

Research on Intelligent Endowment Service Based on Service Chain Theory—A Case Study of Heping District of Tianjin

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Abstract. China's old-age service is confronted with the problem of poor resource integration and the imbalance between supply and demand. And intelligent endowment using the integration function of technology such as the IoT provides a way to solve it. This paper based on the service chain theory analyzes resource integration situation of Heping District intelligent home care service from three aspects of service node, information flow and demand flow. Put forward some suggestions to improve the efficiency and quality of Intelligent endowment services.

1. Introduction

Recent years, China's aging situation becomes increasingly severe. Influenced by various factors such as politics, industry and technology, the government departments related to pensions and social forces are segmented. The pension resources lack integration and coordination. Intelligent endowment, cloud computing and IoT, have great advantages in integrating pension resources. The State Council's guidance on actively promoting the "Internet + Pension" initiative emphasizes relying on existing Internet resources and social forces to build a network platform for old-age services which is based on the community, and provides home care services such as nursing care, health management, etc. However, intelligent endowment service is still in infancy, there are problems such as insufficient marketization, inadequate use of social forces, and low supply and demand matching. The quality and efficiency of services are not high. As a hotspot in service industry research, the service chain based on modern technology organizes specific organizations and factors related to services and provide an analytical framework for solving the problem of intelligent endowment services. This paper draws on the service chain theory to conduct research on intelligent endowment service, and tries to provide new ideas for the development of old-age services.

2. Intelligent Endowment Service and Service Chain Theory

2.1. Intelligent Endowment Service

Intelligent endowment service, first proposed by the British Life Trust Fund was originally called "intelligent home-based care for the old". The core of the intelligent endowment service is the application of advanced management and information technology to closely link the old with government, community, medical institutions, and medical personnel [1]. Based on modern technology, intelligent endowment service is a new modern pension model connected with related subjects through sensors. It's committed to meeting the material and spiritual demand of the old [2]. Compared with the traditional pension model, "intelligent endowment" makes full use of technologies such as big data, cloud computing and IoT. The service not only enhances the quality of life of the old from the aspects of daily life, safety, health care and rehabilitation, but also pay attention to the value and dignity of the old[1]; The essential purpose is effective service delivery [3]. Intelligent home care service based on the family, relying on the community will become a major component of intelligent aged care.

2.2. Service Chain Theory and Intelligent Endowment Service

Service chain theory gradually developed from the aspects of service management and supply chain management in the 1990s. Ken Ruggles believes that the service chain is the relationship formed by different service providers in response to customer requests [4]. Some scholars point out that the service chain is the most effective way to provide comprehensive, full-process and full-time services in enterprises [5]. Liu Qiusheng abstracts the general model of the service chain under the support of a large number of specific models of the service chain. As shown in Figure 1, the model includes nodes such as core service organization, final customers, auxiliary service providers, and suppliers. The model emphasizes the necessity of the existence of demand flow and information flow, fully embodies the most important feature of the service chain—relying on advanced information technology to respond to customer needs quickly [6].

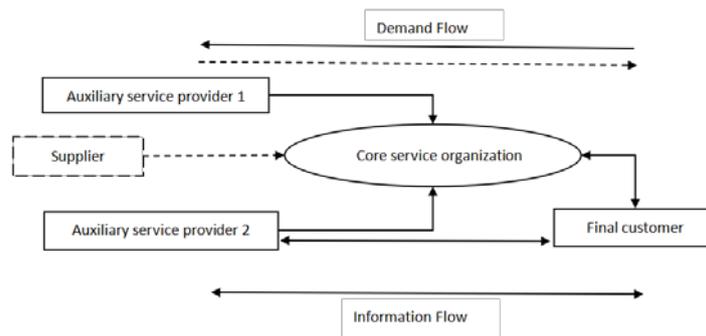


Figure 1. Service chain general model

3. Intelligent Home Care Service in Heping District of Tianjin

3.1. Case Overview

The aging level of Tianjin ranked secondly in China from 2004. By 2017, the number of old people aged 65 and over was 1,576,700, accounting for 10.13% of the total resident population of Tianjin. As an intelligent home care service promotion area, Heping District has formed a multiagent pension pattern includes government, the Civil Affairs Bureau, the home care call service center, and social forces. On one hand, intelligent sensors monitor the safety hazards of the old, such as smoke, fire, gas, etc., continuously record the living conditions and changes in real time, and automatically alarm the emergency based on calculation and analysis; On the other hand, the old contact the service center by telephone or push-to-talk emergency call when there is a service demand or an emergency situation. This model plays an important role in delivering the demand and risk signals of the old in an instant.

