

Research on Construction of the Aged Security Service Chain Model and Industry Chain Model

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Abstract. The aged security service is complicated system engineering. It needs motivate and play the role of the whole society to provide multi-level security service for elderly. Based on interview and literature retrieval, this study summarized four core categories, eight relating categories and many concept categories of the aged security service demand by using grounded theory; using security chain theory, the aged security service chain model was constructed, which consists of the public service chain, the market service chain and the ancillary service chain; using industry chain theory, the aged security industry chain model was constructed, which consists of public service industry chain, market service industry chain, ancillary service industry chain, longitudinal supply-demand industry chain and horizontal cooperation industry chain.

Introduction

The degree of population aging is closely related to the economic development level of the country or region. From the middle of the 19th century, the western developed countries entered to aging country successively. After the 1970s, the trend of population aging was accelerated, and almost all developed countries had been aging country by the end of the 20th century. China's ageing population began in the early 1970s, and then accelerated rapidly. By the end of 2014, 60 years old and older population of China has been accounting for 15.5% of the total population. 65 years old and older population has been accounting for 10.1% of the total population. It is predicted that the elderly will maintain an average annual increase of 1 million in China before 2025. It is clear that China's ageing population is seriously beyond the international standard.

In the face of a growing number of elderly population, countries such as Britain and Japan, have adopted a series of measures, aimed at improving the level of the aged security service, and reducing the negative impact of an aging population. Experts and scholars have studied the trend, the influencing factors, the preventive measures and the management system of population aging. The author found that most of these studies focused on forward-looking forecast and putting forward measures. Few related to the comprehensive understanding of the aged security demands, and providing a systematic demand list of the aged security service and the policy measures list of the aged security supply according to these demands. Based on the definition of aged security service chain and industrial chain, this study builds structure model from the needs of the elderly. And it's a very important and urgent task of aging state and society. Based on this, this paper builds a model of aged security service chain and industrial chain provided by governments and relevant organizations and enterprises, in order to enhance the quality and level of aged security service.

Related Theories

Service Chain Theory

Edward and other scholars put forward the concept of "service chain" for the first time in 1999, it's a network composed of all kinds of related enterprises, institutions and social sector in order to satisfy the demands of consumers [1]. The government, enterprises, social groups, non-governmental organizations and other relevant social forces all can be incorporated into the

network and play different roles according to the requirement of the "service chain", furthermore, provide services for consumers jointly.

Domestic and foreign scholars don't form a unified understanding of the service chain's definition. The following is the definition of service chain given by different scholars: Akkermans viewed the customer service process composed of the product sales, supply, installation and gathering as a service supply chain [2]. Ellram studied the service supply chain management, and thought that the whole process of service which the final customers got from the original supplier contained the management of information, process, capacity, service performance and funds [3]. Ruggles thought service chain was a chain formed through the division of labor cooperation of different service enterprises, aimed at meeting customers' demands [4]. Cheng suggested that Service Supply Chain (SSC) appeared when service industry develops to a certain level, its starting point was customer demand, and it referred a Complex Service or an Integrated Service Package as a series of service process [5]. It was a service network that divided and reconstructed the system by using modern management techniques, thus it would organize the service entity according to a certain way, and satisfy the customer service demands. "Service chain theory" believes that there is a certain relation between the service enterprises or institutions, such like the "chain". When the service enterprises form the "chain" relationship, the service efficiency and service quality of service enterprises will be improved greatly [6].

Industrial Chain Theory

The traditional industry chain is internal activities of manufacturing enterprises, it refers to the process that passes purchased raw materials and spare parts to the retailers and the users through the production, sales and other activities. In 1958, Albert Hirschman discussed the chain relations of industry and related concept by applying "correlation effect", and emphasized the importance for the development of the economy of forward linkage and backward linkage [7]. As a result, the category of industry chain gradually extended to the outside of the enterprises, and became an important part of the industrial organization theory. But the concept of "industrial chain" derived other concepts, such as "production system", "commodity chains", "production chain", "value chain" or "value added chain". These different concepts exist certain differences in expression, but they all expressed the interrelation between different elements of some common features. Among them, the commodity chains or production chain focused on the products production's links of upstream and downstream. According to the definition of Gereffi, commodity chain does not only include the manufacturing process's links of upstream and downstream, and includes research and development, production and marketing, etc. Value chain focuses on the relative importance of the commodity production's each link in the value creation. After industrial chain's concept was put forward, its application gradually expanded to the service industry and other fields [8].

