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Measuring satisfaction with basic medical insurance in China

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Master in Business Administration

Supervisor:

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University Institute of Lisbon (Iscte)

August, 2023

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BUSINESS
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Such a thesis is my greatest recent achievement, and with its completion, it can also mean the end of my master's career.

Firstly, I would like to thank the school for my hard education, so that I have gained a lot in the strong learning atmosphere.

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RESUMO

Os seguros de saúde são extremamente importantes para as populações em todo o mundo, representando um tema sob grande discussão em muitos países.

Nos últimos anos, a China tem vindo a atribuir maior importância à saúde das pessoas e surge com o slogan de construir uma China saudável. Foram colocadas em vigor uma série de reformas de saúde, mostrando a preocupação do país com essas questões. É claro que alguns problemas também foram expostos nesse processo, problemas esses causadores de insatisfação do ponto de vista dos utilizadores dos planos de saúde. Este estudo propõe-se, assim, avaliar a satisfação dos residentes em relação ao seguro médico básico na China, especificamente em duas províncias chinesas (Guangdong e Shanxi), apresentando de seguida propostas sobre como superar as causas de insatisfação identificadas. Nesse sentido, propõe-se uma metodologia mista, na qual são realizadas entrevistas semiestruturadas e um questionário. A pesquisa utilizada para medir a satisfação com o seguro de saúde básico resulta de um ajuste do modelo de satisfação CCSI, que é um modelo CSI criado pela Universidade de Tsinghua e usado para testar a satisfação da indústria na China.

Finalmente, por meio da investigação, este estudo constatou que a qualidade dos serviços é o principal fator que afeta a satisfação das pessoas. Embora a satisfação da província de Guangdong e da província de Shanxi seja menor nessas duas dimensões, a satisfação da província de Guangdong também é significativamente maior do que a da província de Shanxi.

Palavras-chave: CCSI, Seguro Médico, Pesquisa de Satisfação, Análise de CFA, Análise de SEM

Classificação JEL:

L88 — Industry Studies: Services (Government Policy)

Y40— Dissertations

ABSTRACT

The medical insurance system is an extremely important item for global populations, representing a hot topic of discussion in every country.

In recent years, China attaches greater importance to the health of people, and came up with the slogan of building a healthy China. A series of medical insurance reforms were in place, showing the country's concern about healthcare issues. Consequently, some problems have also been exposed in this process, and some of those problems end up by causing a dissatisfaction from the point of view of basic medical insurance users. This study is thus proposed to evaluate resident's satisfaction related to basic medical insurance in China, specifically in two Chinese provinces (Guangdong and Shanxi), and present some proposals on how to overcome the identified causes of dissatisfaction. A mixed-methodology is proposed for that purpose, where semi-structured interviews and a survey are performed. The survey used to measure the satisfaction with medical insurance results from an adjustment of the CCSI satisfaction model, which is a CSI model created by Tsinghua University and used to test industry satisfaction in China.

Finally, through the investigation, this study finds that service quality is the main factor affecting people's satisfaction. Although the satisfaction of Guangdong Province and Shanxi Province is lower in these two dimensions, the satisfaction of Guangdong province is also significantly higher than that of Shanxi Province.

Keywords: CCSI, Medical Insurance, Satisfaction, CFA Analysis, SEM Analysis

JEL Classification:

L88 — Industry Studies: Services (Government Policy)

Y40— Dissertations

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1. Introduction

China's medical security system refers to the medical insurance system operated by the Chinese government, which is a part of China's health system. China's medical insurance system takes basic medical insurance as the main body, and medical assistance as the bottom guarantee. Apart from the basic medical insurance that the government is responsible for, combined with commercial health insurance and other measures, it forms a medical security system covering mainland China.

1.1 Background

1.1.1 Basic medical insurance in China

Since the founding of China, the Chinese government has taken medical security as one of its responsibilities and is committed to building a relatively sound and reasonable security system that can cover most people. In 1952, the Chinese government began to socialize the medical and health system and set up a tertiary hospital structure: public hospitals under the jurisdiction of municipal governments, district governments and small community clinics(You, 2021). At the same time, according to the characteristics of national development and population division at that time, the medical insurance system suitable for different urban and rural population was initially proposed. And as a result, people started to have access to their own medical insurance provided by the government when they need to have access to different clinics and hospitals for the purpose of consultations, medicines administration, hospitalization or surgery.

By 1978, China's basic medical insurance system could be summarized into three parts: the medical insurance covering enterprise employees (the labor insurance), the free medical insurance covering government personnel, and rural cooperative medical insurance (Song, 2009). As a result of the rigid dual structure in the society, farmers were unable to have access to public medical care or labor security of urban residents and can only use mutual assistance of people in need through the collective economy of their village communes. Due to the great differences in the development level of different rural areas, the specific organization of cooperative medical care is also very different (Qiu, 2019). At the same time, the medical insurance accessible to enterprise employees only applies to the employees of national enterprises. Other enterprises receive little financial support from the government.

1.1.2 Stage of reform and opening – up

Since 1978, China's Gross Domestic Product (GDP) has increased by 33.5 times at constant prices, an average annual growth rate of 9.5 percent, doubling every eight years on average, from 1 percent of

the world economy to 15 percent in 2017. China became the second largest economy in the world after the United States (Wang, 2018). However, during this period, some problems have emerged in the previously established medical insurance system (Wu et al., 2002).

The first problem relates to the rapid growth of medical expenses (Qin, 2021). During this period, China's medical system has made a great leap in technology, and its ability to solve severe diseases has also been improved. On the contrary, medical expenses also began to rise rapidly, resulting in unreasonable medical charges. Statistics show that in 1995, China's medical expenditure had increased 106 times compared with 1953, while fiscal revenue only increased 27 times during the same period ("The medical", 2012). Furthermore, with the transition of China's economic model from planned economy to market economy, except for a few national enterprises, most enterprises began to assume their own profits and losses, losing the support of the national power. Companies gradually could not afford the expensive medical expenses of their employees (Wu et al., 2002). Many foreign and private enterprises appeared, and many people were no longer employed by state enterprises, thus losing the health insurance provided by the government. Following all this context, the funds allocated by the government to public hospitals decreased and hospitals started to increasingly rely on fees from patients (Tang, 2014), with most urban residents paying for all the medical expenses by themselves.

Another problem is related to the context in China's rural areas. Since the 1980s, the rural cooperative medical care system has been facing a collapse (Tang, 2014). Most farmers cannot afford to pay their own medical expenses in urban hospitals, and it is difficult for them to have access to advanced medical resources. As of 2002, the coverage rate of the rural cooperative medical care system in China was only 9.5 per cent, and 79.1 per cent of the rural population did not have any medical insurance (Ministry of Health Statistical Information Center, 2004).

1.1.3 Building universal medical insurance

In order to overcome the before mentioned challenges, in 1998, after a pilot program, China merged the free medical insurance system for urban residents with the labor insurance system, and initially established a basic medical insurance system with a lower pooling level, also known as employee medical insurance (Wang & Fan, 2013). Since 2003, the Chinese government has begun to establish a new rural cooperative medical care system. In accordance with the principle of "*financial support, voluntary participation of farmers and government organization*", the Chinese government has organized farmers to participate in medical insurance based on family units, and the government has borne most of the medical expenses (MOHRSS, 2012). By 2013, the number of beneficiaries had reached 1.37 million, with the actual reimbursement ratio reaching about 70 percent (SCIO, 2014). With the establishment of the above referred two medical insurance systems, the medical problems

of urban students, children and unemployed residents became increasingly prominent (MOHRSS, 2012). China began to try to establish resident medical insurance, in which unemployed people's families paid for their medical insurance. So far, China's medical insurance system has been composed of workers' medical insurance, urban residents' medical insurance and the new rural cooperative medical system.

1.1.4 The current medical insurance system

Since 2013, the state has begun to integrate the two systems of medical insurance for urban residents and new rural medical cooperation, hoping to reduce the growing gap between urban and rural areas and establish a fairer and more complete medical insurance system (Qiu & Wang, 2018). In 2016, the country finalized relevant policies, requiring basic medical insurance for urban and rural residents to cover all residents except employees' basic medical insurance. By 2020, China's medical security system mainly consists of workers' basic medical insurance and residents' medical insurance, covering approximately 345 million workers' and 1.017 billion urban and rural residents', with a total coverage rate of 95% (National Healthcare Security Administration, 2020).

Up to now, China's medical insurance system has entered a new period, and various and complex problems are gradually exposed. The slow growth of national fiscal revenue and the rapid growth of national welfare have become a realistic contradiction. Coupled with the rapid aging of China's population and its large scale, the sustainability of China's medical insurance has become obvious. Due to the lack of public financial investment in hospitals and the system of self-responsibility for their profits and losses, the major hospitals in the three-level medical system have no choice but to refuse patients who use the basic medical insurance or to adopt some additional charges to maintain their own economic benefits in order to survive, and the contradictions between doctors and patients are also reflected during this process. Moreover, due to the imbalance of regional development in China, the pooling level of medical insurance is also relatively low. As a consequence, there is a big gap in medical insurance policies among different regions, and medical resources tend to be in rich areas (Yue, 2020).

An additional problem is related to how people use this medical insurance in practice. After applying to join the basic medical insurance, users will get a medical insurance bank card, and when using medical insurance, they can use this bank card to pay. The system of the hospital will deduct the individual payment, and the rest will be settled between the government and each hospital later. However, in the actual reimbursement process, there are some problems occurring. The problem of reimbursement in Chinese medical insurance is related to the unbalanced distribution of medical resources (Bai, 2018). People always expect to go to areas with well-developed medical resources to see a doctor, but because the medical insurance policies in these places are different from those in

the region where they enrolled, they often encounter complicated application procedures, ambiguities in insurance payment and even rejections by the local government during the process of using medical insurance. Recently, Chinese government has been making every province to build a nationwide medical insurance reimbursement system, so that there is no gap between the use of long-distance medical insurance (“Accelerate”, 2020). Although certain achievements have been made, China is still facing the challenges caused by uneven development.

At present, the implementation of China's basic medical insurance system has been in the process of continuous implementation and improvement, progress and reform. However, during this process, more research data is needed to support the implementation and to know whether the expected goals have been achieved (Zhu, 2023) . Most of the research on the national medical insurance system is based on the system itself, such as explored ways to implement policies for retired employees to pay contributions by Jiao (2022) and established a medicine price supervision mechanism by Wang (2020). These studies are focused on exploring the irrationality or solutions of the current system, but often ignore the subjective feelings of the people served by the system. Therefore, this study aims to fill this gap in the literature by exploring people's subjective feelings and satisfaction with the current medical insurance system in China.

1.2 Purpose and significance of the topic

China is experiencing a relatively rapid stage of development, and with the growth of comprehensive national strength, the state has also invested more in the welfare of various livelihood issues. Among these, the basic medical insurance service provided by the government is also naturally endowed with higher expectations. People see that their country is getting better and stronger and so they look forward to a continued increase in pensions, a reduction in the burden of personal medical treatment for diseases, and the continued development of various social welfare programs (Zheng, 2016). However, China is currently facing significant challenges in what concerns medical insurance. The medical insurance system in China is a rather complex system, affecting both the national development and people's welfare. And the fact is that people are not satisfied with the current basic medical security in China (Yu et al. 2019).

Within this setting, this study aims at reaching a better understanding of the reasons behind this dissatisfaction and based on that, proposing specific strategies with potential to make people happier with the national medical insurance system in China.

At present, the research on satisfaction with medical insurance in China is growing, with several quantitative studies being developed for that purpose (e.g., Liu (2020) and Wenwei (2022)). Nevertheless, most of these studies are focused on measuring the satisfaction of a certain type of medical insurance, but there are also few satisfaction measurement studies focused on basic medical

insurance covering all groups (from rural and urban areas) (e.g., Hao (2019) and Yu (2019)). Recognizing the weaknesses associated with the use of these tools, other satisfaction measurement tools widely used in other sectors appear as having potential to measure satisfaction associated with medical insurance. This is the case of the ACSI, first developed by Fornell (1994) and then applied in many different sectors, such as done by Zhang et al. (2022) who used it in a survey about satisfaction of online studying, and the case of CCSI, first developed by Tsinghua University (2001), and then applied by other authors, such as it is the case of Shi (2013) who have used it to measure consumer satisfaction in budget hotels.

