest degree of education is junior college or below, and the level of education is generally not high. According to the research of Wu et al. (2019), the quality of the questionnaire response is positively related to the education level and cognitive ability of the respondents. Therefore, limited by the respondents' incomplete understanding of the questionnaire and response bias, our analysis results may lead to a certain degree of unsystematic errors. Therefore, in the survey process, it is necessary to help the interviewees better understand the question in order to improve the quality and efficiency of response (Chang et al., 2020).

The research on organization capabilities has multiple levels, such as the macro level based on samples from multiple countries or regions, the meso level based on samples from multiple companies, and the micro level based on samples from a small number of companies. Scholars such as Zhang et al. (2020) explored the entrepreneurial performance of technology-based small and medium-sized firms from the perspective of dynamic capabilities based on the macro-level of Beijing, Shanghai, Guangzhou, and Hangzhou. The results show that the political skills of technological entrepreneurs can influence the innovation performance of firms through dynamic capabilities. Wilden and Gudergan (2015) carried out research based on the meso-level of multiple companies in Australia and conducted a questionnaire survey, confirming that corporate dynamic capabilities have a positive effect on organizational marketing and R&D capabilities, and can improve corporate performance. Hou et al. (2019) carried out a micro-level research on Angel Orange and Huiyuan Juice. The research explored how the dynamic capabilities of firms can affect the value chain reconstruction from the perspective of new retail, showing that dynamic capabilities of different dimensions will have different effects on the value creation activities of firms, and then trigger value chain reconstruction at different levels. Numerous studies have shown that firm dynamic capabilities have the feasibility of being applied at different levels, time scales and geographic scopes. The research conclusions can provide references for the collaborative management and development of related firms, industries, and localities. However, our research only chose the micro level, and future research can go deeper on the research level, and on this basis, increase the analysis of the adjustment factors such as hospital scale and culture. In addition, future research should increase the antecedents of the combined customer and organization perspective to understand the full picture of the antecedents and results of organization capabilities.

Since all the data in this study was collected in a relatively short period of time, continuous longitudinal changes could not be observed in the patient-centered questionnaire survey. Therefore, the data used are all cross-sectional data. Appropriate caution should be maintained in verification and interpretation. According to the research of Yao et al. (2017), only by using longitudinal data can we better observe how the residents' health level changes over time, and more accurately describe the residents' health trajectory. Therefore, future research should use longitudinal research to confirm the causal relationship and evaluate the changes in the results of the hospital's capabilities and patient satisfaction over time.

Since this study does not include the scope of capabilities in the entire operation of the firm, the measurement of dynamic capabilities is not comprehensive enough. It is necessary to strengthen the measurement of this variable in future research. In addition, corporate dynamic capabilities emphasize the ability to integrate existing resources in the process of responding to changes in the market environment. In this research, due to the existence of unknown and unpredictable new capabilities, the new capabilities generated by firm dynamic capabilities are not included in the conceptual framework. Therefore, this research framework needs to be further expanded and improved in the future (Hong et al., 2018).

6.5 Conclusion

In this study, we define the dynamic capabilities and service capabilities of aesthetic hospitals and verifies the relationships among patient market cognition, hospital dynamic and service capabilities, patient satisfaction, and hospital competitive advantages, and answers the core research question of this study: that is how to improve satisfaction and corporate competitive advantage from the patients' perspective. The research results show that: 1) The dynamic capabilities of hospital include integration, agility and innovation capabilities, and the service capabilities include facility excellence, service convenience, clinical ability, service responsiveness and doctor-patient communication, among which the most important capabilities for patients are dynamic agility capabilities and doctor-patient communication; 2) Patient market cognition has a positive effect on both dynamic capabilities and service capabilities, which in turn affect patient satisfaction and hospital competitive advantage, and both dynamic capabilities and service capabilities positively affect patient satisfaction and competitive advantages. This study not only enriches the existing research on organization capabilities, but also provides new ideas for Chinese aesthetic hospitals to develop patients' acquisition plan.