At present, the concept of industrial chain are often applied in practical application, but its theoretical researches are very few. Academia has not reached a unified understanding of industrial chain's concept. Jian considered that every industry's economic activities formed the industrial chain on the basis of the ordinal relationship [9]. Zhou thought that industrial chain was a kind of industrial ecological map set up on the basis of the industry's inside division of labor and the supply and demand relations. Industry chain includes vertical supply chain and horizontal collaboration chain [8]. Vertical relationship is the main structure of the industrial chain, and some people divided this vertical division of labor into the industry-segment. Horizontal collaboration is the industry's supporting we often mentioned. Zhou suggested that the industrial chain is an industry in the process of production and services in accordance with the requirements of internal technical and economic association will related economic activities, economic process, production stage or economic business link according to the order of the chain structure. No matter which kind of the industrial chain's form, or which aspects of the industrial chain, its essence is seeing the value as the link, and it will be able to determine and influence the node industry, and the connection of main products value[10].

There are both broad sense and narrow sense of industry chain's concept. Generalized industrial chain includes all enterprises meeting the specific requirements or producing specific production (and providing service), it involves in the relationship between the related industry; Narrow industry chain's key point is the enterprise set of meeting specific requirements directly or producing specific production (and providing services), it focuses on the relationship between each link within the industry [11].

Study Design

Study Subject and Method

The subject of this study focuses on old people who are retired or about to retire.

Two methods were used in this study: one is interview, for knowing the aged security service status among community residents, old people in nursing home, etc.; the other one is grounded theory, which used to refine the core concepts via literature retrieval.

Study Procedure and Result

Interview Investigation

Old people who lived in Dalian city were mainly chosen to have an unstructured interview, which means no questionnaire and fixed procedure were designed in advance, just daily life chat around the topic of the aged security service, so as to get intensive, lively and abundant information. Besides, people who can provide lots of information were chosen by means of purposive sampling strategy. 317 old people in Dalian workers nursing home, Xing Hai Park, some communities were interviewed. All of the information was recorded by a voice recorder, or pen and paper. After interviewing, these records were sorted out in time, kept original and complete at the same time.

The basic information of the interviewees is as follows: 232 lived in city, 85 lived in countryside; 174 were male, 143 were female; 51 aged between 51 and 55, 62 aged between 56 and 60, 62 aged between 61 and 70, 67 aged between 71 and 80, 20 aged over 81.

The results show that 67% wanted to get old-age service from their children; 34% wanted to get service from aged support agencies; 43% chose community service; 31% chose household service and neighbor assistance; 91% thought the most expected way of caring old people is home care, only 9% wanted to stay in old people apartment and nursing home; interviewees hoped the community they live provide services as follows: water, electricity, gas and CATV fee paying service; house cleaning, bedding washing, electrical home appliances maintenance, emergency alarm system installing; provide old people activity room and entertainment items for free, library for the old, books and newspapers; establish the elder universities, elderly interests training school, elderly gymnastics team, Yangge team, old people amateur group; hold recreational and sports activities and competition of calligraphy, swimming, shadowboxing, bodybuilding exercise and dance, ping-pang, billiards, singing, mountain climbing, etc.; provide place for playing Mahjong, playing poker, listening to the radio, listening to storytelling, watching TV, growing vegetables, etc.; provide elderly canteen, elderly barber shop, community church, etc.

Most old people paid attention to their health, so health consultation and guidance is the most needed; the aged really expected to listen to the health lecture of experts, and nutrition and diet guidance; hope to be provided fitness facilities and activity places; getting basic medical care and health service is their common desire, mainly including common diseases care, elderly medical station (elderly clinic and elderly emergency treatment), medical and health visiting service, senile dementia care, elderly common disease (e.g., diabetes and coronary heart disease), regular health checks (at least once per year, nearby or come to see), family sickbed providing, etc.; some old people want to have companions chatting and shopping with them, get psychological consultation online, watch art exhibitions and traveling; get the aged marriage counseling, employment counseling, family issues counseling, etc.