In order to fill this gap in the literature, this study adopts a survey methodology by adjusting the CCSI to the Chinese context, to identify the factors that influence people's satisfaction with the medical insurance system in China, as well as the degree of such influence on their satisfaction. Based on the conclusions taken based on this survey, it will be possible to propose specific strategies focused on the reform of the national medical insurance system in China, so that it leads to a higher satisfaction of the general population. CCSI is selected to be used in this study because it was improved by China National Institute of Standardization Organization, which would fit China's situation better. It also has some advantages when compared to the remaining tools, as detailed in the following Chapter 2.

However, China has a large land area and permanent population, so it is unrealistic to collect satisfaction data of all regions for such a study. Therefore, it is a reasonable choice to narrow the target to provinces. For this study, Shanxi Province and Guangdong Province are selected. Guangdong Province is the province with the highest economic level in China, and Shanxi Province is the largest coal-exporting province in China. In terms of development level, they represent China's high level and medium level respectively. By comparing the data of these two provinces, more convincing conclusions can also be obtained.

1.3 Research questions and objectives

Based on the context presented above, two research questions are proposed in this thesis:

- i. How much satisfied are people with the current basic medical insurance system, specifically those from Shanxi and Guangdong provinces in China?
- ii. How can one promote a higher satisfaction with medical insurance in these provinces?

To respond to these research questions several partial objectives will be pursued:

- i. Evaluate patient satisfaction with medical insurance at Shanxi and Guangdong provinces in China.

ii. Identify the main sources of dissatisfaction with medical insurance at Shanxi and Guangdong provinces in China.

iii. Propose potential solutions to improve the satisfaction with basic medical insurance at Shanxi and Guangdong provinces in China.

1.4 Methodology

In order to investigate people's satisfaction with basic medical insurance in China, so as to clarify the impact of dimensions such as perceived quality and perceived value on people's satisfaction, a mixed-methodology was followed, combining an initial set of semi-structured interviews followed by a survey.

Concerning the survey, it relies on 31 questions to test six dimensions, including perceived quality, perceived value, national confidence, customer expectation, customer satisfaction, and customer loyalty. For the measure, this study uses a seven-point Likert scale (1=" Totally Unsatisfied" and 7 =" Totally Satisfied"). For the data analysis, the software IBM SPSS Statistics (version 26) and AMOS (version 26) was used in this study.

1.5 Thesis Structure

This study is divided into five chapters.

The first chapter is the introduction part, which mainly introduces the development history of China's basic medical insurance, describes the operation mode of the current medical insurance system, summarizes the purpose, significance, and main contents of this paper, finally introduces the writing framework of this paper.

The second part is the literature review, which wants to sort out the literature and concepts related to this paper, including some research in the field of medical insurance at home and abroad, as well as the customer satisfaction theory, customer satisfaction evaluation model, customer loyalty measurement and other concepts used in this study.

The third part is methodology to design the content of this research, use relevant models, develop specific problem descriptions, hypotheses, and design questionnaires to analyze the reliability and validity of various problems adopted.

The fourth part, data analysis, is to analyze the questionnaire data recovered from the formal investigation. Using relevant software, descriptive analysis and correlation coefficient determination of the satisfaction questionnaire are carried out.

The fifth part, the conclusion, is the summary of the above process. The correctness or error of the hypothesis proposed is obtained through the analysis of the data. By reviewing the main points mentioned above and combining the collected data, I hope to have a deeper understanding of

China's medical insurance system and put forward some suggestions and theoretical support. Some ideas and suggestions are provided for future research.

2. Literature Review

This literature review aims at exploring previous research on users' satisfaction and, particularly, on the satisfaction of users of basic medical insurance.

2.1 The satisfaction concept

The study of customer satisfaction can be dated back to the 30s, when Hoppe (1930) and Lewin (1936) began to explore satisfaction theory in the field of social and experimental psychology, arguing that satisfaction was related to self-esteem, trust, and loyalty. Keith (1960) believes that customer satisfaction is " *to satisfy the needs and desire*"(P.37) Scholars are beginning to apply expectation theory, gap theory, and hierarchy of needs theory to explain satisfaction (Ji, 2016).

Customer satisfaction was first proposed by the American scholar Cardozo Richard N in 1965, and then the definition of customer satisfaction has become diverse, and the "customer satisfaction is a psychological response after the customer's needs are satisfied, it is the customer's judgment of the characteristics of the product and service, or the degree of psychological judgment of the product and service itself to meet their own needs" proposed by Oliver(1997) has also been approved(Shi, 2019). A key area of research relates with the measurement of satisfaction related to the delivery of services, which is a key area of research related to the problem under study in this thesis.

2.1.1 Definition of Service

Regen (1963) considers service to be an imperceptible activity that provides satisfaction directly or in conjunction with tangible goods and other services. Lovelock and Young (1979) argue that services include all economic activities whose output is a non-tangible product, which is usually consumed at the time of production, and that it provides added value in a convenient, pleasurable, timesaving, comfortable, or healthy form, which is the concern of their buyers. Grönroos (2000) considers service to be an activity or series of activities with intangible characteristics, which usually, but not necessarily, occurs between the customer and the service personnel and/or material resources or the system of goods and/or service providers, which provides solutions to the problems raised by the customer.

From the above research content, services and products are related in most cases, but services do not exist after all, and there are differences from the goods that people use every day, as shown in the table2.1 below.

Table 2.1 Characteristics of service

commodity	service	Corresponding meaning
tangible	intangible	Services are not storable, patentable, easy to display or communicate, and difficult to price
Production is separated from consumption	Production and consumption at the same time	Customer involvement and influence of transactions, interaction between customers, influence of employees on the outcome of services, decentralization may be necessary, and mass production is difficult
standardization	heterogeneity	It depends on many uncontrollable factors, and it is not clear whether the services provided are in line with the plan or promotion
Storable	Perishability	It is difficult to synchronize the supply and demand for services, and services cannot be returned or resold

Data From: Fan Xiucheng. Service Management[M]. Tianjin: Nankai University Press, 2006:10.

2.1.2 Research on service satisfaction

Christian Grönroos (1982) first put forward the concept of customer perception of service quality service, he believes that service quality is essentially a perception, which is determined by the comparison of customer service expectations and actual service experience, the level of service quality depends on customer perception, and the final evaluator of service quality is the customer instead the enterprise. Grönroos (1984) divides service quality into technical quality, technical quality refers to what the customer actually gets from the service, and functional quality refers to the way the service is delivered to the customer.

2.2 Measuring satisfaction

There are different tools that can be used to measure satisfaction, as detailed in the sections below.

2.2.1 Swedish Customer Satisfaction Index (SCSB)

The Swedish Customer Satisfaction Index (SCSB) is the world's first national customer satisfaction index. Developed by Fornell (1989), it is based on the Swedish Customer Satisfaction Survey from 1898-1991 to create the SCSB Customer Satisfaction Model as figure 2.1 shows:

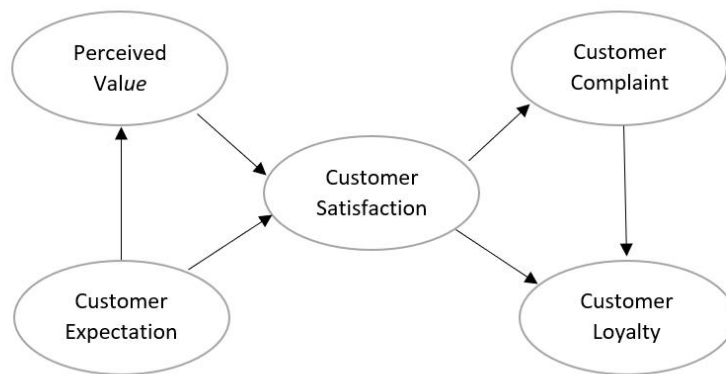


Fig 2.1 Sweden Customer Satisfaction Barometer model proposed by Tang et al. (2009)

In the SCSB model, customer satisfaction is mainly manifested as the overall satisfaction, the satisfaction of expectation and the gap between the ideal and the customer satisfaction. Satisfaction has two prefacing variables: perceived value and customer expectation. In SCSB, there are two observed variables of perceived value, namely, the perception of customers with fixed price on quality and the perception of customers with fixed quality on price.

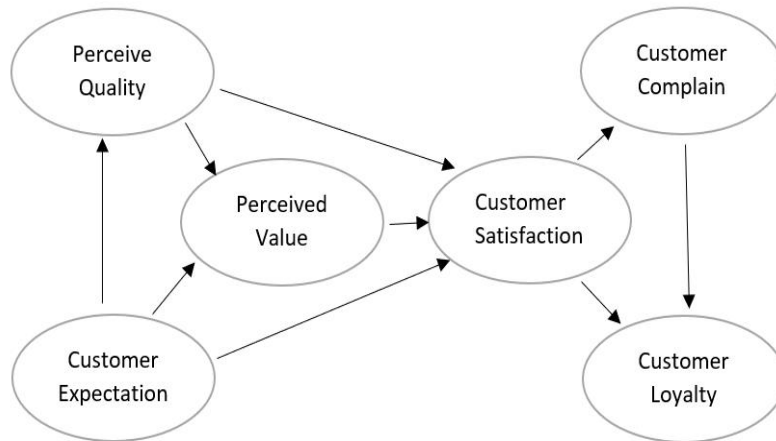
Customer expectation refers to consumers' subjective expectation of products or services. In the SCSB model, there are mainly three observational variables: the expectation of products adapting to individual needs, the expectation of product problems and the overall expectation of products.

There are also two post-variables of satisfaction, namely customer complaint and customer loyalty. In SCSB, customer complaint is divided into two variables: customer complaint expression and complaint to departments. Customer loyalty is the final variable of SCSB, which reflects the willingness of customers to buy the agreed items again and is a direct expression of corporate profit.

By using the SCSB, the government publishes satisfaction index of each department regularly every year based on a survey of more than 30 key industries and more than 100 companies across the country. And there are some studies in other countries use the SCSB, Zhou (2021) used this model to measure the Park-and-ride satisfaction in Nanjing, got a result that people will have high loyalty when they feel satisfaction of the parking and riding, and general satisfaction is 65.26%.

2.2.2 American Customer Satisfaction Index (ACSI)

American Customer Satisfaction Index (ACSI) was developed by the National Quality Research Center of the University of Michigan Business School in 1994 (American Customer Satisfaction Index, www.theacsi.or). It is a market-based method for measuring the economic performance of firms, industries, economic sectors and countries. This model was created by Fornell et al. (1992) based on



the SCSB model, as shown in the figure2.2:

Fig 2.2 American customer satisfaction index model as proposed by Tang et al. (2009)

ACSI model is composed of 6 structural variables, and compared with SCSB, perceived quality is added. Perceived quality refers to customers' actual feelings about products or services after consumption, which mainly includes observational variables in three aspects: satisfaction degree to meet their own needs, reliability and overall evaluation. He (2022) found that improving perceived quality will improve customer satisfaction in a survey of consumer participation breadth and satisfaction.

This originates the following hypothesis:

H1: Perceived quality positively affects customer satisfaction.

Like SCSB, in the ACSI model, perceived value is quantified by observing the relationship between quality and price: The perception of quality under the lattice and the perception of price under a given quality.

Thus, originates the following hypothesis:

H2: Perceived quality positively affects perceived value

The meaning of customer expectation is the customer's expectation of the product or service before purchasing (Tang, 2009).

Tse & Wilton (1988) believe that customer satisfaction refers to customers' expectations of products after consumption. A type of feedback that is perceived as inconsistent with actual performance. And according to Kotler (2001), satisfaction refers to a person's state of feeling of

pleasure or disappointment after comparing the perceived effect (or result) of a product with his expectation (Shi, 2013).

This originates the following hypothesis:

H3: Customer expectation positively affects customer satisfaction.

In SCSB model, Fornell (1989) summarized the research results of customer satisfaction theory and proposed an econometric logical model composed of customer expectation, post-purchase perception, purchase price and other factors. He thought these dimensions would affect each other. And in ACSI, based on SCSB, he added perceived quality which affected perceived value to these relationships, here can originate several hypothesis:

H4: Customer expectation positively affects perceived quality.

H5: Customer expectation positively affects perceived value.

In the ACSI model, there are three variables to measure customer loyalty: the possibility of repeated purchase, the tolerance of increased price if the customer is willing to repeat purchase, and the tolerance of price reduction if the customer is unwilling to repeat purchase.

The ACSI has four levels of measurement. First, the customer satisfaction of each enterprise (about 200 enterprises) is obtained, then the index is weighted to get the satisfaction index of 41 industries and 10 sectors, and finally the overall satisfaction index of the country, so it can be used to compare the different industries in America.