3.2. Analysis of Intelligent Home Care Service in Heping District Based on Service Chain Theory

3.2.1. Service Node Analysis

There are several types of nodes in the service chain: customers, core service organization, and auxiliary service organizations. The customer is the destination of the service chain. The core service organization bears the main function and services of the service chain. And the auxiliary service organizations provide policy, capital, technology, manpower and other resources to support the service chain [6]. The service chain nodes achieve connectivity and form a structure.

3.2.2. Customer

The ultimate customers of the intelligent home care service in Heping District are empty-nest old people. offspring of the old also benefit from the service. On the one hand, the service alleviates the pressure of care. On the other hand, emergency services provide conditions for families of the old to feel risks. Especially when families of the old are too old to care their parents. The service request of

the old is the trigger point for the service chain to run. The service center responds to service requests for the old. the satisfaction degree has an important impact on the service center and the auxiliary service organization.

3.2.2.1. Core Service Organization

As core service organization of the service chain, Heping District Home Care Service Center is an important hub connecting customers and auxiliary service organizations. It relies on the intelligent home care service system to integrate resources and promote the matching of supply and demand. The service center provides a platform from which the old can contact with the housekeeping service companies. While getting support of policies, funds, technology, manpower and other resources from the auxiliary service organizations, it integrates a large amount of information of the old and auxiliary service organizations and provides information support for the operation of the entire service chain.

3.2.2.2. Auxiliary Service Organization

The auxiliary service organizations are located upstream of the service center. And they provides policy, capital, technology, and manpower support for the service center. The Heping District Government introduces relevant policies actively. The District Civil Affairs Bureau and other departments provide funds, land and other resources connectivity. Each sub-district office and neighborhood committee provide human resources support; The supplier of “Home Guardian” intelligent terminal equipment provides technical support; Social organizations such as the Senior Citizens Association and the Volunteer Association obtain information through service center and provide life assistance.

3.2.3. Information Flow Analysis

Information flow plays an important role in linking the service chain nodes. It runs through the entire service process, from the upstream to the customer, and from the customer to the upstream. For example, the Home Guardian Terminal Equipment Provider installed the “Family Guardian Five-Piece Set” for the old who used the emergency caller earlier in Heping District and explained the usage method so that the old could have a basic understanding of the service, which achieved the customer-oriented Information transfer; During the transmission, the information is changed from the original point-to-point single transmission to the packet-to-point centralized transmission. The service provider obtains information packet of the old from the service center. But the information form and content carried by the information flow are simple. The information provided by the home guard terminal to the center is in the form of text and voice. The old as the recipient of the information, mainly obtain information through telephone consultation. The information transmission effect is poor.

3.2.4. Demand Flow Analysis

The goal to maximize the satisfaction of customer demand makes the demand flow important in improving service quality. The two-way nature of the demand flow represents the customer's desire for the service organization and the service chain initiatives to seek and create customer needs. The demand flow in the intelligent home care service chain in Heping District is mainly realized through the feedback of the old on the service and the home visits of the staff. However, due to the large cost of time and labor, demand flows are not smooth.

4. Significance and Existing Problems

4.1. The Significance of the Intelligent Home Care Service in Heping District of Tianjin

First, service is intelligent. Based on modern information technology, the intelligent home care service in Heping District monitors the living conditions of the old in real time, responses to abnormal conditions automatically through the procedure of real-time information acquisition -

connectivity - intelligent analysis .It breaks the dilemma of high cost of manual care, lagging response demand, big pressure of care.

Secondly, resource is integrated. The both sides of supply and demand can obtain information and resources through the service center. The path trust makes the supply and demand sides matched more easily, which breaks the dilemma of poor information flow and demand flow, reduces the transaction cost.

Third, the way is suitable for the old. The design of the “Home Guardian” intelligent terminal takes into account the peculiar psychological, physiological and lifestyle characteristics of the old. The intelligent home care service monitors security risks through intelligent facilities and alert automatically, which improves the old person’s ability to deal with dangers. In addition, the service staff initiative to help the old consult and apply for reimbursement of medical expenses which meets the needs of the old.

4.2. The Existing Problems of Intelligent Home Care Service of Heping District

The intelligent home care service in Heping District has important reference significance, but it is still in its infancy, and there are still many problems in subject positioning, information transmission, supply and demand matching and operation guarantee.

4.2.1. The Subject Body Positioning is not Clear.

The core model of the service chain can be abstracted as “auxiliary service organization–core service organization–final customer”, in which the government plays an important role as a special auxiliary service organization. The marketization of the service is insufficient. The government has excessively interfered with social forces and the administrative dependence of grassroots autonomous organizations is strong, which limits the vitality of development. The opportunities for the old to receive services are not equal. The customers are only those who enjoy policy subsidy. And the old who have middle income are ignored.