Literature Data Collection

Firstly, literature retrieval was carried out. The literature data in this study includes 110 Chinese papers and 66 English papers. Chinese papers were gotten from China Integrated Knowledge Resources Database, Chinese Social Sciences Citation Index, wanfangdata, Elsevier, Wiley Online Library, Springer Link, SAGE Premier and so on. Using “the aged service”, “old people security”, “the aged industry”, “old people spiritual security”, “old people medical and health security” as keywords to systematically search papers published between 2000 and 2013.

Secondly, filter the collected literature. According to the abstracts content, papers related to the aged security service were picked out. After initial screening, the picked out literature were combed, to get main problems every paper focuses on and confirm if it has relationship with the aged security service. Due to the initial picked out papers were obtained on basis of abstract, although some of the abstracts talk about the aged security service, the major problem concerned have no relationship with the aged security service, so papers like this were taken out. At last, 96 Chinese papers and 43 English papers relevant to the aged security service.

Thirdly, classify literature by degree of correlation to present study. The two categories consist of closely related and general related, which were tabulated to facilitate subsequent view. Closely related literature accounts for more than 2/3.

At last, the data were coded. In the grounded theory technical analysis process, coding the data step by step is a core segment, as well as the most significant aspect of quantization characteristics. The study uses data coding technology program developed by Strauss and Corbin. The program consists of open coding, axial coding and selective coding.

Encoding Results

After open coding and comparative analysis of interview data and literature data (reject repetitive items and items relate to the aged products, only items about service left), 417 first-level encoding obtained: 123 Chinese literature first-level encoding, 222 English literature first-level encoding and 72 interview data first-level encoding.

The 417 concepts were filtered and 97 concepts left. Then the 97 concepts were classified, which is second-level encoding, eight relating categories obtained: institutional care service, community care service, medical institution service, medical care and health care service, the aged education service, entertainment and fitness service, consulting service and guidance service. The eight relating categories were classified again: combine categories that have the same characteristic and then get the third-level encoding. Institutional care service and community care service belong to care service, which was classified as a class and named basic life care service; medical institution service and medical care and health care service belong to medical and health care, which was classified as a class and named medical and health care service; the aged education service and entertainment and fitness service belong to spiritual culture and sports demand, which was classified as a class and named recreational activity service; consulting service and guidance service was classified as a class and named consultation and guidance service. Eventually, four core categories acquired: basic life care service, medical and health care service, recreational activity service and consultation and guidance service (encoding results shown in Table 1).

Table 1. The Aged Security Service Encoding Result.

Core Category	Relating Category	Examples of Concepts
Basic life care service	Institutional care service	geracomium; welfare house; honorable court; apartment for the aged; day care for the aged; nursing home; home for old people; nursery for the elderly
	Community care service	gas sending; pet care; fee (like heating, water and electricity) paying; house cleaning; meals door-to-door service; reading, writing and listening support; dialing call car service; feeding service; dressing; toileting; cleaning; combing and bathing;

		emergency assistance; call server; porter service; cooking; clothes washing; haircut; pedicure; exercise companion; medicine feeding; chatting companion; shopping companion; medical treatment companion; regular visiting; maintenance service; mobility care; special care; answering the phone; old people canteen; emergency alarm system installing
Medical and health care service	Medical institution service	geriatric hospital; medical rehabilitation station; clinic; geriatrics department; end-of-life care hospital; nursing hospital
	Medical care and health care service	medical lectures; experts voluntary diagnosis; diet and nutrition guidance; calling for help; infusion; injection; home visiting; family sickbed; hospice care; emergency assistance; common disease prevention; chronic diseases prevention; medication guide; acute disease care; special care sickbed; rehabilitation care; short-term care; long-term care; basic care
Recreational activity service	The aged education service	the elder universities; elderly interests training school; aging research institutions; occupational training school for the old
	Entertainment and fitness service	activity center for old people; drawing and calligraphy; traveling companion; chess and cards room; reading room; elderly Peking Opera club; percussion team; younger team; library for the aged; teahouse for the old; park for the old; cinema for the old; old volunteer association; swimming; martial arts; gymnastics; outdoor walking; shadowboxing; bodybuilding exercise; dancing; ping-pang; billiards; singing; mountain climbing
Consultation and guidance service	Consultation service	health care consulting; transport consulting; shopping consulting; old people employment consulting; psychological consulting; marriage consulting; investment consulting; legal consulting service for old people; family problem consulting; housekeeping consulting; the aged security information consulting; old-age insurance consulting
	Guidance service	diet and nutrition guidance; rehabilitation training and guidance; financing guidance; psychological guidance; marriage and family guidance; network application guide