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Annex A: Initial Questionnaire

Thank you for taking the Hospital Capability and Customer Satisfaction Survey. The data collected by this questionnaire is used for research purposes only and for no other purpose. Our statistical analysis of the data is based on the combined results of all questionnaires and no individual data will be analyzed. Therefore, please answer all questions in the questionnaire based on your own personal experience, real feelings, or observations. There are no objective answers or criteria for the items in the questionnaire that require scoring choices, so please estimate based on your own perceptions. Please answer all questions carefully.

As a token of our appreciation for your answers to the questionnaire, we prepare you a gift.

Customer name: _____ Customer phone number: _____

Hospital name: _____ Visiting doctor's name _____

1. Background information

a. Your aesthetic project this time (you can select more than one projects, please tick to select):

Facial plastic surgery; Body plastic surgery; Injection filling projects; Skin Laser projects; Skin care; Others (please specify):

b. Amount you spent this time (please select one): ≤ 2000 RMB; 2001-4000 RMB; 4001-6000 RMB; 6001-8000 RMB;
 8001-10000 RMB; 10001-30000 RMB; 30001-50000 RMB; ≥ 50001 RMB

c. How did you find out about the hospital (please tick , multiple choices allowed): Offline advertising (e.g. outdoor advertising);
 Online advertising (aesthetic medicine APP/social media, e.g. Baidu/Meituan, etc.); Recommendations from friends and family; Other
channels (please specify): _____

d. Your gender (please tick one): __Male __Female

e. Your age: _____

f. Your highest education (please tick one): __PhD __Master __Bachelor __College School __Vocational Technical School __High School
 __Junior High School __Elementary School

g. What year did you first visit this hospital for aesthetic medicine: _____

h. How many times did you receive service at this hospital in the last year : _____

2. Question Items

Table A.1 Question Items

1. Patient market cognition		Strongly Disagree				Strongly Agree			
1.1	I usually focus on collecting the latest international aesthetic medicine products / technologies / services.	1	2	3	4	5	6	7	
1.2	I can collect some information about side effects of disease treatment such as nausea and vomiting.	1	2	3	4	5	6	7	
1.3	I often set aesthetic medicine improvement goals for myself, depending on my situation.	1	2	3	4	5	6	7	
2.1	I have many relatives and friends who often receive aesthetic medicine services.	1	2	3	4	5	6	7	
2.2	This hospital has a good reputation.	1	2	3	4	5	6	7	
2.3	I often see advertisements for this hospital.	1	2	3	4	5	6	7	
2.4	I often receive messages about aesthetic services from this hospital.	1	2	3	4	5	6	7	
2.5	I have relatives and friends who recommend this hospital for aesthetic service.	1	2	3	4	5	6	7	
3.1	Based on my situation, I would like to go to the same medical aesthetic hospital for all aesthetic medicine services.	1	2	3	4	5	6	7	
3.2	Based on my situation, I hope to see the same doctor every time.	1	2	3	4	5	6	7	
3.3	Based on my situation, I would like to use the same brand of aesthetic medicine products or techniques.	1	2	3	4	5	6	7	
3.4	Based on my situation, I need to ask the doctor to evaluate and recommend	1	2	3	4	5	6	7	