ACSI is the first CSI model widely used in many regions in the world. McDonald's, Apple, and other companies have used ACSI model to measure satisfaction of their own products or electronic services, and the USA government will also release the results of the ACSI survey every year. Sometimes other country's studies will use ACSI to measure satisfaction. Angelova (2011) used ACSI model to evaluate the satisfaction of the services provided by three mobile operators in Macedonia, this study focused on satisfaction and customer expectations in the ACSI model, and finally obtained from 1,048 valid questionnaires that customers have high expectations and are not satisfied with the current service provided by the operators. Mittal (1998) used ACSI data to study the relationship between consumer perception of store culture and store performance, proving the importance of ACSI data in marketing decisions.

ACSI's theories and research methods have been widely used and recognized as a standard for measuring customer satisfaction in U.S. companies and government agencies (Phillip, 2002).

2.2.3 European Customer Satisfaction Index (ECSI)

The European Customer Satisfaction Index (ECSI) model was developed under the auspices and cooperation of the European Organization for Quality, the European Foundation for Quality Management, and the European Academic Network for Customer Oriented Quality Analysis. It was

first published in 1998, and follows the conceptual model shown in figure 2.3: (ECSI Technical Committee. (1998))

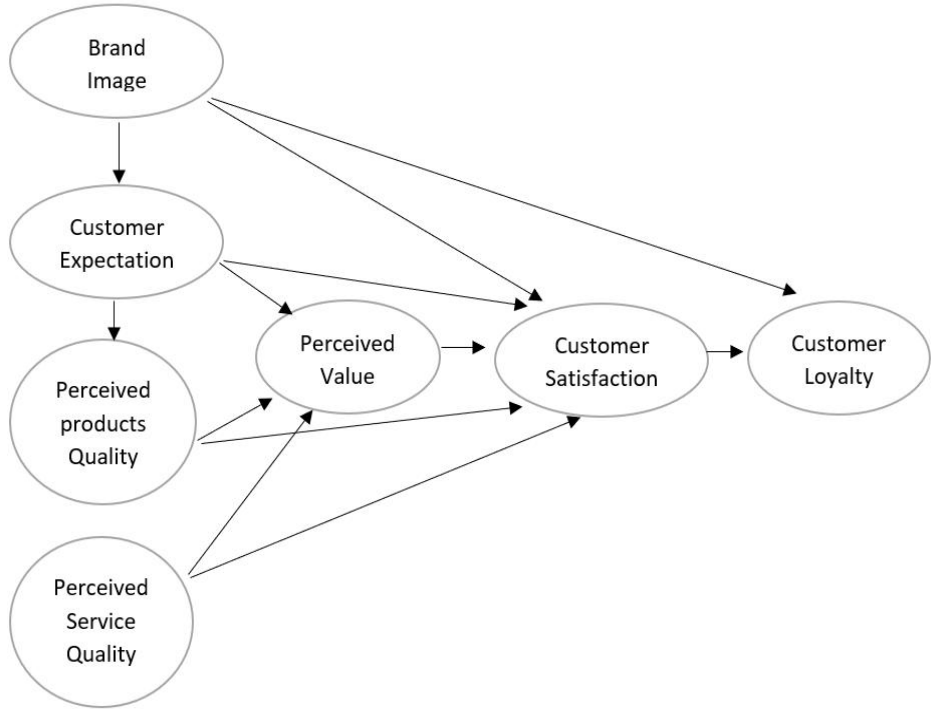


Fig 2.3 European customer satisfaction index model as proposed by Shi, (2013)

ECSI and ACSI share the same core concepts of customer expectation, perceived quality, and customer loyalty, but there are also some differences (Shi, 2013):

i. ECSI model considers that customer complaint is a part of service, rather than a result, and it has no significant impact on customer satisfaction, based on a survey of Norway customer satisfaction made in 1998. Therefore, this index is removed, and brand image is added, which can affect people’s expectation and satisfaction.

ii. ECSI measures customer loyalty with three indicators: the likelihood of a customer recommending the company, the likelihood of a repeat purchase, and the likelihood of an increased purchase.

Kristensson (2004) discussed the application and development of ECSI in European market and emphasized its importance to innovation. Baronchelli (2019) studied the influence factors of customer satisfaction and loyalty in retail banking by using ECSI model. Martínez-Caro (2014) analyzes the application of ECSI model in the field of higher education and studies the relationship between customer satisfaction and the quality of university education.

2.2.4 Chinese Customer Satisfaction Index (CCSI)

The research on customer satisfaction index started in China in 1995, when Professor Zhao Ping from Tsinghua University introduced this concept and began to conduct systematic research and analysis.

In 1998, the State Bureau of Quality and Technical Supervision commissioned the School of Economics and Management of Tsinghua University to organize and carry out research on the establishment of user satisfaction index in China. In 2001, China National Institute of Standardization and Tsinghua University preliminarily established the Chinese customer satisfaction model (CCSI) (He& Liu, 2000) (see figure 2.4 below)

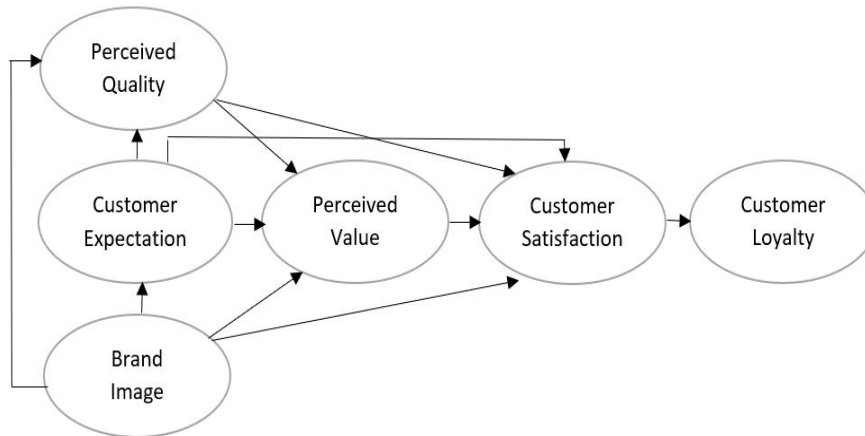


Fig 2.4 Chinese customer satisfaction index model as proposed by Tang et al. (2009)

CCSI contains 6 latent variables: brand image, expected quality, perceived quality, perceived value, customer satisfaction and customer loyalty. Among them, the first four are the cause variables of customer satisfaction, and customer loyalty is the result variable of customer satisfaction.

CCSI preserves the brand image in ECSI, according to Tang (2009), brand image fitted China better than other countries, people were more willing to choose the products or services from brand they preferred, and based on CCSI theory (He & Liu, 2000), when people feel better about the image of a brand, it will drive people to have a more positive willingness to try the products of the brand, and it will also get a higher consumption experience which can originate hypothesis as follows:

H6: Brand Image positively affects perceived quality.

H7: Brand Image positively affects customer expectations.

H8: Brand Image positively affects customer satisfaction.

H9: Brand Image positively affects perceived value.

Bai et al. (2002) thought customer perceived value is an important premise to determine customer satisfaction. There is a relationship between customer perceived value and customer satisfaction level of interaction, thus forming different levels of customer satisfaction.

This originates the following hypothesis:

H10: Perceived value positively affects customer satisfaction.

The application of CCSI model is mainly concentrated in the research of China. He (2019) discussed the application of CCSI in the tourism industry and built a CCSI model suitable for tourist destinations through questionnaire survey and data analysis. According to the author, factors such as scenic area environment, service level, price and public facilities have a great impact on tourists' satisfaction, and the increasing online comments and social media information should also be considered as important factors. Wang (2022) conducted a satisfaction survey on the automobile sales industry through CCSI, found that enterprise brands play a huge role in China's automobile sales market, and put forward relevant suggestions for the development of Chinese automobile brands.

2.2.5 Comparison of SCSB, ACSI, ECSI and CCSI

SCSB as the first index proposed to measure customer satisfaction, has some shortcomings. Fornell (1996) argues that both value and quality affect the perceived value factor, but SCSB cannot establish which one has larger influence. So, he added the perceived quality in ACSI.

The purpose of ACSI is to monitor macro-economic indicators and consider cross-industry and cross-sector comparisons of customer satisfaction, rather than providing a specific guidance to enterprises. Fornell (1994) proposed 17 questions/items which are macroscopic and abstract to measure the satisfaction under this context. But these do not involve the specific product or service performance of the enterprise, so the enterprise often does not know what causes its low satisfaction, so it is powerless to conduct a specific survey of the satisfaction of a certain industry.

Compared with ACSI, ECSI eliminates customer complaints and argues that the associations created by brand image affect people's expectations and satisfaction. ECSI distinguishes product quality and service quality when measuring perceived quality, service quality mainly reflects the subjective feelings of customers in the purchase process, while ACSI did not add the measurement of service quality until 1996 (Shi, 2013).

CCSI, on the other hand, draws lessons from ACSI and ECSI, and finally simplifies the perceived quality based on ECSI. It focuses more on people's feelings rather than the products and services themselves, so the service quality and products quality can be combined as one. And these three SCI models all accept that customer loyalty is a variable depend on customer satisfaction, this can originates the following hypothesis:

H11: Customer satisfaction positively affects customer loyalty.

Meanwhile, the country establishes the C-CSI platform, which reports every quarter instead of every year by Chnbrand It has gained high recognition and authority in the domestic industry (Shi, 2013), so the CCSI model is more suitable for the study of customer satisfaction in China.

2.3 Research on satisfaction of medical insurance

Basaza (2008) argues that in Uganda, lack of information, the level of insurance contributions paid, and the quality of health care have led to less coverage of social health insurance. Lekashingo (2012) points out that the use of health resources between Swiss regions is inefficient, and it is necessary to improve the supply level of health resources, improve the allocation of health resources. Ahn (2014) conducted an empirical analysis of the correlation between NHS perception and satisfaction among Korean residents, and the results showed that as the cost of health care increased, the correlation between residents' perception and satisfaction decreased significantly. Markovic (2015) pointed out that in Croatia, in terms of medical care, the product quality that has the greatest impact on patient satisfaction is beyond medical services. Puhlman ME (2016) put forward the research results of LMASS, a medical service enterprise combining "customer satisfaction" and "Six Sigma", in order to provide reference for the future development and related policy formulation of medical service enterprises, medical service enterprises and consumer medical service enterprises.

Chen Qiaoling et al. (2016) conducted an empirical study on the logistic multivariate linear model of the satisfaction level of urban residents' medical insurance in Shenyang city, they surveyed 1196 people by 5 dimensions, got a total 86.3% satisfaction, and the results showed that the quality of medical services, reimbursement process and medical expenses were important influencing factors of the overall satisfaction of urban residents' medical insurance. Liu Bin (2017) also used logistic analysis to do the study, and came to three conclusions through the satisfaction survey of urban and rural residents' medical insurance in Ezhou City: among the three indicators, the medical service attitude, the actual reimbursement ratio, the scope of diseases and drugs that can be reimbursed by the system, and the work ability and service attitude of medical service personnel, require the adjustment of reimbursement ratio, timely adjustment of reimbursement scope, capacity building of medical insurance handling personnel, and improve the comprehensive literacy of medical personnel. Yu Jialin (2017) through the survey of Qian 'an City, using multivariate stepwise regression research, concluded that rural residents' overall satisfaction with medical insurance is low, the treatment level and payment level have a greater impact on medical insurance, and the constraints on the medical insurance system are small, some insurmountable "adverse selection" phenomena have emerged, and the development gap between urban and rural areas in China is large, and further research is carried out.

In these studies, basically according to their own ideas to analyze, there were a variety of research methods, but few used the Customer Satisfaction Index (CSI) model to do the analysis, although Hao (2019) used ACSI model to design his questionnaire for the Satisfaction of Shi Jiazhuang city, he did not use it to analyze the results. Accordingly, no study was found proposing the

measurement of satisfaction related to medical insurance (in China) using the CCSI, ACSI, ECSI or SCSB.