Construction of the Aged Security Service Chain Model

Concept Definition

The aged security service chain is a chain which is composed of a series of aged security service projects or activities provided by the responsibility subject based on aged security service demands. According to this definition, the service object of the aged security service chain is elderly; The service target is satisfying the demands of elderly to a maximum extend; service subject is made up of government agencies, enterprises, industries, correlative social organizations and other social forces. There are several key nodes on the aged security service chain which are the core generics of it, namely basic life care service, medical and health care service, recreational activity service, consultation and guidance service. Each key node also includes several child nodes, namely, key categories, which contain many small nodes, namely, the concept category means the specific services, and all the nodes constitute the complex aged security service chain.

Model Construction

As mentioned above, the aged security service is a responsibility of the whole society, so the responsibility subject of the aged security includes public service provided by government department, ancillary service provided by non-profit organizations and others under the supporting of the government, market service provided by enterprises and other organizations. Therefore, according to the type of the aged security service and each node, comprehensively considering the service chain consists by all the relevant nodes and its responsibility subject, so that we can construct the aged security service chain model(as Figure 1 displays).

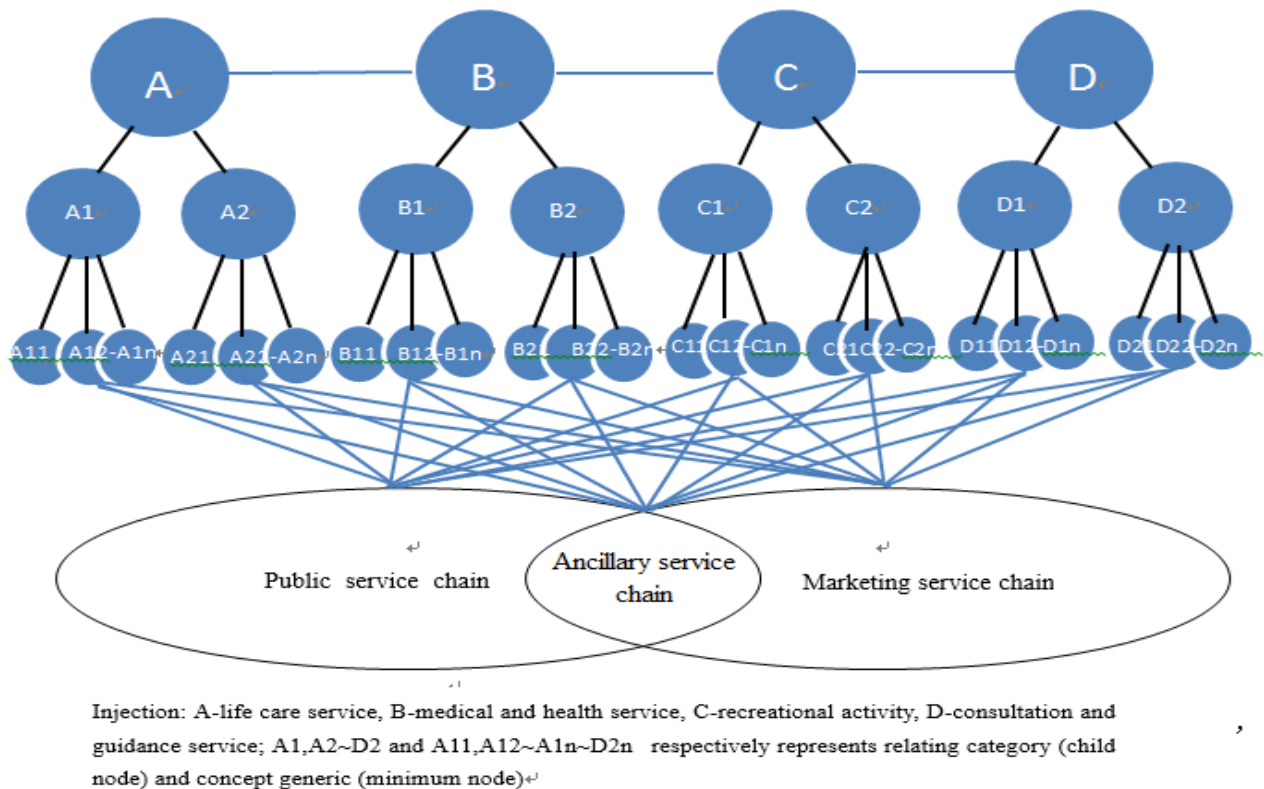


Figure 1. Construction of the Aged Security Service Chain Model.

In accordance with the division of the responsibility subject, the aged security service chain mainly includes public service chain, market service chain and ancillary service chain.

Public Service Chain. That the most basic aged security service provided by the governments at all levels as the responsibility subject of social security for elderly forms a service chain which is named public service chain. Public service chain has the following characteristics: ① Public welfare of service. The government department provides a series of public services to elderly especially the weak group in urban and rural areas including the most basic life care, medical and health care, recreational activity, consultation and guidance, etc. These services belong to free service in accordance with the commonweal. ② Moderate degree of service provision. One of the basic principle of social security with government leading is the level of social security must adapt to the level of economic development, and it provides the basic security service, hereby the government can only provide basic life supporting service for elderly, Thus the public service chain has moderate degree of security service. The contents provided by the public service chain include the establishment of the public nursing home, community medical and nursing service center, aged recreational activity center, volunteering service center, which can insure elderly with the most basic aged service demand; To provide basic life care service, medical and health care service, recreational activity service, consultation and guidance service for elderly, especially for the low-income group, or the group which lives with hardship due to illness, or "three nos" elderly (no labor ability, no source of income, no provider).