	the aesthetic treatment plan frequently.							
3.5	Based on my situation, I often need to go to the aesthetic hospital to use medical beauty equipment for aesthetic treatment.	1	2	3	4	5	6	7
3.6	Based on my situation, I often need to go to aesthetic hospital to do medical beauty projects.	1	2	3	4	5	6	7
2. Dynamic capabilities		Strongly Disagree					Strongly Agree	
1.1	During the treatment process, the healthcare professionals are responsible for different steps coordinated well together.	1	2	3	4	5	6	7
1.2	The healthcare professionals can combine different products to meet my medical aesthetic needs when designing the plan.	1	2	3	4	5	6	7
1.3	The healthcare professionals can consider and analyze all my medical/aesthetic medicine history comprehensively when designing the plan.	1	2	3	4	5	6	7
1.4	The healthcare professionals can make full use of a wide range of equipment data when designing the plan.	1	2	3	4	5	6	7
1.5	The healthcare professionals can consider my different medical/aesthetic medicine needs in a comprehensive manner when designing the plan.	1	2	3	4	5	6	7
2.1	During the treatment process, the medical staff could find that I felt pain in time.	1	2	3	4	5	6	7
2.2	When I feel pain, the healthcare professionals can take effective measures to help me stop the pain in time.	1	2	3	4	5	6	7
2.3	During the treatment, the healthcare professionals can detect my allergy or other reactions in time.	1	2	3	4	5	6	7
2.4	When I have allergies or other reactions, the healthcare professionals can adjust the plan in time.	1	2	3	4	5	6	7
2.5	During the treatment process, the healthcare professionals can promptly detect my scruple.	1	2	3	4	5	6	7
2.6	When I have scruple, the healthcare professionals can explain it clearly in time.	1	2	3	4	5	6	7
2.7	During the treatment process, the healthcare professionals can promptly find out if my medical program needs to be adjusted temporarily.	1	2	3	4	5	6	7
2.8	The healthcare professionals can discuss with me when my aesthetic medicine program needs to be adjusted on an ad hoc basis.	1	2	3	4	5	6	7
3.1	The healthcare professionals use the latest international medical	1	2	3	4	5	6	7

	products/technology.							
3.2	The healthcare professional's medical service concept is very innovative.	1	2	3	4	5	6	7
3.3	The technical level of the healthcare professionals is much higher than other hospitals.	1	2	3	4	5	6	7
3.4	This hospital often introduces new medical aesthetic products/services.	1	2	3	4	5	6	7
3.5	This hospital is ahead of other hospitals in the application of new medical aesthetic technology.	1	2	3	4	5	6	7
3. Service capabilities		Strongly Disagree					Strongly Agree	
1.1	The medical equipment of the hospital is very advanced.	1	2	3	4	5	6	7
1.2	The dress of healthcare professional is professional and neat.	1	2	3	4	5	6	7
1.3	The environment of the hospital is clean and tidy.	1	2	3	4	5	6	7
1.4	The signs of the hospital's department facilities are very clear.	1	2	3	4	5	6	7
2.1	I can easily make an appointment to the time I need.	1	2	3	4	5	6	7
2.2	I can easily make an appointment with the doctor I want to see.	1	2	3	4	5	6	7
2.3	In the hospital, I can easily find my way.	1	2	3	4	5	6	7
2.4	Every step of aesthetic medicine project in the hospital is very convenient and easy.	1	2	3	4	5	6	7
2.5	Whenever I need them, I can easily find hospital staff to help me.	1	2	3	4	5	6	7
3.1	My doctor can do medical beauty diagnosis and treatment for me.	1	2	3	4	5	6	7
3.2	When the doctor gave me medical treatment, I feel very safe.	1	2	3	4	5	6	7
3.3	My doctor's medical treatment and behavior show me his/her great confidence.	1	2	3	4	5	6	7
3.4	My doctor has a good knowledge of aesthetic medicine.	1	2	3	4	5	6	7
3.5	My doctor is trustworthy.	1	2	3	4	5	6	7
3.6	My doctor is very experienced.	1	2	3	4	5	6	7
4.1	The healthcare professional can answer my questions quickly.	1	2	3	4	5	6	7
4.2	The healthcare professionals will not be too busy to answer my questions in time.	1	2	3	4	5	6	7
4.3	I always get a timely answer when I contact the hospital.	1	2	3	4	5	6	7
4.4	It is easy for me to take my opinion to the hospital	1	2	3	4	5	6	7
4.5	The hospital can answer and solve my questions in a timely manner.	1	2	3	4	5	6	7