2.5 Conclusions

Finally, according to the hypothesis, some dimensions in the CCSI model were replaced to establish a detection model more suitable for basic medical insurance in China and proposing the hypothesis of this study based on the model, and I call it basic medical insurance satisfaction model. The final CCSI model using in this study is shown as figure2.5:

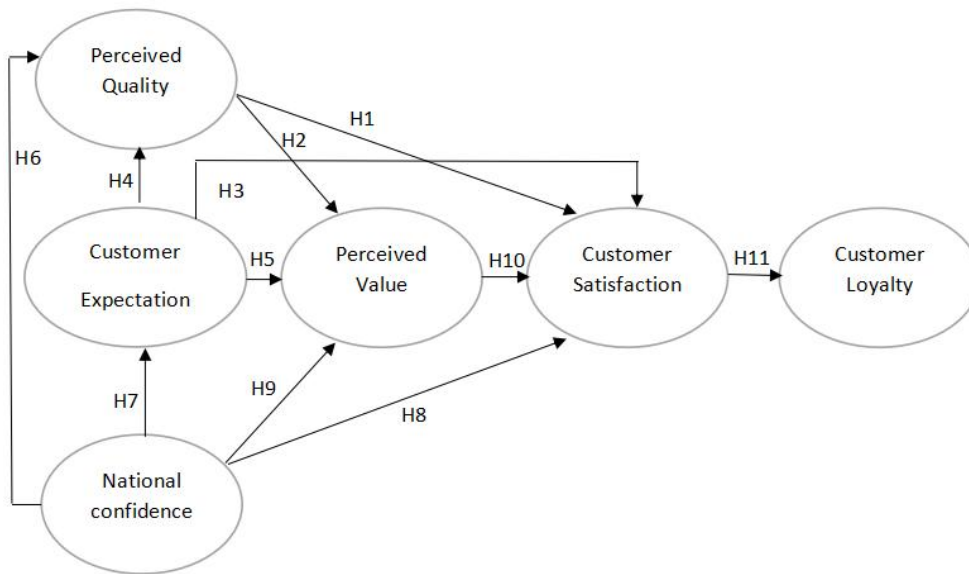


Fig 2.5 Basic medical insurance satisfaction model

The satisfaction model established in this paper contains six dimensions, namely perceived quality, customer expectation, brand image, perceived value, customer satisfaction and customer loyalty. The specific dimensions are defined as follows.

- Perceived Quality: Customers' actual feelings on the service quality of basic medical insurance in China after actual use.
- Customer Expectation: Before purchasing a product or service, customers have a certain preliminary understanding of it through different channels and have a certain prediction (Zou, 2018).
- Brand Image: It refers to the how customer think the company or the brand is, such as the brand awareness.
- Perceived Value: Perceived value includes two aspects: "evaluation of quality when the price is fixed" and " evaluation of price when the quality is fixed." (Sun, 2020)
- Customer Satisfaction: Overall customer satisfaction with basic medical insurance in China.

- Customer Loyalty: Loyalty is mainly reflected in two aspects: one is the willingness to continue using the basic medical insurance; the other is the willingness to actively persuade others to join and keep using the basic medical insurance.

Based on the above research status, scholars have conducted some research on basic medical insurance and medical insurance policy satisfaction and have also achieved research results. However, it cannot be ignored that in many studies, there are few studies based on satisfaction models to measure the satisfaction of residents' medical insurance, and there are still gaps in research in this field, which need continuous research and data support. In view of this, this project attempts to discuss the satisfaction of Chinese residents with basic medical insurance, and evaluates it based on the CCSI satisfaction model, hoping to better enrich the research content of Chinese residents' satisfaction with basic medical insurance.

3. Methodology

The methodology and research methods and tools used in this thesis are detailed in this chapter. A mixed-methodology is proposed, based on a case study approach where both semi-structured interviews and a survey are employed.

3.1 Case study approach

A case study methodology is followed in this thesis (Yin, 2018). The main objective of a case study is to promote the research theory and provide some reference basis through specific cases. In this study, the questions raised about residents' satisfaction with the current basic medical insurance in China is a way to understand the reality. Manipulators cannot control the results of the survey, which is very consistent with the case analysis method focusing on contemporary realistic behaviors. At the same time, case analysis can provide researchers with insights independent of large sample data, and lead to a certain extent, make up for the incompatibility between existing theories and past research experience. In addition, a feature of case analysis is that it is only applicable to the case studied (Yin, 2018).

In this case study, qualitative data and quantitative data are gathered and analyzed, as described below.

3.2 Data Collection

3.2.1 Data Collection Instruments

After the literature review, it was possible to find that there are many studies focusing on the satisfaction of basic medical insurance in China. Although the research methods used in these studies are quite different, such as SEM structural equation, mixed model and ACSI which is close to CCSI, these studies still provide a lot of experience and theoretical support for the questionnaire design of this research. This study thus proposes to build a quantitative data collection instrument for measuring satisfaction with medical insurance in China using as a starting point these previous studies. But recognizing that such a tool has never been used for this particular context, a previous qualitative study will be performed, in which several semi-structured interviews will be performed to obtain more insights about what influence people's views and satisfaction related to the use of basic medical insurance in China.

Qualitative data collection phase: Semi-structured interviews

The purpose of these semi-structured interviews is to determine the respondents' views on the current basic medical insurance in China, and get to know the group attributes they represent, including students, retirees, and in-service personnel. These interviews aim at guiding the

adjustment of the questionnaire to be used in the following quantitative data collection stage – this adjustment is a critical step since existing tools for data collection are not commonly applied to the specific sector under study in this thesis, and so there is need to ensure that the used tools fit to the problem under study. The interview guidelines are detailed in Annex A, and are aimed at exploring different issues:

- i. Determine if the interviewee is covered by basic health insurance.
- ii. Ask questions about the applicability and usefulness of different perceived quality dimensions and items, in line with the dimensions and items already used in previous studies.
- iii. Ask if interviewees consider that national confidence affects their level of satisfaction with the basic medical insurance. This is relevant to validate the need to include questions related to the brand image questions commonly used in other studies.
- iv. No matter what the interviewees' personal situation is, they are asked to give a brief answer on the aspects that need to be improved in the current basic medical insurance.

A total of 10 volunteers were invited to participate in these semi-structured interviews, and these interviews took place in private rooms agreed in advance to achieve a good interview atmosphere.

Quantitative data collection phase: adjusted version of the CCSI

The original CCSI included 31 items and one open question asking for any suggestions focused on medical insurance, and these items were divided into 6 dimensions – perceived quality, expected quality, national confidence, perceived value, satisfaction of the insured and loyalty of the insured, as followed (Tang, 2009):

- i. Perceived quality (P1-P17) – refers to the service quality of basic medical insurance perceived by the insured from their subjective perspective.
- ii. Expected quality (P18-P20) -- refers to what level of basic medical insurance in China should reach as expected by the insured.
- iii. National confidence (P21-P23) – refers to the insured's confidence in China's economic development and in government. These factors will make the insured associate with the potential of basic medical insurance and then affect their satisfaction.
- iv. Perceived value (P24-P25) -- refers to the value of basic medical insurance perceived by enrollees.
- v. Customer Satisfaction (P26-P27, P31) – the satisfaction evaluation of the insured on the current basic medical insurance in China.

vi. Customer Loyalty (P28-P30) -- the willingness of enrollees to continue to participate in China's basic medical and health insurance.

vii. Open question (P32)—the suggestions about basic medical insurance from the invitees.

As for the P21-P23 project, brand image is a newly added dimension of CCSI. In this study, since basic medical insurance is a national social security service, there is no competition and influence among different brands, so these items should be adjusted. The brand image used in other fields is herein replaced by national confidence behind medical insurance in this study. Although no relevant literature was found to support this adjustment, this was confirmed as adequate based on the interviews performed in the previous qualitative study (as further detailed in Chapter 4, section 4.1).

To measure the first 31 items, a 7-point Likert-scale used by Zhou (2022) is used for reference.

Table 3.1 summarizes all the items that are included in the survey following its adjustment for the particular context of this study in China. These adjustments result from changes in the wording to make it more closely related to the medical insurance context in China, as well as changes that are justified by the conclusions taken from the semi-structured interviews (which are detailed in Chapter 4, section 4.1).

Table 3.1 CCSI-adjusted Items focused on measuring satisfaction with medical insurance in China

Satisfaction dimensions		Items	Source
Perceived Quality	Medical insurance participation	PQ1: How much satisfied are you with current basic medical insurance coverage (95%)?	Liu (2020)
		PQ2: How much satisfied are you with your current payment amount in healthcare?	Hao (2019)
		PQ3: How much satisfied are you with the available information about the basic medical insurance (e.g., government document, news, APP and so on)?	Qualitative Study
		PQ4: How much satisfied are you with the information and procedures to enroll additional members (e.g., your child) in your insurance?	Liu (2020)
	Service	PQ5: How much satisfied are you with the current list of reimbursable diseases?	Hao (2019)
		PQ6: How much satisfied are you with the minimum expenses covered by the basic medical insurance?	Hao (2019)
		PQ7: How much satisfied are you with the maximum expenses that can be reimbursed?	Hao (2019)
		PQ8: How much satisfied are you with the procedure for referral (outpatient to inpatient or transfer to a	Hao (2019)

		higher-level hospital)?	
		PQ9: How much satisfied are you with the reimbursement procedures?	Hao (2019)
		PQ10: How much satisfied are you with the current online reimbursement process?	Qualitative Study
		PQ11: How much satisfied are you with the reimbursement rate for medical insurance?	Hao (209)
		PQ12: How much satisfied are you with the type of medicines the basic medical insurance covers?	Qualitative Study
	Reimbursement Department	PQ13: How convenient is it to get in contact with the reimbursement department (either online or physically)? (1 means very inconvenient, 7 means very convenient)	Shi (2013)
		PQ14: How much satisfied are you with the service attitude of medical insurance staff?	Shi (2013) & Yu (2019)
		PQ15: How much satisfied are you with the service efficiency (e.g., time it takes to be reimbursed) of medical insurance institutions?	Wang (2021), Yu (2019) & Cao (2022)
		PQ16: How much satisfied are you with the national health insurance promotion policy for health insurance?	Hao (2019)
		PQ17: How much satisfied are you with remote medical insurance reimbursement?	Qualitative Study
Customer Expectation		CE1: How would you rate your expectations with basic medical insurance? (From 1-7, 1 means you don't have expectations, 7 means you expect the basic medical insurance.)	Shi (2013) & Liu (2020)
		CE2: How fast and attentive are the services provided by the insurance entity (government) do you expect (1 means very slow and not attentive, 7 means very fast and attentive)?	Shi (2013)
		CE3: How much do you expect that the basic medical insurance can provide a high-quality service? (Please give it a score within 1-7, 1 means the lowest quality and 7 means the best in your mind)	Shi (2013)
National Confidence		NC1: How much satisfied are you with the current development of economic in China?	Qualitative Study
		NC2: How much satisfied are you with the government	Hao (2019)

	effort in the development of medical insurance?	
	NC3: How much satisfied are you with the National Healthcare Security Administration's reform of medical insurance?	Fu (2021)
Perceived Value	PV1: How much satisfied are you with the current price of basic medical insurance? (For students, retirees and those who don't have work is around ¥ 300 (depends on provinces), for workers is 2% of their salary)	Shi (2013)
	PV2: How much satisfied are you with the quality-cost relation of services covered by the basic medical insurance?	Shi (2013)
Customer Satisfaction	CS1: How far is the current basic medical insurance from your ideal medical insurance (1 means they have a long distance, 7 means basic medical insurance has reached your ideal)?	Shi (2013) & Liu (2020)
	CS2: How much satisfied are you with your most recent health insurance use?	Qualitative Study
	CS3: Globally speaking, how much satisfied are you with the current basic medical insurance system?	Shi (2013) & Fu (2021)
Customer Loyalty	CL1: How much open are you to the idea to keep your basic national health insurance (1 means you don't want to keep it anymore, 7 means you really want to keep it.)?	Shi (2013) & Hao (2019)
	CL2: To what extent are you willing to persuade uninsured people to pay for basic health insurance (1 means you don't want to persuade them, 7 means you really want to persuade them to join)?	Fu et al. (2021) & Liu et al.(2020)
	CL3: To what extent are you willing to keep your basic national health insurance in case there is a cost increase (1 means you are not willing to keep it, 7 means you are willing to keep it)?	Shi (2013)
Subjective Response	Do you have some suggestions about basic medical insurance? Please write it here.	Qualitative Study

Quantitative data collection phase: Independent Variables

According to previous literature, besides the six dimensions recognized to affect customer satisfaction, it is also relevant to assess the influence of different characteristics of the interviewees, such as age, gender, job occupation, education level and monthly income was collected.

i.Age: Four age groups were defined: Less than 20 years old; 21 to 40 years old; 41-60 years old and 61 or more years old proposed by Yu et al. (2019).

ii.Gender: Male and Female.

iii.Job occupation: Six groups were defined to try to cover all people: Government organs or institutions, Employees of an enterprise/company, Self-employed households/private owners, Farmer, Student, and other jobs proposed by Shi (2013) and Hao (2019).

iv.Education Level: People with different levels of education have different understanding of basic medical insurance and its influencing factors, and for that reason the following groups were considered: Illiterate, Primary school (6th year of schooling), Junior high school (9th year of schooling), Senior high school (12th year of schooling), bachelor's degree, master's degree, and higher education (Shi, 2013).

v.Monthly Income: People with different monthly income need to pay different amounts for healthcare delivery, so different monthly income levels were distinguished - Less than¥5000, ¥5001-10000, ¥10001-20000, more than ¥20001(referred to Zhang (2022) and Yu (2019)).