Market Service Chain. According to the demand of the aged security service, that a chain which can guarantee elderly with high-level security service demand provided by enterprises and other organizations in accordance with supply-demand relationship of the market, is known as market service chain. Market service chain has the following characteristics: ① For-profit. That the enterprises apply basic life care service, medical and health care service, recreational activity service, consultation and guidance service, and other services in accordance with the supply-demand circumstance of the security service market to elderly who has a high level demand of security service is market service chain, all of those services belong to paid service, so they have for-profit. ② High level of service. Enterprise runs for profit to pursuit capital appreciation and

profit maximization as an economic organization, and sets up service organization according to marketing demand of the aged security service to meet the high level service demand of some elderly through high level of service. The contents provided by market service chain mainly include opening senile apartment, housework service corporation, private medical institution, travel agency, aged university, darby and joan club, consulting company, and providing basic life care service, medical and health care service, recreational activity service, consultation and guidance service, and other services in high level.

Ancillary Service Chain. That the chain forms by insuring elderly with mid-level service demand realized by non-profit organizations, families or individuals, is known as ancillary services chain. Ancillary service chain both has the features of public service chain, and features of market service chain. Its specific features are as follows: ① With profit welfare and for-profit. The supply subject of ancillary service chain is non-profit organizations, families or individuals, and the government finance provides a certain amount of allowances for elderly to assure some of the fees or low-cost service, so these services both have profit welfare and for-profit. ② Generalization of security level. Because the aged security service provided by public service chain can only meet the most basic security service demand of elderly, and the service provided by the market service chain can generally meet the high-level need of security service of elderly, in this case, the aged group with a medium or general security service demand is in an embarrassing situation like "refused by the superior and refuse the inferior", and it is difficult to meet the need of the security service for this group. In this background, auxiliary service chain undertakes the aged security service with a moderate level of security and generalization. The service object of the security service is huge, with diversity of service requirement and complicated context of the service, at the same time the supply subject gradually expand to some organizations like institutions, enterprises and other groups. Services provided by the ancillary service chain mainly include establishing aged home, senior citizens home, aged interest school, opening training class, lectures on special topics, psychological consultation, marriage intermediary service, or setting up all kinds of aged security service companies, trade associations to provide basic life care service, medical and health care service, recreational activity service, consultation and guidance service in moderate level for elderly.