5.1	The healthcare professional can clearly explain the professional information about the treatment.	1	2	3	4	5	6	7
5.2	The healthcare professional can clearly explain the purpose / expected effect of the treatment.	1	2	3	4	5	6	7
5.3	The healthcare professional can explain the price clearly.	1	2	3	4	5	6	7
5.4	Healthcare professionals can clearly explain the risks of treatment.	1	2	3	4	5	6	7
5.5	The healthcare professional can clearly explain the drug (use purpose, general effect, treatment cycle and adverse reactions).	1	2	3	4	5	6	7
5.6	The healthcare professional can clearly explain the comfort experience in the treatment.	1	2	3	4	5	6	7
5.7	The healthcare professional can clearly explain the precautions after treatment.	1	2	3	4	5	6	7
5.8	The healthcare professionals can clearly explain the method of self observation / maintenance / adjustment after treatment.	1	2	3	4	5	6	7
4. Patient satisfaction		Strongly Disagree					Strongly Agree	
1.1	I am satisfied with the waiting time before seeing the doctor.	1	2	3	4	5	6	7
1.2	I am satisfied with the time spent to discuss the medical treatment plan with the doctor.	1	2	3	4	5	6	7
1.3	I am satisfied with the time spent on the actual aesthetic medicine treatment program.	1	2	3	4	5	6	7
1.4	I am satisfied with the total time spent in the hospital.	1	2	3	4	5	6	7
2.1	I am satisfied with the different price levels of the hospital's aesthetic medicine services.	1	2	3	4	5	6	7
2.2	I am satisfied with the price of the aesthetic medicine services I received.	1	2	3	4	5	6	7
2.3	I am satisfied with the price (value for money) of the aesthetic medicine services I received.	1	2	3	4	5	6	7
3.1	I am satisfied with the individualized aesthetic medicine services provided specifically for me.	1	2	3	4	5	6	7
3.2	I am satisfied with the full range of aesthetic medicine services that can be done at this hospital.	1	2	3	4	5	6	7
3.3	I am satisfied with the safety of the treatment.	1	2	3	4	5	6	7
3.4	I am satisfied with the efficiency of the healthcare professional.	1	2	3	4	5	6	7

3.5	I am satisfied with the quality of the service attitude of the healthcare professional.	1	2	3	4	5	6	7
3.6	I am satisfied with the professional and technical level of healthcare professionals.	1	2	3	4	5	6	7
3.7	I am satisfied with the treatment effect.	1	2	3	4	5	6	7
5. Competitive advantage		Strongly Disagree					Strongly Agree	
1.1	Compared with other aesthetic hospitals, the reputation of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.2	Compared with other aesthetic hospitals, the personalized aesthetic medicine service provided by this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.3	Compared with other aesthetic hospitals, this hospital has a full set of various aesthetic medicine projects that can better meet my requirements.	1	2	3	4	5	6	7
1.4	Compared with other aesthetic hospitals, the price of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.5	Compared with other aesthetic hospitals, the hospital environment/infrastructure of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.6	Compared with other aesthetic hospitals, the safety of diagnosis and treatment in this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.7	Compared with other aesthetic hospitals, the service attitude and quality of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.8	Compared with other aesthetic hospitals, the professional and technical level of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.9	Compared with other aesthetic hospitals, the clinical reliability and treatment effect of this hospital can better meet my requirements.	1	2	3	4	5	6	7
2.1	The reputation of this hospital is at the top and unique in the aesthetic medicine market.	1	2	3	4	5	6	7
2.2	The personalized aesthetic medicine service provided by this hospital is relatively rare and unique in the medical aesthetics market.	1	2	3	4	5	6	7
2.3	The full set of various aesthetic medicine projects provided by this hospital is relatively rare and unique in the medical aesthetics market.	1	2	3	4	5	6	7
2.4	The customer price of this hospital is relatively rare and unique in the aesthetic medicine market.	1	2	3	4	5	6	7
2.5	The hospital environment/infrastructure of this hospital is relatively rare and	1	2	3	4	5	6	7

