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A Study on Critical Factors in the Service Innovation of Local Medical Care for Senior Citizens

Chih-Ming CHEN¹, Di-Yu LEI², Tzu-Jiun YEH³, Jui-Hsi CHENG⁴

Abstract

The 21st century is a hundred-year century, when senior citizen related issues are derived along with enhancing life expectancy, declining concept of raising a child as the insurance for old age, and increasing index of aging. Aiming at the test for possible needs, national social policies and systems as well as relevant economic industries should make adjustment and innovation. People's needs for health care used to be pure disease treatment and health acquisition. When the market system moved towards the trend of customer-oriented service, people did not simply ask for the enhancement of medical technology, but started to criticize the feelings in the medical process. It resulted in medical care institutions focusing on the quality of service. Service innovation is a critical factor for medical care institutions keeping the competitiveness and sustainable growth in the market. Aiming at senior citizens in Fujian Province, 480 copies of questionnaire are distributed, and 351 valid copies are retrieved, with the retrieval rate 73% . The research results are summarized as below: "Service type" is the most emphasized dimension in Hierarchy II, followed by "service delivery", "customer interface", and "technology choice", Among 12 indicators, top five indicators are ordered diversified service, service channel point, customer relationship management, business model, and customer participation. According to the results to propose suggestions, it is expected to benefit medical care institutions as well as enhance the health care quality of domestic medical market.

Keywords: senior citizen, aging in place, medical care, service innovation, critical factor, social service, social network.

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Introduction

Rapid economic development enhances people's living standards. After satisfying individual basic needs, people pursue higher-level safety needs and appear higher expectation on medical service. In addition to influencing people's habit of seeking medical advice, it allows medical service industry changing the original business model to have the entire medical service industry enter a brand-new competitive era. Hospitals and clinics have tried hard to enhance the competitiveness and service in order to overcome the operation pressure. The concept of "quality" has now deeply planted in industry and service industry; even government departments present the emphasis; and, the promotion of health care quality becomes a fundamental factor in the management of medical care institutions. Medical institutions nowadays have to encounter the major challenge that no matter how the medical market changes, medical institutions, when offering medical service, have to ensure and promote the health care quality and service for patients so as to create the core value and market competitiveness.

Increasing costs, mutual competition among medical institutions, and patients' higher requirements for health care quality in medical service industry result in bad operation of many medical institutions and even bankruptcy. To cope with above business dilemmas, medical care institutions would move towards updating equipment construction or medical devices, resource consolidation or cooperation, larger scale development, and strategy of diversification or service innovation to strive for patients' agreement and willingness to return in order to enhance the revenue and market competitiveness. Medical service industry is a part of social service and involves in life that the government has various regulations and restrictions on medical service industry, e.g. medical advertising. Unlike general industries, medical care institutions could not solicit consumers (patients), but could indirectly enhance the reputation and patients' visiting rate through patients' word-of-mouth or health education in the institutions. Along with the market competition and the rise of patient awareness, medical care institutions have to learn from service industry to add several service concepts and elements in the medical process to enhance the service quality of medical service industry. Health care is an old industry. People's needs for health care used to be pure disease treatment and health acquisition that "medical skills" were the major consideration for health care. When the market system moved towards the trend of "customer-oriented" service, people did not simply require the enhancement of medical skills, but also started to criticize the feelings in the medical process. It had medical care institutions start to concentrate on the quality of service. "Service innovation" is a critical factor for medical care institutions keeping the competitiveness and sustainable growth in the market. Medical service industry is a part of social public service and involves in life that the issue discussion presents the importance for medical service industry. As a result, critical factors in service innovation strategies of local medical care for senior citizens' aging in place is discussed in this study,

expecting to benefit medical care institutions as well as promote the health care quality of domestic medical market.

Literature review

Aging in place

Chen (2018) indicated that the idea of “aging in place” was proposed in Nordic countries in 1960, when people appeared the idea to return family and community due to dissatisfaction with the restraint in institutions and the life lack of autonomy and privacy and expected to continue the family life at home, rather than staying in institutions due to physical functional decline, in the aging process. “Aging in place” regarded aging as normal life and a stage in life development. For this reason, the elderly should naturally stay in the original growth environment in the aging process but should not leave the familiar environment due to bad physical conditions. Countries with the goal of “aging in place” would develop the care through substitutive agencies to deliver service to the elderly home and help the elderly continuously live in the home. Um, Zaidi, & Choi (2019) pointed out “aging at home” and “aging in community” as the contents in the idea of “aging in place”, which referred to family care and community care models, aiming to fully grasp the service delivery systems of public and private sectors and informal care and construct community as well as construct community or home care support network, based on “home”. Barteit *et al.* (2019) pointed out the major spirit of “aging in place” policies as the accessibility of service delivery. In this case, the government promoted community care, expecting that the service system of supply departments could help the elderly stay in the community, live in the familiar environment, be cared and supported in familiar culture and social network, and present safety and stability in life. In consideration of culture, matching local customs and living habits allowed senior citizens receiving proper care in familiar community environment and remaining dignified, private, and independent quality of life; besides, the introduction of care support network with family members, relatives & friends, and neighbors could reduce care costs.