Additional items are thus included in the questionnaire in order to collect this information.

3.2.2 Pre-test and data collection procedure

A pre-test was conducted before the formal application of the questionnaire, aiming to find the problems still existing in the questionnaire and to modify it into the final version as far as possible based on the feedback received. The pre-test was performed with eight volunteers, including three students, three employees, one senior (retiree), and one medical insurance employee, to ensure the diversity and comprehensiveness of the information collected. In the end, the wording of some items in the questionnaire was changed, and the questionnaire was sent out again and received positive feedback. The complete questionnaire can be found in the Annex B.

In the next stage, the quantitative data collection of the questionnaire was started. Firstly, the "Questionnaire Star" platform was used to design the questionnaire, and then the questionnaire was distributed to different groups. For college students and employees, the questionnaire is very executable, and data can be conveniently gathered by sending questionnaires online. But for the retired elderly the online questionnaire may not be the most effective approach. Therefore, when preparing the online questionnaire, some paper versions of the questionnaires were printed, and these questionnaires were distributed to the elderly in the community, so that some of their opinions could be effectively collected.

Finally, the online questionnaire was distributed between May 1, 2023, and June 1, 2023, At the same time, we also began to visit the community to collect responses from the elderly population of

both provinces. In the end, a total of 245 online questionnaires and 41 offline questionnaires were collected (total of 286 answers).

3.3 Population and Sample

Data collection took place in two Chinese provinces: Shanxi and Guangdong provinces. The subjects selected for qualitative analysis were conveniently selected. They were all people who had participated in and often used basic medical insurance around them, and the interviews were completed with their voluntary help. Concerning the quantitative study, it included as sample people with basic medical insurance, including employees, who are the main users of basic medical insurance, as well as retirees and students. All participants were volunteers who have read the survey instructions written under the questionnaire title before they filled the questionnaire.

3.4 Data Analysis Tools

Data analysis is performed using a variety of statistical methods, including the ones described below:

i. Descriptive statistics are used to describe the basic features of the data in the study. Data were analysed with IBM SPSS Software (version 26.0).

ii. Construct reliability and validity were also verified. Reliability was measured through a confirmatory factor analysis (CFA), which was employed as a prerequisite for applying structural equation modelling (SEM) (Moore, 2012; Correia et al., 2022). Based on the results herein obtained, items with low factor loadings were removed from the model. These adjustments considered that model identification requires a minimum of three indicators for a CFA model with a one-factor solution (Wang et al., 2019). Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) were afterwards computed (Correia et al., 2022).

iii. SEM is then estimated using AMOS. The model represents the structural connections between latent variables.

3.5 Conclusion

This study employs both qualitative and quantitative research methods to build a survey focused on measuring the satisfaction with basic medical insurance in two provinces in China. The data gathered through the use of such survey was then analyzed using both descriptive statistics, reliability and validity analysis and SEM.

Table 3.2 presents a summary on the research structure and coherence to meet the objectives proposed for the present study.

Table 3.2 Partial Objectives, Research Questions and Analysis

Partial Objectives	Research Question	Analysis
Evaluate patient satisfaction with medical insurance at Shanxi and Guangdong provinces in China	How much satisfied are people with the current basic medical insurance system, specifically those from Shanxi and Guangdong provinces in China?	Descriptive Analysis
Identify the main sources of dissatisfaction with medical insurance at Shanxi and Guangdong provinces in China		Descriptive Analysis & Structural equation modelling
Propose potential solutions to improve the satisfaction with basic medical insurance at Shanxi and Guangdong provinces in China	How can one promote a higher satisfaction with medical insurance in these provinces?	Qualitative analysis

4. Analysis of results

This chapter analyzes the results of the data collected both in the qualitative and quantitative stages of this thesis.

4.1 Qualitative data collection phase

4.1.1 Sample Characterization

The collection of qualitative analysis data was chosen for convenience. Considering that there are still 5% of people in China who don't have access to basic medical insurance, these interviews included one person that does not take part in the basic medical insurance – this was decided so as to try to understand the reasons behind not using such an insurance. At the same time, considering the differences among employees, students and retired people, 9 volunteers with access to basic medical insurance participated in the interview. Details related to the interviewees are shown in table 4.1.

Table 4.1 Summary of respondents' data

Interviewee	Gender	Age	Whether to participate in China's basic medical insurance	The last time you used basic medical insurance
Student1	Female	20	Yes	2022.12
Student2	Female	22	No	-
Student3	Male	24	Yes	2022
Production personnel	Male	29	Yes	2023.1
Marketing personnel	Female	35	Yes	2022.8
Government officer1	Male	25	Yes	2023.3
Government officer2	Male	33	Yes	2022.12
Manager	Male	37	Yes	2022.9.16
Medical staff	Female	45	Yes	2023.2
Retiree	Female	56	Yes	2023.3

According to the table above, 10 people from 7 industries took place in the interviews, one student who did not join the basic medical insurance was volunteered to participate the interview. Their ages were all above 20 years old, so that they had independent cognition and basically have a certain economic ability. Finally, it showed that all people who joined the insurance had enjoyed the service, which moaned the basic medical insurance had a good utilization rate.

4.1.2 Analysis of interview results

Interviewees provided the answers shown in Annex C. Key information can be gleaned through these interviews.

i. Results show that national confidence can be used as one dimension in this study, thus replacing the brand image. This was confirmed together with the production personnel who said that “*When people have confidence in the national government, they will tend to magnify his positive side, which is the inevitable result of national identity, the role of basic medical insurance will certainly improve people's satisfaction, of course, if there is no confidence, people are more negative, their satisfaction will certainly decline.*” And the manager also said that “*Having confidence in the state of the economy of the national government makes them have higher expectations about the future reimbursement level of medical insurance, even if the basic medical insurance is defective now, they are more confident that the future medical insurance will be better, which make them more satisfied.*”

ii. By the answer given by student2, who does not join the basic medical insurance, there are mainly two groups who do not take part in the insurance: i) one first group is those people who are rich, who have many commercial insurances to choose from, which might be more convenient than basic medical insurance; and ii) one second group comprising those who have low income and education level, and who want to get the payment of basic insurance as their own money. This second case requires China to have a higher economic strength to solve those poor people's living problems.

Finally, these interviews also allowed to adjust the items in the questionnaire, given the specificities of the sector and the problem under analysis. Particularly, interviews allowed to conclude that some items were missing in the original questionnaire built based on items proposed from the literature (see Table 3.1 for details). In particular, PQ3 is based on student1 who said that “*maybe there are some ways to know about this information just from news or apps, but I think that this information should be disseminated more widely*” PQ10, on the other hand, comes from “*I know that nowadays we can do some reimbursement online, but I think government still need to improve the online survey*”, according to production personnel. PQ12 about medicine reimbursement comes from the answer given by marketing personnel and retiree. PQ17, PQ21 and PQ27 are also the new items based on interviews, and their supports can be found in the interviewees' answers in Annex C.

The interviews provide rich theoretical support for the research in this thesis, so that this research can continue according to the initial assumption, and then carry out the questionnaire data collection and analysis stage.

4.2 Quantitative Study

This section presents the results obtained for the quantitative component of the study.

4.2.1 Sample Characterization

In this part, the sample used for the quantitative analysis stage is analyzed and then compared with the population data of two provinces (Guangdong and Shanxi) provided by the Chinese Bureau of Statistics (2023). This comparison allows to conclude about the representativeness of the sample.

Sample Characterization - Guangdong and Shanxi provinces

The profile of respondents is characterized in terms of Province, Gender, Age, Education, Marital status, Household registration, Regular residence, Occupation and Average monthly income (see Table D-1 and Table E.2 for more details).

i.Province: In a total sample of 286, 55.59% were from Guangdong province, and 44.06% were from Shanxi province.

ii.Gender: 43.71% were Male, 56.29% were Female.

iii.Age: Only 4 people were less than 20 years old; the majority of respondents (65.03%) were between 21 to 40 years old, 19.23% were between 41 to 60 years old, and 14.34% were more than 61 years old.

iv.Education: It was divided into 6 parts, 1.4% were Illiterate, 12.59% were Primary school, 4.9% were Junior high school, 11.19% were Senior high school, 63.99% have bachelor's degree, and 5.94% were those who have the degree above master.

v.Marital status:19.23% were single, and 80.77% had get married.

vi.Household registration: 87.06% were citizen, 12.94% were rural.

vii.Occupation: It was divided into 6parts, 7.69% were government officers, the most of them (67.48%) were employees in national or private enterprise, 9.79% were Self-employed households/private owners. And there were 5.59% farmers, 5.94% students and 3.5% did other works.

viii.Average monthly income: It had 4 levels, there were 37.06% had less than 5000RMB income monthly, 40.91% had 5001 to 10000RMB, 18.53% had 10001 to 20000RMB and only 3.5% had average salary over 20001RMB.

Sample Representativeness

For the representativeness, a comparison between the province population structure and sample is done. Table4.2 shows the information about Guangdong province.

Table 4.2 Representativeness in Guangdong province

	Guangdong province		Sample	
	number	percent	number	percent
Total population	12,601.25 million	100%	159	100%
Male	6,687.36 million	53.07%	72	45.28%
Female	5,913.88 million	46.93%	87	54.78%
15-59 years old	8,669.66 million	68.80%	139	87.42%
60+ years old	2637.44 million	20.93%	20	12.58%

(Data source: Guangdong Statistical Information Network STATS.GD.GOV.CN)

Table 4.3 shows the same information but concerning Shanxi province.

Table 4.3 Representativeness in Shanxi province

	Shanxi province		Sample	
	number	percent	number	percent
Total population	3,491.5616 million	100%	127	100%
Male	1,780.5148 million	50.99%	53	41.73%
Female	1,711.0468 million	49.01%	74	58.27%
15-59 years old	2,260.0878 million	64.73%	106	83.46%
60+ years old	1,111.0149 million	31.82%	21	16.54%

(Data Source: Shanxi Provincial Bureau of Statistics tjk.shanxi.gov.cn)

From the comparison of the above two tables, the structure of data collected by this research is somehow different from the population distribution of Guangdong province and Shanxi province. Particularly, a higher number of responses were obtained from women in both provinces, while a higher percentage of man would be expected. On the other hand, a higher percentage of responses is obtained for people aged below 60, which is in line with the majority of the population of both provinces.

4.2.2 Descriptive Statistics of Questionnaire items

4.2.2.1 Descriptive statistics for the global sample

SPSS (version 26) was used to perform the descriptive analysis of the data, including the mean value, skewness, and kurtosis of each variable. The specific results are shown in table 4.4.