	unique in the aesthetic medicine market.							
2.6	Diagnosis and treatment safety of this hospital is relatively rare and unique in the aesthetic medicine market.	1	2	3	4	5	6	7
2.7	The quality of service attitude of this hospital is relatively rare in the aesthetic medicine market.	1	2	3	4	5	6	7
2.8	The level of professional skills is relatively rare in the aesthetic medicine market.	1	2	3	4	5	6	7
2.9	The quality of service attitude of this hospital is relatively rare in the aesthetic medicine market.	1	2	3	4	5	6	7
2.1	It is difficult for other aesthetic hospitals to imitate/copy the reputation of this hospital.	1	2	3	4	5	6	7
2.2	It is difficult for other aesthetic hospitals to imitate/copy the personalized aesthetic medicine service provided by this hospital.	1	2	3	4	5	6	7
2.3	It is difficult for other aesthetic hospitals to imitate/copy the full set of services provided by this hospital for various aesthetic medicine projects.	1	2	3	4	5	6	7
2.4	It is difficult for other aesthetic hospitals to imitate/copy the customer prices that this hospital has.	1	2	3	4	5	6	7
2.5	It is difficult for other aesthetic hospitals to imitate/copy the hospital environment/infrastructure of this hospital.	1	2	3	4	5	6	7
2.6	It is difficult for other aesthetic hospitals to imitate/copy the medical safety of this hospital.	1	2	3	4	5	6	7
2.7	It is difficult for other aesthetic hospitals to imitate/copy the quality of service attitude of this hospital.	1	2	3	4	5	6	7
2.8	It is difficult for other aesthetic hospitals to imitate/copy the professional and technical level of this hospital.	1	2	3	4	5	6	7
2.9	It is difficult for other aesthetic hospitals to imitate/copy the reliability of the diagnosis and treatment effect of this hospital.	1	2	3	4	5	6	7

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Annex B: Study Questionnaire

Thank you for taking the Hospital Capability and Customer Satisfaction Survey. The data collected by this questionnaire is used for research purposes only and for no other purpose. Our statistical analysis of the data is based on the combined results of all questionnaires and no individual data will be analyzed. Therefore, please answer all questions in the questionnaire based on your own personal experience, real feelings, or observations. There are no objective answers or criteria for the items in the questionnaire that require scoring choices, so please estimate based on your own perceptions. Please answer all questions carefully.

As a token of our appreciation for your answers to the questionnaire, we prepare you a gift.

Customer name: _____ Customer phone number: _____

Hospital name: _____ Visiting doctor's name _____

1. Background information

a. Your aesthetic project this time (you can select more than one projects, please tick to select):

Facial plastic surgery; Body plastic surgery; Injection filling projects; Skin Laser projects; Skin care; Others (please specify):

b. Amount you spent this time (please select one): ≤ 2000 RMB; 2001-4000 RMB; 4001-6000 RMB; 6001-8000 RMB;
 8001-10000 RMB; 10001-30000 RMB; 30001-50000 RMB; ≥ 50001 RMB

c. How did you find out about the hospital (please tick , multiple choices allowed): Offline advertising (e.g. outdoor advertising);
 Online advertising (aesthetic medicine APP/social media, e.g. Baidu/Meituan, etc.); Recommendations from friends and family; Other
channels (please specify): _____

d. Your gender (please tick one): __Male __Female

e. Your age: _____

f. Your highest education (please tick one): __PhD __Master __Bachelor __College School __Vocational Technical School __High School
 __Junior High School __Elementary School

g. What year did you first visit this hospital for aesthetic medicine: _____

h. How many times did you receive service at this hospital in the last year : _____