Construction of the Aged Security Service Industry Chain Model

Definition of the Concepts

Which industry chain is formed with specifically providing elderly with basic life care service, medical and health care service, recreational activity service, consultation and guidance service is called the Aged Security Service Industry Chain, and it belongs to the tertiary industry. These industry chains are complex industrial network which are formed around the service chain to meet various service demands of elderly.

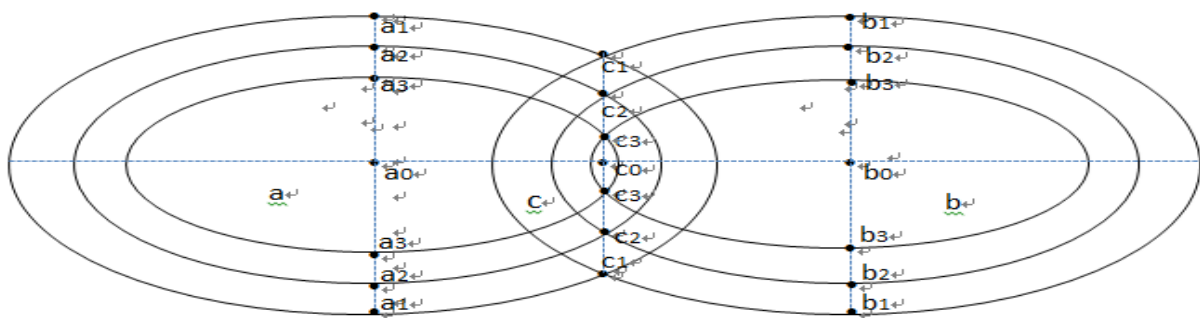
Model Construction

Based on construction of the aged security service chain, we can divide the aged security service industry chain into public service industry chain, ancillary service industry chain, and market service industry chain. But this Classification Method only considered the responsibility subject of the aged security service industry without taking into account the industrial linkage and particularity of it. We can divide the aged security service industry chain into longitudinal supply-demand industry chain, horizontal cooperation industry chain (as Figure 2 displays).

Figure 2 divides the aged security service industry chain into public service industry chain (a), market service industry chain (b) and ancillary industry service chain (c: the cross and repeated area of a and b) in accordance with the responsibility subject; and divides into longitudinal supply-demand industry chain and horizontal cooperation industry chain according to supply-demand relationship and industrial linkage.

Public service industry chain is formed of the government department based on the demand of the aged security public service project. This part of industry set up and funded by the government, aimed at establishing gerocomium, aged welfare institute, cultural entertainment, community hospital and others welfare facilities for elderly, providing public service product and transforming service, these facilities and products are owned by national without participation of market force, so it belongs to public goods.

Market service industry chain is formed by some organizations like enterprises under the demand of the aged security service market and dues to provide some paid service for elderly. This part of industry set up by the enterprises and other organizations in order to satisfy some high-quality and high standard of living needs of the elderly. For example, enterprises invest to set up aged apartment, housekeeping Service Company, Geriatric Hospital, and establish enterprises that can product daily necessity medical supply, rehabilitation supply, health supply, Entertainment supply, fitness supply and others. All the facilities and aged goods are paid service, elderly need to choose and charge what they demand according to their own economic situation.



Such as graph, a-public service industry chain, b-market service industry chain, c-ancillary service industry chain; a1, b1 and c1 are on behalf of the upstream industry, a2, b2 and c2 represent midstream industry, a3, b3 and c3 represent downstream industries; a0 represents public service product, b0 represent market product, c0 represents the auxiliary service product.

Figure 2. Construction of the Aged Security Service Industry Chain Model.