Table 4.4 Descriptive analysis of sample

Dimensions	Items	Min	Max	Mean	Standard deviation
Perceived Quality	PQ1	2	7	5.34	1.188
	PQ2	1	7	4.75	1.505
	PQ3	1	7	5.00	1.397
	PQ4	1	7	5.01	1.293
	PQ5	1	7	4.60	1.601
	PQ6	1	7	4.59	1.564
	PQ7	1	7	4.67	1.564
	PQ8	1	7	4.56	1.516
	PQ9	1	7	4.91	1.472
	PQ10	1	7	5.02	1.384
	PQ11	1	7	4.66	1.587
	PQ12	1	7	4.42	1.685
	PQ13	1	7	4.74	1.577
	PQ14	1	7	5.02	1.525
	PQ15	1	7	4.85	1.519
	PQ16	1	7	4.97	1.479
	Customer Expectation	PQ17	1	7	4.68
CE1		1	7	5.58	1.236
CE2		1	7	5.68	1.341
National Confidence	CE3	1	7	5.47	1.360
	NC1	1	7	5.24	1.267
	NC2	1	7	5.31	1.339
Perceived Value	NC3	1	7	5.00	1.345
	PV1	1	7	4.81	1.474
Customer Satisfaction	PV2	1	7	4.93	1.431
	CS1	1	7	4.57	1.529
	CS2	1	7	5.10	1.474
Customer Loyalty	CS3	1	7	5.08	1.402
	CL1	1	7	5.79	1.244
	CL2	1	7	5.41	1.428
	CL3	1	7	5.07	1.573

According to the data from the table above, the study can do some analysis about the mean and Standard deviation as follows:

i. For the mean of items, CL1 has the highest mean. People are willing to keep in the basic medical insurance system, In the long run, this provides sufficient conditions for the country to continue to carry out the medical insurance system reform and shows that the basic medical insurance field needs continuous research investment. PQ12 has the lowest satisfaction, which

means that people think types of medicine in the basic medical insurance are not enough, this problem can be considered as the most important part of the reformation in medical insurance, although more medicines have been included in the list, it is more difficult for the country to coordinate the sustainable development of medical insurance funds (Zhang & Wang, 2023), which reflects the contradiction between people's growing needs and national development.

ii. We can find that those items with satisfaction less than 5 are focusing on Perceived Quality and Perceived Value. People are not satisfied with items that are related to specific polices, such as procedure for referral, minimum expense requiring during the treatment process, types of diseases and the cost of basic medical insurance. The basic medical insurance system is complex, people always feel dissatisfied with some services, however, the total satisfaction is not low.

iii. For the standard definition, the item PQ12 has the highest index, and those items with high index focus on the dimension Perceived Quality means it has a lower level of agreement exist. People's living environment and economic level are different, and their perceptions of basic medical insurance services are also very different, so it is understandable that the sample data is relatively discrete. From a reformist's point of view, these projects deserve a deeper exploration, but this study will not do the further research.

The data of total sample shows that generally people are satisfied with current basic medical insurance.

4.2.2.2 Descriptive statistics per province

The specific data of two provinces can be found in Annex E, as the tableE.1 shows, the means of dimensions between two provinces are very closed, which might lead to the result that no matter where people live in, they have the same opinion about basic medical insurance. However, although the means are close, people live in Guangdong province have higher satisfaction of basic medical insurance in all 6 dimensions than those who live in Shanxi. The difference is more obvious in Perceived Value and Customer Satisfaction (more than 0.2). This can be considered that with a high economic power, people live in Guangdong have a higher education level and monthly income than those in Shanxi province, the specific structure data can be found in tableE.2, so their perceived value will be higher.

Although there are only two provinces, but by analogy, in China, the better developed provinces are, the higher people's perceived value of basic medical insurance will be, and the higher their satisfaction will be.

4.2.3 Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) verifies the reliability of the measurement scales. In this study, dimension Perceived Quality has 17 items while other dimensions have 2-3 items, which might cause the model fit index low. However, these items will provide the information about what causes people to be dissatisfied with basic medical insurance, and their factor loadings are above 0.4, means they can be accepted (Hair et al. 1992). The comparative fit index (CFI) = 0.88, the Tucker-Lewis fit index (TLI) = 0.87, the root mean square error of approximation (RMSEA) = 0.07. Generally, CFI, TLI should be higher than 0.9, but for this study, deleting items will cause the loss of information, and based on the study of Aminu A. et al. (2021), These values still suggest a good fit between the observed data and the model. The CFA test model can be found in Annex F.

Table 4.5 reports Cronbach's alpha, CR and AVE for the dimensions. When Cronbach's alpha is larger than 0.7, means the dimensions are reliable. The criteria for CR and AVE judgment are $CR > 0.7$, $AVE > 0.5$ (Liu, 2020). Results show that each dimension has a high level of internal consistency. More details can be found in Annex F.

Table 4.5 Reliability and validity of the constructs

Dimension	Items	Cronbach' alpha	CR	AVE
Perceived Quality	17	0.95	0.95	0.53
National Confidence	3	0.76	0.76	0.51
Customer Expectation	3	0.75	0.75	0.5
Perceived Value	2	0.86	0.86	0.75
Customer Satisfaction	3	0.87	0.87	0.69
Customer Loyalty	3	0.8	0.81	0.59

4.2.4 Structural Equation Modelling (SEM)

The study uses the structural equation modelling (SEM) to test the hypothesis. The CFI is 0.88, TLI is 0.87, incremental fit index (IFI) is 0.88 and the RMSEA is 0.07, Chi-square freedom ratio (CMIN/DF)=2.78 which is less than the requirement of 3. Although TLI, IFI are less than 0.9, the Perceived Quality dimension has unbalanced number of items, we can still regard it fits well with the information value of the items.

There are some findings from the Structural equation modelling SEM analysis (table 4.6). H1 states that Perceived Quality has a positive effect in Customer Satisfaction, this effect is confirmed (estimated coefficient = 0.40, $p < 0.001$), supporting H1. Perceived Quality also has a positive effect in Perceived Value (estimated coefficient = 0.63, $p < 0.001$), supporting H2. The relationship between Customer Expectation and Perceived Quality is not valid ($p = 0.106$), and it is same to relationship between Customer Expectation and Perceived Value ($p = 0.528$). But Customer Expectation has a positive effect in Customer Satisfaction (estimated coefficient = 0.22, $p < 0.001$). H3 is supported but

H4 and H5 are not valid. National Confidence has positive effect in Perceived Quality (estimated coefficient = 0.81, $p < 0.001$) and Customer Expectation (estimated coefficient = 0.63, $p < 0.001$), H6 and H7 are valid. But the effect from National Confidence in Customer Satisfaction ($p = 0.239$) and Perceived Value ($p = 0.039$) are not valid. H8 and H9 are rejected. Perceived Value has a positive effect in Customer Satisfaction (estimated coefficient = 0.33, $p < 0.001$), supported H10. H11 states Customer Satisfaction has a positive effect in Customer Loyalty, this is confirmed (estimated coefficient = 0.84, $p < 0.001$).

Based on these hypotheses, we can conclude that Perceived Quality occurs as an antecedent of Perceived Value; Customer Expectation can influence the Customer Satisfaction; National Confidence can influence Perceived Quality and Customer Expectative, and then there is mediating effects between National Confidence and Perceived Value, same to the National Confidence and Customer Satisfaction; Perceived Value influence the Customer Satisfaction, and Customer Satisfaction occurs as an antecedent of Customer Loyalty.

Table 4.6 Estimated coefficients of the structural model

Dimensions	PQ	CE	NC	PV	CS	CL
PQ				0.63	0.4	
CE					0.22	
NC	0.81	0.63				
PV					0.33	
CS						0.84
CL						

Notes: PQ = Perceived Quality, CE = Customer Expectation, NC = National Confidence, PV = Perceived Value, CS = Customer Satisfaction, CL= Customer Loyalty

4.2.5 Suggestions

On the whole, people's dissatisfaction with basic medical insurance services at this stage is concentrated on the quality and price of services. Guangdong Province's satisfaction is slightly higher than Shanxi Province's on the whole, but in terms of dissatisfied items, the two are generally similar.

People generally believe that the cost of basic medical insurance is high, and at the same time they are not satisfied with the minimum payment line and the maximum reimbursement amount of insurance. This is the biggest problem facing basic medical insurance, which requires the government to constantly explore the balance point between the service cost and people's acceptance level, and strive to lower the price of medical insurance.

People are also not satisfied with the list of basic medical insurance, and there are many diseases or drugs that are not included in the list. With the emergence of various special drugs and new drugs, the government should also speed up the review process of drugs included in the list, and

a corresponding expert group can be set up to update the list more frequently and maintain the vitality of the reimbursement list.

In recent years, the Chinese government has recognized the obstacles brought by regional differences to the use of medical insurance, and is promoting the construction of an integrated information platform. In this process, the portability of the network should also be utilized to simplify the reimbursement process, and finally enable people to achieve fast reimbursement in different places through the network. It should also rely on the construction of this platform, so that patient information can be included in the overall platform, and then be quickly accessed by different hospitals.

It should be noted that although the satisfaction trend of the two provinces is consistent, the data of Shanxi Province is significantly lower than that of Guangdong Province when it comes to service price, reimbursement ratio, cost performance and other aspects related to people's economic conditions, indicating that people's living standards in Shanxi Province are not satisfactory. Although the southeast coastal provinces develop rapidly, it also warns us that, In the process of development, the central and western provinces should also be given some economic or policy support.

5. Conclusion

This chapter presents the main conclusions and limitations for this thesis, followed by the proposal of further lines of research.

5.1 Key conclusions and answers to the research questions

5.1.1 Dimensions with better results

According to the analysis in last chapter, the Customer Expectation, National Confidence, Customer Satisfaction and Customer Loyalty have better satisfaction after survey. The current system has done well in these items, can get a result that after more than half a century of hard work, the Chinese government has basically built the world's largest and most complex social medical security system.

5.1.2 Dimensions with lower satisfaction

The Perceived Quality and Perceived Value have lower satisfaction than other dimensions. For the Perceived Value, it mainly influenced by the price of basic medical insurance and the service quality, considering that China's current financial, the contradiction between limited medical insurance fund income and people's unlimited medical needs growing, the pressure on fund revenue and expenditure is increasing year by year (Liu, 2021), it is not feasible to increase perceived value by reducing the amount paid. So how to improve the Perceived Quality is the key to improve the satisfaction of basic medical insurance.

5.1.3 CCSI results

The study divides 31 items into 6 dimensions, some of them have low satisfaction, some have high satisfaction, by doing the SEM analysis, gets a result that shows relationships between the dimensions in basic medical insurance:

i. Perceived Quality, Perceived Value and Customer Expectation all have positive influence on the Customer Satisfaction, and the effect of Perceived Quality is the most significant, which means that for basic medical insurance, improving the service quality is primary requirement.

ii. National Confidence does not influence the Customer Satisfaction, but it will positively influence the Perceived Quality and Customer Expectation, there is an intermediary relationship between National Confidence and Customer Satisfaction. Here shows one probably reason for this: China has a history of 5,000 years and Chinese has been influenced by Chinese culture since childhood. With the recent rise of China in economy and politics, people generally have confidence in the national development, which has been integrated into people's subconscious, so the influence can be ignored.

iii. Customer Satisfaction has positive influence on the Customer Loyalty, however, because basic medical insurance is part of the national social security, with more or less mandatory, the reference value of this relationship might be lower than it in other industries.

5.1.4 Key recommendations

Finally, although the questionnaire scale in these dimensions of this study is not perfect and complete. However, it can also provide the areas they should focus on when analyzing the relevant research in this field in the future and establish an evaluation system and evaluation scale suitable for the public health field, if possible, to provide help for the reform of basic medical insurance.

For the reform of basic medical insurance, as the study shows, the government should focus on the Perceived Quality dimension. According to the open questions, there are many suggestions that can be referenced, such as increasing reimbursement for serious diseases, increasing types of medicines, reducing corruption in government, establishing a unified medical information platform and so on. However, these improvements all need to be combined with the economic level, how to find a way to balance them, will be the target for the medical insurance reform in a long time.

5.2 Limitations

There are still some uncertainties about whether the application of CCSI in the field of basic medical insurance is completely appropriate. At the same time, only the data of Shanxi Province and Guangdong province were used in data collection, and the sample distribution was not fully consistent with the population distribution of the two provinces.

5.3 Further lines of research

In view of the limitations of this paper, the number of samples can be increased in future studies. In view of the speed of China's aging population, the proportion of retirees in the samples can be increased as much as possible, or the survey can be repeated in other provinces of China to enrich regional data and add more data for the difference comparison among different provinces. The questionnaire of this study is not perfect, and we can try to add more items to conduct a more comprehensive investigation in the future research. It is also possible to explore a more perfect model and try to add more dimensions and path relationships to improve the application of CCSI model in the medical insurance field, and it is best to establish a mature measurement system on this basis.

Glossary of acronyms and abbreviations

CSI: Customer Satisfaction Index;

SCSB: Sweden Customer Satisfaction Barometer;

ACSI: American Customer Satisfaction Index;

ECSI: European Customer Satisfaction Index;

CCSI: Chinese Customer Satisfaction Index;

CFA: Confirmatory factor analysis;

CFI: Comparative fit index;

TLI: Tucker-Lewis fit index;

RMSEA: Root mean square error of approximation;

SEM: Structural Equation Modelling;

IFI: Incremental fit index;

CMIN/DF: Chi-square freedom ratio.