2. Question Items

Table B.1 Question Items

1. Patient market cognition		Strongly Disagree					Strongly Agree	
1.1	I usually focus on collecting the latest international aesthetic medicine products / technologies / services.	1	2	3	4	5	6	7
1.2	I can collect some information about side effects of disease treatment such as nausea and vomiting.	1	2	3	4	5	6	7
1.3	I often set aesthetic medicine improvement goals for myself, depending on my situation.	1	2	3	4	5	6	7
2.1	This hospital has a good reputation.	1	2	3	4	5	6	7
2.2	I often see advertisements for this hospital.	1	2	3	4	5	6	7
2.3	I have relatives and friends who recommend this hospital for aesthetic service.	1	2	3	4	5	6	7
3.1	Based on my situation, I would like to go to the same aesthetic hospital for all aesthetic medicine services.	1	2	3	4	5	6	7
3.2	Based on my situation, I hope to see the same doctor every time.	1	2	3	4	5	6	7
3.3	Based on my situation, I would like to use the same brand of aesthetic medicine products or techniques.	1	2	3	4	5	6	7
2. Dynamic capabilities		Strongly Disagree					Strongly Agree	
1.1	During the treatment process, the healthcare professionals are responsible for different steps coordinated well together.	1	2	3	4	5	6	7

1.2	The healthcare professionals can combine different products to meet my medical aesthetic needs when designing the plan.	1	2	3	4	5	6	7
1.3	The healthcare professionals can consider and analyze all my medical/aesthetic medicine history comprehensively when designing the plan.	1	2	3	4	5	6	7
2.1	When I have allergies or other reactions, the healthcare professionals can adjust the plan in time.	1	2	3	4	5	6	7
2.2	During the treatment process, the healthcare professionals can promptly detect my scruple.	1	2	3	4	5	6	7
2.3	When I have scruple, the healthcare professionals can explain it clearly in time.	1	2	3	4	5	6	7
2.4	During the treatment process, the healthcare professionals can promptly find out if my medical program needs to be adjusted temporarily.	1	2	3	4	5	6	7
2.5	The healthcare professionals can discuss with me when my aesthetic medicine program needs to be adjusted on an ad hoc basis.	1	2	3	4	5	6	7
3.1	The healthcare professional's medical service concept is very innovative.	1	2	3	4	5	6	7
3.2	The technical level of the healthcare professionals is much higher than other hospitals.	1	2	3	4	5	6	7
3.3	This hospital often introduces new medical aesthetic products/services.	1	2	3	4	5	6	7
3.4	This hospital is ahead of other hospitals in the application of new medical aesthetic technology.	1	2	3	4	5	6	7
3. Service capabilities		Strongly Disagree					Strongly Agree	
1.1	The medical equipment of the hospital is very advanced.	1	2	3	4	5	6	7
1.2	The dress of healthcare professional is professional and neat.	1	2	3	4	5	6	7
1.3	The environment of the hospital is clean and tidy.	1	2	3	4	5	6	7
1.4	The signs of the hospital's department facilities are very clear.	1	2	3	4	5	6	7
2.1	I can easily make an appointment to the time I need.	1	2	3	4	5	6	7
2.2	I can easily make an appointment with the doctor I want to see.	1	2	3	4	5	6	7
2.3	Every step of aesthetic medicine project in the hospital is very convenient and easy.	1	2	3	4	5	6	7
3.1	My doctor can do medical beauty diagnosis and treatment for me.	1	2	3	4	5	6	7
3.2	When the doctor gave me medical treatment, I feel very safe.	1	2	3	4	5	6	7
3.3	My doctor's medical treatment and behavior show me his/her great	1	2	3	4	5	6	7