4.2.2. The Information Mechanism is Inadequate.

The service chain is committed to creating an information sharing platform through the core service organization and two-way transmission information flows. The content, form and structure of information transmission in the Heping District intelligent home care service chain are not perfect.

In the form of transmission, the service request of the old is only transmitted through the automatic alarm and voice form. The form is simple and information carried is limited, which affects the staff's judgment and decision on the situation. Especially in an emergency, there may be misunderstandings and operation errors that may cause accidents.

Information transmission structure appears as asymmetry. The home care service center has a large amount of information, but the auxiliary service organizations and the old at both ends of the service chain have less information, which affects the response speed and service quality of the auxiliary service organization and reduces the synergy. Besides, the old do not form clear understanding of the service. The utilization rate of the service results in waste of resources.

4.2.3. There is an Imbalance between Supply and Demand.

The essence of intelligent aged care services is the effective delivery of services. The intelligent home care service in Heping District has an imbalance between supply and demand in terms of service content, targets and levels. The service mainly provides emergency rescue and life support services. The content of the service stays at the level of helping the old intelligently. There is less communication with the spiritual level of the old, and it does not reach the high level. The service target is only for the old group who enjoy government policy subsidies, and the coverage is narrow. In addition, the degree of intelligent application is low, and the powerful computing analysis capability of modern information technology is not fully utilized. The ability to provide personalized service is weak.

4.2.4. The Operation Guarantee Mechanism is Insufficient.

In recent years, with the support of relevant policies in Tianjin, the operational guarantee mechanism for intelligent home care services in Heping District has been continuously improved in terms of policy, capital, technology, supervision, information security, etc. But the responsibility of risk management is insufficient, and on the micro level implementation is lack. The specific performance is that the localization of the accident responsibility in the service process is not clear. There is a lack of institutional guarantee for solving above problems, and the service center bears excessive responsibility risk. Improper handling will seriously hinder the implementation of intelligent home care services.

5. Suggestions for the Development of Intelligent Aged Care Services Based on Service Chain Theory

As an important way to solve the old-age predicament, the intelligent old-age service is an important direction for the development of old-age services. Through the analysis of the intelligent old-age service in Heping District of Tianjin which refers to the service chain theory, we actively put forward the development ideas of intelligent old-age service to improve service quality and efficiency and optimize the aged care service.

5.1. Construct a Multi-Agent Cooperation Mechanism and Introduce Market-Oriented Operation Methods.

The governments introduce relevant supporting policies actively, improve intelligent old-age service standards, encourage the development of intelligent old-age service industry through policy concessions, increase the ability of social forces to undertake intelligent old-age services, introduce market operation methods actively, select high-quality service providers through competitive mechanisms, and improve the level of old-age services; Strengthen diversified capital investment and use the PPP cooperation mechanism to expand investment of social capital.

5.2. Improve Service Data Management and Strengthen the Construction of Information Sharing Platform.

Maintaining a benign operation of the service chain requires ensuring effective information content, diverse form, stable transmission, balanced structure, and safe information. To make information transmission more stable and establish a two-way information base for the demand and services supply in the region to promote information sharing, strengthen the construction of broadband network infrastructure and the interconnection of information is beneficial. At the same time, the government should improve relevant laws and regulations to prevent theft, enhance information support capabilities.

5.3. To Be Demand-Led and Innovate Comprehensive Service Model.

At present, Tianjin has implemented a variety of intelligent old-age service models, each of which has its own focus, For example, the Heping District intelligent home care service model mainly provides emergency rescue and life support services. There is a lack in meeting the spiritual needs of the old. We should use the initiative and forward-looking characteristics of the service chain to play the role of predicting the future and actively pushing services, improve the interest and demand expression mechanism of the old, explore the potential needs of them, make full use of the analysis capabilities of modern information technology intelligent computing, provide rich and personalized service to them, and improve the level of old-age life for them.

6. Conclusion

In summary, the service nodes, information flow and demand flow of intelligent aged care services constitute the basic framework of the service chain. Clear node positioning is the prerequisite for development. A sound information transmission mechanism is the driving force for development,

maximize meeting the diversity demand of the old is the direction of development. In addition, Tianjin's aging degree and smart Tianjin strategy have brought challenges and opportunities for the development of intelligent aged care. To provide high-quality old-age life for the old, it's necessary to know the development status of intelligent aged care services correctly.

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8. References

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