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Annexes

Annex A- Interview with the satisfaction of China basic medical insurance

My name is Chen Liang, and I am currently developing a master's thesis on a satisfaction survey of basic medical insurance, as part of the master's in business administration at ISCTE. The purpose of this interview is to get to know your opinion about the Chinese basic medical insurance. To get some data to support the medical insurance reform.

Aiming to evaluate the perceived service quality, we will also collect some data from them.

1. Have you participated in China's basic medical insurance plan?
2. Have you used medical services under your basic health insurance plan in the last 12 months?
3. When was the last time you used medical services under your basic health insurance plan?
4. Do you think the coverage of the basic medical insurance plan is broad enough? If not, please indicate what do you think it needs to be improved.
5. Do you have to pay extra when you use medical services under your basic health insurance plan? If yes, do you think these fees are reasonable?
6. Do you think the medical insurance management agency is efficient? Was it possible to address your questions or feedback in a timely manner?
7. Do you think Medical insurance 's reimbursement process is simple? How can this process be improved to make it simple in your opinion?
8. Are you satisfied with the quality of medical services in your basic medical insurance plan? If no, please briefly state what you are not satisfied with.
9. Do you think Medicare is reimbursed fairly? If not, how can it be fair?
10. Do you think your economic level will influence your satisfaction of the basic medical insurance?
11. I'm going to test residents' confidence about country economic and the government in my next step, so do you think there is link between confidence and satisfaction? Whether yes or not, please show me your reason.
12. Do you have any other comments or suggestions about the basic medical insurance plan? Please provide a brief description, explaining which areas the most positive and negative aspects of it.

Annex B-Questionnaire

Questionnaire

Dear invitees,

I 'm a student from ISCTE-IUL, Lisbon, currently developing my Master Thesis in Business Administration. I'm conducting a survey to evaluate your satisfaction with basic medical insurance in China, and only focus on Guangdong and Shanxi provinces. If you are not a user of Chinese basic medical insurance, or you do not live in these two provinces, please do not answer this questionnaire.

The questionnaire is organized into 2 parts. Part 1 is used to evaluate your satisfaction with basic medical insurance in China, and all the questions should be answered using a 7-point Likert scale (1 means that you are strongly unsatisfied, 7 means that you are strongly satisfied). Part 2 is used to collect your personal details. All the data will be used only for academic purposes, and your anonymity will be ensured.

Thank you for your cooperation,

Chen Liang.

Group I - Personal Characterization

Please, mark your answer with an "x" in the option corresponding to your answer.

Province of residence:

- Guangdong Shanxi
 Others (If you check this box, you don't have to fill out the rest of the questionnaire)

Gender:

- Male Female

Age:

- Less than 20 years-old 21-40 years-old 60 years-old
 More than 61 years-old

Education:

- Illiterate Primary school (6th year of schooling)
 Junior high school (9th year of schooling)
 Senior high school (12th year of schooling)
 Bachelor's degree
 Master's degree and higher education

Marital status:

- Married Unmarried

Household registration:

City

Countryside

Regular residence:

City

Countryside

Your occupation:

Government organs or institutions

Employees of an enterprise/company

Self-employed households/private owners

Farmer

Student

Other

Your average monthly income:

Less than 5000

5001-10000

10000-20000

More than 20001

Group II -Satisfaction of basic medical insurance in China

Mark with an (x) the number that best describes your satisfaction level with each of the following statements, considering the scale that goes from 1- "Totally unsatisfied" to 7- "Totally satisfied".

Items		Scale						
		Totally Unsatisfied						
P1	How much satisfied are you with current basic medical insurance coverage (95%)?	1	2	3	4	5	6	7
P2	How much satisfied are you with your current payment amount in healthcare?	1	2	3	4	5	6	7
P3	How much satisfied are you with the available information about the basic medical insurance (e.g., government document, news, APP and so on)?	1	2	3	4	5	6	7
P4	How much satisfied are you with the information and procedures to enroll additional members (e.g., your child) in your insurance?	1	2	3	4	5	6	7
P5	How much satisfied are you with the current list of reimbursable diseases?	1	2	3	4	5	6	7
P6	How much satisfied are you with the minimum expenses covered by the basic medical insurance?	1	2	3	4	5	6	7
P7	How much satisfied are you with the maximum expenses that can be reimbursed?	1	2	3	4	5	6	7
P8	How much satisfied are you with the procedure for referral (outpatient to inpatient or transfer to a higher-level hospital)?	1	2	3	4	5	6	7
P9	How much satisfied are you with the reimbursement procedures?	1	2	3	4	5	6	7
P10	How much satisfied are you with the current online reimbursement process?	1	2	3	4	5	6	7
P11	How much satisfied are you with the reimbursement rate for medical insurance?	1	2	3	4	5	6	7
P12	How much satisfied are you with the type of medicines the basic medical insurance covers?	1	2	3	4	5	6	7
P13	How convenient is it to get in contact with the reimbursement department (either online or physically)? (1 means very inconvenient, 7 means very convenient)	1	2	3	4	5	6	7

P14	How much satisfied are you with the service attitude of medical insurance staff?	1	2	3	4	5	6	7
P15	How much satisfied are you with the service efficiency (e.g., time it takes to be reimbursed) of medical insurance institutions?	1	2	3	4	5	6	7
P16	How much satisfied are you with the national health insurance promotion policy for health insurance?	1	2	3	4	5	6	7
P17	How much satisfied are you with remote medical insurance reimbursement?	1	2	3	4	5	6	7
P18	How would you rate your expectations with basic medical insurance? (From 1-7, 1 means you don't have expectations, 7 means you expect the basic medical insurance.)	1	2	3	4	5	6	7
P19	How fast and attentive are the services provided by the insurance entity (government) do you expect? (1 means very slow and not attentive, 7 means very fast and attentive.)	1	2	3	4	5	6	7
P20	How much do you expect that the basic medical insurance can provide a high-quality service? (Please give it a score within 1-7, 1 means the lowest quality and 7 means the best in your mind)	1	2	3	4	5	6	7
P21	How much satisfied are you with the current development of economic in China?	1	2	3	4	5	6	7
P22	How much satisfied are you with the government effort in the development of medical insurance?	1	2	3	4	5	6	7
P23	How much satisfied are you with the National Healthcare Security Administration's reform of medical insurance?	1	2	3	4	5	6	7
P24	How much satisfied are you with the current price of basic medical insurance? (For students, retirees and those who don't have work is around ¥ 300 (depends on provinces), for workers is 2% of their salary)	1	2	3	4	5	6	7
P25	How much satisfied are you with the quality-cost relation of services covered by the basic medical insurance?	1	2	3	4	5	6	7
P26	How far is the current basic medical insurance from your ideal medical insurance (1 means they have a long distance, 7 means basic medical insurance has reached your ideal)?	1	2	3	4	5	6	7

P27	How much satisfied are you with your most recent health insurance use?	1	2	3	4	5	6	7
P28	How much open are you to the idea to keep your basic national health insurance? (1 means you don't want to keep it anymore, 7 means you really want to keep it.)	1	2	3	4	5	6	7
P29	To what extent are you willing to persuade uninsured people to pay for basic health insurance? (1 means you don't want to persuade them, 7 means you really want to persuade them to join.)	1	2	3	4	5	6	7
P30	To what extent are you willing to keep your basic national health insurance in case there is a cost increase? (1 means you are not willing to keep it, 7 means you are willing to keep it.)	1	2	3	4	5	6	7
P31	Globally speaking, how much satisfied are you with the current basic medical insurance system?	1	2	3	4	5	6	7
P32	Do you have some suggestions about basic medical insurance? Please write it here.							

This is the end of the questionnaire. Thank you again for your strong support. Wish you good health and a happy life.

Annex C – Answers of interviews

Table C.1 The answers of interviewees

Question	Stu1	Stu2	Stu3	Pro	Mar	Gov1	Gov2	Man	Med	Ret
Q1	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q2	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q3	2022.12	-	2022	2023.1	2022.8	2023.3	2022.12	2022.9.16	2023.2	2023.3
Q4	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes
Q5	Yes	No	No	No	Yes	No	No	No	Yes	No
Q6	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Q7	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Q8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Q9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q10	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Q11	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q12	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Legend: Stu - student, Pro - production personnel, Mar - marketing personnel, Gov - Government officer, Man - manager, Med - medical staff, Ret - retiree

The answers given to open questions are summarized below:

- Student 1: "Although we still have to pay some cost by ourselves even if we use the basic medical insurance, it is much better than all personal expenses. I am still very satisfied with basic medical insurance. By the way, I have no idea about how to take part in the insurance and how to use it, to be honest all these things are done by my parents, maybe there are some ways to know about this information just from news or apps, but I think that this information should be disseminated more widely. "

- Student 2: "Because my family is relatively rich, my parents have purchased a lot of commercial medical insurance for me, so I don't need to participate in basic medical insurance. Although I cannot provide my own experience, from the information I have learned, I'd like to say that China's basic medical insurance is almost perfect and can meet most needs."

- Student 3: "I think that the correlation between whether people have faith in the country and their willingness to participate in basic medical insurance is not clear, because even if people don't trust the government, they still want to participate in basic medical insurance, after all, they can reduce their own expenses."

- Production personnel: "In my opinion, when people have confidence in the national government, they will tend to magnify his positive side, which is the inevitable result of national identity, the role of basic medical insurance will certainly improve people's satisfaction, of course, if there is no confidence, people are more negative, their satisfaction will certainly decline. Finally, I

know that nowadays we can do some reimbursement online, but I think government still need to improve the online survey, I hope it will be more convenient to get reimbursed when we use it in other provinces."

- Marketing personnel: "The basic medical insurance services that people enjoyed are same, the company will generally deduct the cost before they send the salary to people, so people do not care about it, their income should have no impact on satisfaction. For the suggestions, I hope the reimbursement list of basic medical insurance can be more extensive, there are many types of medicines that can't be reimbursed."

- Government officer1: "I think the physical examination program can also be included in the scope of basic medical insurance reimbursement. It's better to expand its scope of service, so that people can enjoy more benefits brought by the development of the country."

- Government officer2: "Basic medical insurance sometimes requires too many procedures, the steps are very tedious. Of course, the government will give a lot of subsidies to us who work in the government, so we must be more satisfied than ordinary people. I hope the country will get better and better in the future, let more people enjoy the survey."

- Manager: "Now the basic medical insurance is more biased towards the poor, people with higher incomes have to pay more money than them, but they enjoy the same service, which of course will affect some people's satisfaction. And having confidence in the state of the economy of the national government makes them have higher expectations about the future reimbursement level of medical insurance, even if the basic medical insurance is defective now, they are more confident that the future medical insurance will be better, which make them more satisfied, so I think it's necessary to get a high economic level for China."

- Medical staff: "I feel that the starting line of basic medical insurance can be further lowered, because some minor diseases should also need medical insurance to cover, and the reimbursement amount should be different according to the level of payment, the current system is not reasonable for people with high incomes."

- Retiree: "I am generally satisfied with the current medical insurance. It would be very good if the state could increase the amount and types of medicines of medical insurance reimbursement in the future."