	confidence.							
3.4	My doctor has a good knowledge of aesthetic medicine.	1	2	3	4	5	6	7
3.5	My doctor is trustworthy.	1	2	3	4	5	6	7
3.6	My doctor is very experienced.	1	2	3	4	5	6	7
4.1	I always get a timely answer when I contact the hospital.	1	2	3	4	5	6	7
4.2	It is easy for me to take my opinion to the hospital	1	2	3	4	5	6	7
4.3	The hospital can answer and solve my questions in a timely manner.	1	2	3	4	5	6	7
5.1	The healthcare professional can clearly explain the professional information about the treatment.	1	2	3	4	5	6	7
5.2	The healthcare professional can clearly explain the purpose / expected effect of the treatment.	1	2	3	4	5	6	7
5.3	The healthcare professional can explain the price clearly.	1	2	3	4	5	6	7
5.4	Healthcare professionals can clearly explain the risks of treatment.	1	2	3	4	5	6	7
5.5	The healthcare professional can clearly explain the drug (use purpose, general effect, treatment cycle and adverse reactions).	1	2	3	4	5	6	7
5.6	The healthcare professional can clearly explain the comfort experience in the treatment.	1	2	3	4	5	6	7
5.7	The healthcare professional can clearly explain the precautions after treatment.	1	2	3	4	5	6	7
5.8	The healthcare professionals can clearly explain the method of self observation / maintenance / adjustment after treatment.	1	2	3	4	5	6	7
4. Patient satisfaction		Strongly Disagree					Strongly Agree	
1.1	I am satisfied with the waiting time before seeing the doctor.	1	2	3	4	5	6	7
1.2	I am satisfied with the time spent to discuss the medical treatment plan with the doctor.	1	2	3	4	5	6	7
1.3	I am satisfied with the time spent on the actual aesthetic medicine treatment program.	1	2	3	4	5	6	7
1.4	I am satisfied with the total time spent in the hospital.	1	2	3	4	5	6	7
2.1	I am satisfied with the price of the aesthetic medicine services I received.	1	2	3	4	5	6	7
2.2	I am satisfied with the price (value for money) of the aesthetic medicine services I received.	1	2	3	4	5	6	7
3.1	I am satisfied with the safety of the treatment.	1	2	3	4	5	6	7

3.2	I am satisfied with the efficiency of the healthcare professional.	1	2	3	4	5	6	7
3.3	I am satisfied with the quality of the service attitude of the healthcare professional.	1	2	3	4	5	6	7
3.4	I am satisfied with the professional and technical level of healthcare professionals.	1	2	3	4	5	6	7
3.5	I am satisfied with the treatment effect.	1	2	3	4	5	6	7
5. Competitive advantage		Strongly Disagree					Strongly Agree	
1.1	Compared with other aesthetic hospitals, the hospital environment/infrastructure of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.2	Compared with other aesthetic hospitals, the safety of diagnosis and treatment in this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.3	Compared with other aesthetic hospitals, the service attitude and quality of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.4	Compared with other aesthetic hospitals, the professional and technical level of this hospital can better meet my requirements.	1	2	3	4	5	6	7
1.5	Compared with other aesthetic hospitals, the clinical reliability and treatment effect of this hospital can better meet my requirements.	1	2	3	4	5	6	7
2.1	The reputation of this hospital is at the top and unique in the aesthetic medicine market.	1	2	3	4	5	6	7
2.2	The personalized aesthetic medicine service provided by this hospital is relatively rare and unique in the medical aesthetics market.	1	2	3	4	5	6	7
2.3	The full set of various aesthetic medicine projects provided by this hospital is relatively rare and unique in the medical aesthetics market.	1	2	3	4	5	6	7
2.4	4. The customer price of this hospital is relatively rare and unique in the aesthetic medicine market.	1	2	3	4	5	6	7
3.1	It is difficult for other aesthetic hospitals to imitate/copy the personalized aesthetic medicine service provided by this hospital.	1	2	3	4	5	6	7
3.2	It is difficult for other aesthetic hospitals to imitate/copy the full set of services provided by this hospital for various aesthetic medicine projects.	1	2	3	4	5	6	7
3.3	It is difficult for other aesthetic hospitals to imitate/copy the customer prices that this hospital has.	1	2	3	4	5	6	7
3.4	It is difficult for other aesthetic hospitals to imitate/copy the hospital environment/infrastructure of this hospital.	1	2	3	4	5	6	7

3.5	It is difficult for other aesthetic hospitals to imitate/copy the medical safety of this hospital.	1	2	3	4	5	6	7
3.6	It is difficult for other aesthetic hospitals to imitate/copy the quality of service attitude of this hospital.	1	2	3	4	5	6	7
3.7	It is difficult for other aesthetic hospitals to imitate/copy the professional and technical level of this hospital.	1	2	3	4	5	6	7
3.8	It is difficult for other aesthetic hospitals to imitate/copy the reliability of the diagnosis and treatment effect of this hospital.	1	2	3	4	5	6	7