Auxiliary service industry chain is formed of the non-profit organizations under the fund provide by government or buy the public service from government. This part of industry which will also charge a fee in order to survive and develop offers service facility, aged goods, service and others without the objective of profitableness, and satisfy the middle-level and general level of security service demand of some elderly. For example, there are non-profit organizations, families, and individuals set up aged house, senior citizens center, interest school, and launch aged barber, aged canteen, aged marriage agency and so on. Since the policy support or financial support by government, this part of industry is able to meet some of the elderly on their aged.

Longitudinal supply-demand industry chain is present among a, b, c industry chain, and each chain includes upstream industry chain (a1, b1, c1), midstream industry chain (a2, b2, c2) and downstream industry chain (a3, b3, c3). Because aged security service industry is with type of variety and structure of complexity, and each chain both has upstream, midstream and downstream industry, the formation of a complex chain system, so it becomes an industry chain system with complexity. Take the medical and health service industry chain as an example, medical service industry chain has family medical service chain (such as family doctor, family bed, family outpatient, family nursing, etc.), community medical service industry chain (community sanatorium, community medical service centers, community hospital, various pharmacies, rehabilitation center, physiotherapy center, traditional Chinese medicine clinic, sanatorium, hospice care hospital, etc.), regional medical service industry chain (all kinds of public hospitals in city and township administrative areas, private hospital), etc., it also has the health service industry chain

based on difference of the health condition, sickness species of elderly, aged daily care service industry chain, aged medicine industry chain, aged nursing product industry chain and so on.

Horizontal cooperation industry chain mainly refers to the aged security service product provided by aged security services industry chain, including public service product (a0), market service product (b0) and ancillary service product (c0). Some aged products are needed by the elderly no matter in which service industry chain and who is the subject, they just different in quality, function and price; three different supply subjects are not strict distinction in product provision, they are both in distinction and in cooperation. Market service industry chain provides not only b0, c0, but also a0. For example, the high-grade apartment established by some companies can provide public service project such as providing free basic life care service for community elderly in obligation, or developing medical and health care service, recreational activity service, consultation and guidance service by cooperating with some non-profit organizations in charging a lower fee. Auxiliary service industry chain fills the blank of the aged security service market of middle-income, while people of this elderly group account for majority among the whole aged group.

Conclusion

There are more and more problems brought about by the aging of the population since entering the aging society. The result shows that the degree of satisfaction about the current aged security service supplied in China is low, moreover there is lacking thorough and systematic study for the demand of aged security service. Based on the grounded theory, the paper refines 4 core categories (basic life care service, medical and health care service, recreational activity service, consultation and guidance service), 8 relating categories (agency care service, community care service, medical institution service, health care service, aging education service, recreational fitness service, consulting service and instruction service) and many concepts of the aged security service through coding the data collected from document retrieval and interviews.

Above all, the aged security service chain model was constructed by using security chain theory. Depending on the different main bodies of the old age security service supply, the old age security service chain is divided into public service chain, market service chain and auxiliary service chain, at the same time, the characteristics, content, service objects and other aspects of each service are made clear.

The aged security industry chain model was constructed on the basis of the aged security service chain structure model. According to the responsibility main body of the aged security industry, the model divides the industry chain into public service industry chain, market service industry chain and ancillary service industry chain; And according to the supply and demand relationship, affinity and other aspects of the aged security service products, the above 3 industry chains are developed into longitudinal supply-demand industry chain and horizontal cooperation industry chain.

Construction of the aged security service chain and the industry chain model is that the theories of service chain and industry chain are introduced into the aged security service field. This paper constructs the aged security service chain model and the aged security industry chain model by classifying the aged security service demand scientifically, which enriches social security theory and the aged industry theory, and makes the functions that such organizations like government, enterprises, and non-profit organizations played in the aged security service clear. The significance of construction of the aged security service chain and the industry chain model is reflected in two aspects. One is that it contributes to improving the society's awareness of the aged security service, and integrating the aged resources and society resources better, what's more it help to guide the government, enterprise, nonprofit organizations and others in providing full security services for the elders; The other is that it is conducive to meeting the need of various elderly in basic life care service, medical and health care, recreational activity, consultation and guidance, and other aspects through offering all-around services, which will make for a more civilized and harmonious society.

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