Annex D – Sample Characterization

Table D.1 Sample Characterization – Mean and frequencies for the characterization variables

INDEPENDENT VARIABLES		Absolute frequency	
Total sample		286	
		Absolute Frequency	Relative Frequency
Province	Guangdong province	159	55.59%
	Shanxi province	127	44.41%
	Total	286	100.00%
Gender	Male	125	43.71%
	Female	161	56.29%
	Total	286	100.00%
Age	Less than 20	4	1.40%
	21 to 40	186	65.03%
	41 to 60	55	19.23%
	More than 61	41	14.34%
	Total	286	100.00%
Education level	Illiterate	4	1.40%
	Primary school (6th year of schooling)	36	12.59%
	Junior high school (9th year of schooling)	14	4.90%
	Senior high school (12th year of schooling)	32	11.19%
	Bachelor's degree	183	63.99%
	Master's degree	17	5.94%
	Total	286	100.00%
Marital Status	Unmarried	231	80.77%
	Married	55	19.23%
	Total	286	100.00%
Household registration	City	191	66.78%
	Countryside	95	33.22%
	Total	286	100.00%
Regular residence	City	249	87.06%
	Countryside	37	12.94%
	Total	286	100.00%
Occupation	Government organs or institutions	22	7.69%
	Employees of an enterprise/company	193	67.48%
	Self-employed households/private owners	28	9.79%
	Farmer	16	5.59%
	Student	17	5.94%
	Other	10	3.50%
	Total	286	100%
Average monthly income	Less than 5000	106	37.06%
	5001 to 10000	117	40.91%

10001 to 20000	53	18.53%
More than 20001	10	3.50%
<hr/>		
Total	286	100%
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Annex E – Compare of two provinces

Table E.1 Mean of dimensions of two provinces

Dimensions	Guangdong (Mean)	Shanxi (Mean)
Perceived Quality	4.87	4.74
Customer Expectation	5.59	5.56
National Confidence	5.2	5.17
Perceived Value	4.98	4.73
Customer Satisfaction	5.01	4.79
Customer Loyalty	5.44	5.41

Table E.2 The structure of two sample

INDEPENDENT VARIABLES		Guangdong province		Shanxi province	
		Absolute frequency	Relative frequency	Absolute frequency	Relative frequency
Gender	Male	72	45.28%	53	41.73%
	Female	87	54.72%	74	58.27%
	Total	159	100%	127	100%
Age	Less than 20	2	1.26%	2	1.57%
	21 to 40	113	71.07%	73	57.48%
	41 to 60	24	15.09%	31	24.41%
	More than 61	20	12.58%	21	16.54%
	Total	159	100%	127	100%
Education level	Illiterate	1	63.00%	3	2.36%
	Primary school	19	11.95%	17	13.39%
	Junior high school	3	1.89%	11	8.66%
	Senior high school	13	8.18%	19	14.96%
	Bachelor's degree	111	69.81%	72	55.69%
	Master's degree	12	7.55%	5	3.94%
	Total	159	100.00%	127	100%
Marital Status	Unmarried	35	33.33%	20	15.75%
	Married	124	66.67%	107	84.25%
	Total	159	100%	127	100%
Household registration	City	106	66.67%	85	66.93%
	Countryside	53	33.33%	42	33.07%
	Total	159	100.00%	127	100%
Regular residence	City	142	89.31%	107	84.25%
	Countryside	17	10.69%	20	15.75%
	Total	159	100.00%	127	100%
Occupation	Government organs or institutions	14	8.81%	8	6.30%
	Employees of an enterprise/company	116	72.96%	77	60.63%
	Self-employed households/private owners	11	6.92%	17	13.39%
	Farmer	6	3.77%	10	7.87%
	Student	7	4.44%	10	7.87%

	Other	5	3.14%	5	3.94%
	Total	159	100.00%	127	100%
Average monthly income	Less than 5000	43	27.04%	63	49.61%
	5001 to 10000	65	40.88%	52	40.94%
	10001 to 20000	41	25.79%	12	9.45%
	More than 20001	10	6.29%	0	0.00%
	Total	159	100%	127	100%

Annex F – CFA and SEM model

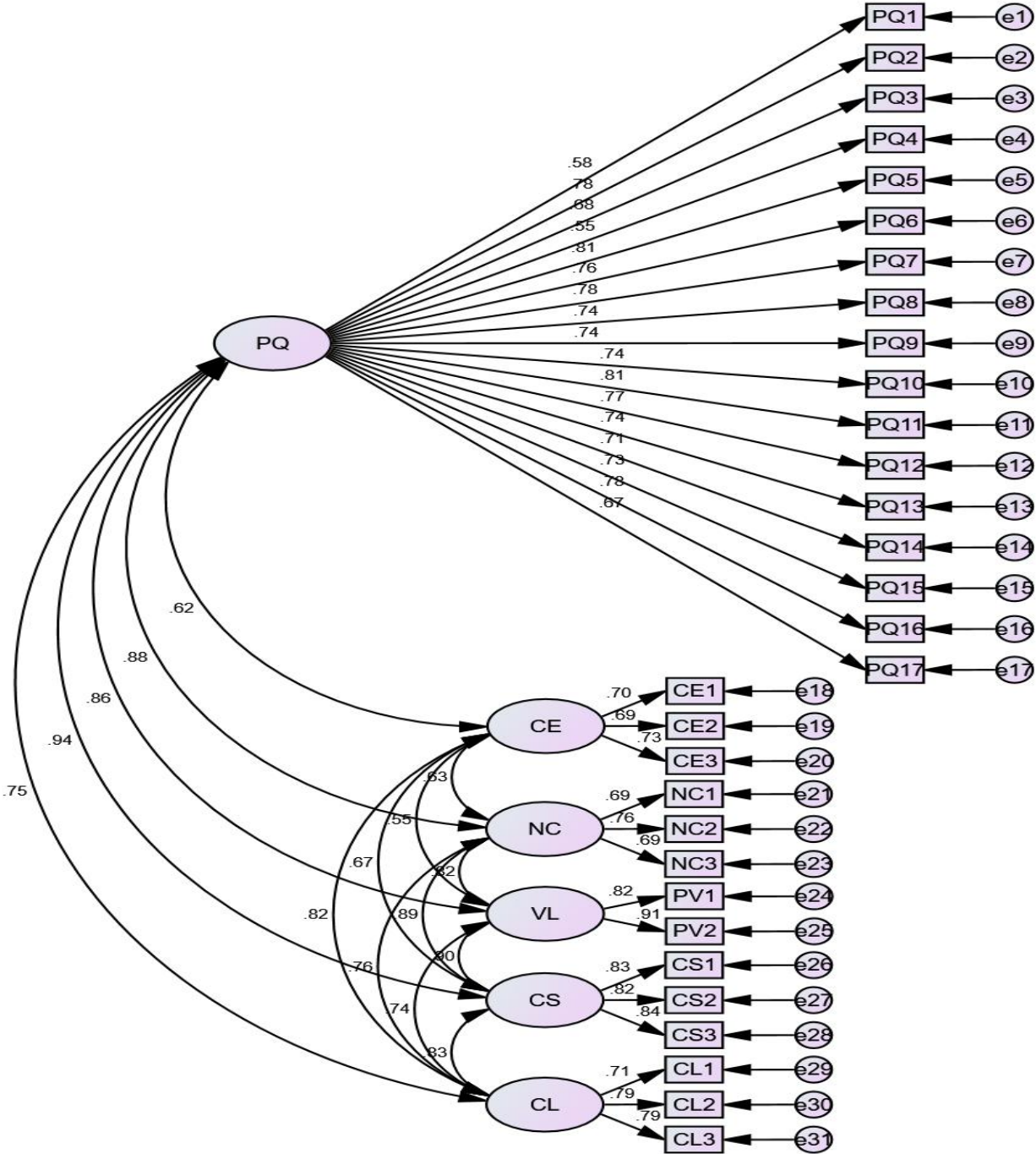


Fig F.1 CFA model diagram of basic medical insurance satisfaction scale

Table F.1 Cronbach's Alphas for the details

Items	Corrected Item-Total	Cronbach's Alpha if Item Deleted	α
PQ1	0.577	0.951	
PQ2	0.759	0.947	
PQ3	0.676	0.949	
PQ4	0.543	0.951	
PQ5	0.781	0.947	
PQ6	0.738	0.948	
PQ7	0.744	0.948	
PQ8	0.732	0.948	
PQ9	0.728	0.948	0.951
PQ10	0.734	0.948	
PQ11	0.77	0.947	
PQ12	0.737	0.948	
PQ13	0.728	0.948	
PQ14	0.697	0.949	
PQ15	0.728	0.948	
PQ16	0.767	0.947	
PQ17	0.652	0.949	
CE1	0.584	0.666	
CE2	0.596	0.65	0.752
CE3	0.563	0.689	
NC1	0.578	0.682	
NC2	0.638	0.61	0.756
NC3	0.542	0.723	
PV1	0.747	.	0.855
PV2	0.747	.	
CS1	0.76	0.809	
CS2	0.751	0.817	0.87
CS3	0.745	0.824	
CL1	0.588	0.797	
CL2	0.721	0.655	0.804
CL3	0.663	0.726	

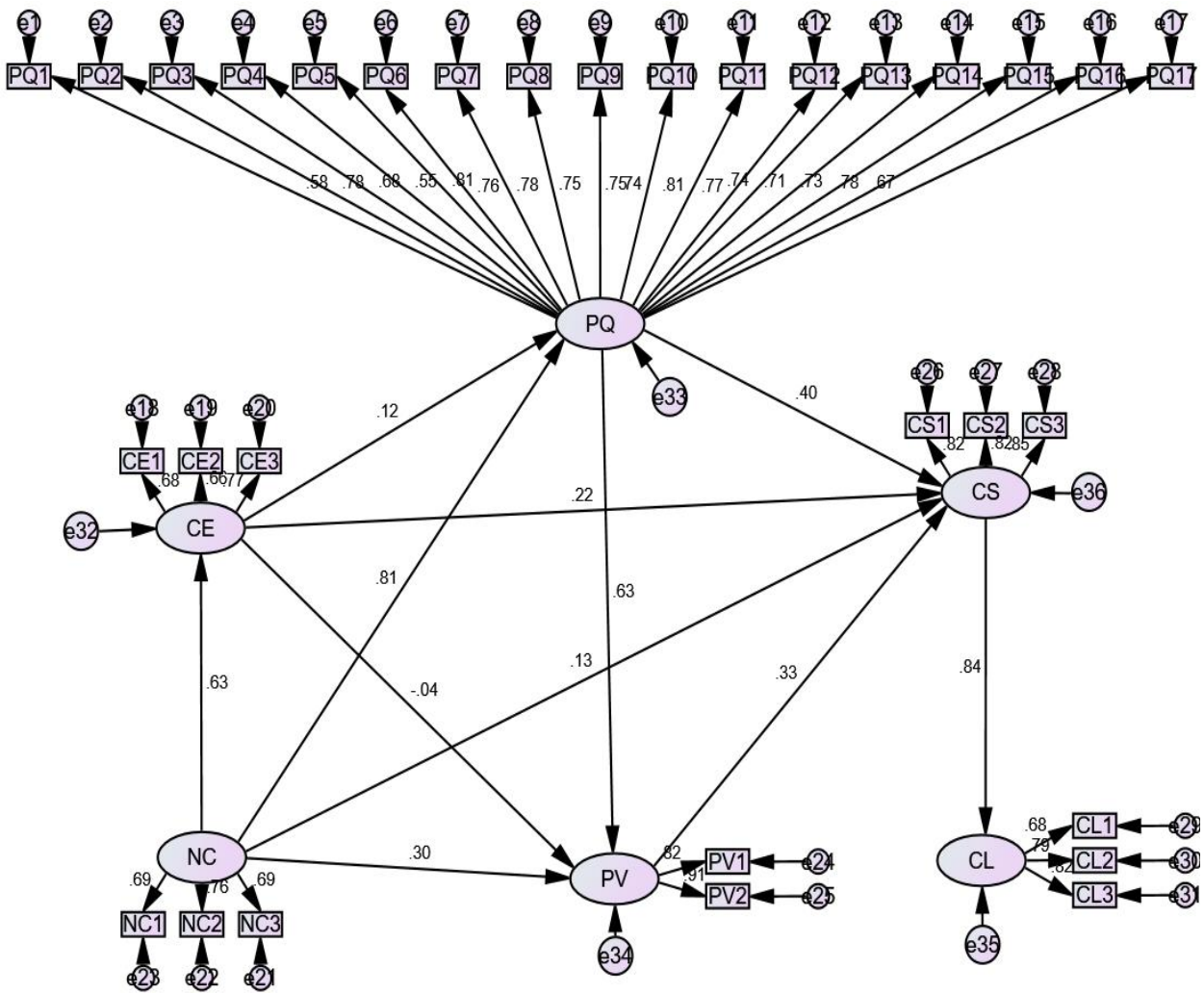


Fig F.2 SEM structure model

Table F.2 Path significance test

Path relation	Estimate	S.E.	C.R.	P
CE <--- NC	0.632	0.086	7.023	***
PQ <--- CE	0.118	0.06	1.617	0.106
PQ <--- NC	0.810	0.088	7.25	***
PV <--- PQ	0.628	0.246	4.456	***
PV <--- CE	-0.041	0.093	-0.632	0.528
PV <--- NC	0.296	0.196	2.062	0.039
CS <--- PQ	0.399	0.194	3.72	***
CS <--- PV	0.331	0.085	4.037	***
CS <--- NC	0.126	0.152	1.176	0.239
CS <--- CE	0.222	0.076	4.364	***
CL <--- CS	0.841	0.053	10.706	***