Medical care for aging in place

Jang, Oh, & Kim (2019) indicated that aging in place was proposed in Nordic countries in 1960, when the elderly community care system in Nordic countries was generated; afterwards, it became the long-term care goal of many advanced countries in 1990. The reasons for being popular in the policies of various countries contained the enhancement of the elderly education and economic level, change of professionals’ care idea, reduction of long-term care cost, and research & development of new-style equipment and devices. Zhao, Ni, & Zhou (2018),

thinking from supply-demand and finance, proposed the senior citizen care policy development derived from aging in place, including (1) evaluation of long-term care needs in various areas to set the development goal of “local” service resources, (2) development of diverse “local” service resources to serve “local” people, (3) construction of community service network to enhance the cost effectiveness of community care service, (4) establishment of information management and quality improvement systems to pursue the service quality of “aging in place”, (5) provision of home support service to control the use of institutional service, and (6) construction of financial systems to support the development of “aging in place” care system.

Chen & Hong (2019) considered to take the needs of elderly population into account, establish long-term care systems, construct senior citizen caring environment, and enhance evaluation monitoring and awareness as the key tasks: (1) For those with relatively higher and stable functions, the key was to eliminate obstacles to acquiring service, facilitate functional improvement and self-care, and prevent chronic disease patients with early diagnoses and effective control; (2) For those with functional decline, the key as to reverse the decline trend, prevent from further decline, and ensure the development of function based on the decline; (3) For those with severe disability or risk with severe disability, the key was to ensure the dignified life and provide health service for severe chronic disease patients. In this case, any public health measures would require large amount of resources, which should be regarded as reasonable investment for the society.

Service innovation

Lan, Chen, & Yi (2019) pointed out service innovation as an emerging field which service industry urgently intended to study; the value of service was originated from the constant service innovation of service providers to have customers acquire the latest service experience at any time; service innovation was an important strategy for modern businesses or organizations enhancing competitiveness. Alzahrani *et al.* (2019) mentioned that the statement of business innovation originated from the definition of innovation proposed by Joseph Alois Schumpeter, a German economist, in 1912, who regarded innovation as an enterprise effectively utilizing resources and satisfying market needs with innovative production, as well as the motive force of economic growth. In the innovation classification in 1934, five standards to judge innovation contained (1) new product, (2) new production process, (3) development of new market, (4) creation of new source of supply for materials and semi-finished products, and (5) establishment of monopoly or breaking monopoly. Hsu *et al.* (2019) proposed that service innovation could bring multiple profits for an organization and considered that corporate management should measure the development of new service and new products with financial standards, while other relevant quantitative measurement included sales volume and market share. Wang *et al.* (2019) described the characteristics of service

innovation as (1) innovation of interaction between service providers and clients, (2) important roles of human capital and organizational change, (3) application and outsourcing of knowledge-intensive service, (4) service innovation based on knowledge, information, and intangible assets, (5) intellectual property, (6) innovation of high uncertainty of low visibility, risks, and potential markets, and (7) the role of R&D as the source of innovation showing lower importance than manufacturing. Tang *et al.* (2019) mentioned that Services in Innovation: Knowledge Intensive Business Services (KIBS) as Co-producers of Innovation presented the best representativeness on innovation theory in service industry. The innovation structure contained four dimensions of (1) New Service Concept, (2) New Client Interface, (3) New Service Delivery System, and (4) Technological Options. The meanings are explained as followings.

- 1) *New Service Concept*: Tangible products are the general innovation in manufacturing, while change in service type is the innovation of service industry and business.
- 2) *New Client Interface*: The communication between service industry and clients forms the major area of service innovation that the interaction with clients might be the source of innovation.
- 3) *New Service Delivery System*: Service delivery system and organization refer to internal organizational arrangement to smoothen service or work execution in order to develop and provide innovative service.
- 4) *Technological Options*: Technological innovation is not essential for service innovation; the major innovation of service industry is the organization. Nevertheless, all services have to use some technologies; in practice, technology reveals high correlations with service innovation.

Methodology

Fuzzy Delphi Method

Delphi Method, originally developed by RAND in 1950, was the group decision-making method to achieve the consensus of studied problems or programs with expert group questionnaire survey. Fuzzy Delphi Method (FDM), developed by combining fuzzy set theory and Delphi Method, allowed independent thinking and judgment of expert group, according to the expertise, presented the effect of brainstorming, removed complicated mathematical statistics, and could break through time and space restriction.

Establishment of indicator

Fuzzy Delphi Method (FDM) is adopted in this study for selecting main criteria factors and secondary criteria factors in the expert questionnaire survey

and threshold. Expert group questionnaire survey in Fuzzy Delphi Method (FDM) could shorten the number of questionnaire survey times and time for statistics to enhance the accuracy of the questionnaire survey and present more flexibility and efficiency on the consensus scale of expert group' decision-making opinions. Fuzzy linguistic variables are used as the reference for Fuzzy Linguistic Representation in this study. Experts' questionnaire survey criteria are displayed with 9 scales. For the integration and calculation of expert group decision-making consensus, mean is applied in this study to generalize the geometric mean of model. The criteria and concept framework (*Figure 1*) of this study, after the modification with Delphi Method, are summarized as below.

- 1) Service type: self-owned brand products, membership establishment, diversified service, business model.
- 2) Customer interface: customer relationship management, propaganda.
- 3) Service delivery: customer participation, social network site application, hardware improvement, service channel point.
- 4) Technology choice: medical assistance devices, POS system establishment.

Research object

In Fujian Province, places with conditions are encouraged to establish senior citizen hospitals and rehabilitation hospitals to be included in the regional health service development plan, hospitals with conditions are encouraged to establish senior citizen disease, medical service preferential policies for senior citizen are comprehensively implemented, medical care institutions are generally established senior citizen registration and green channel for health care to optimize the process for senior citizens seeking medical advice and enjoying the priority service of seeing a doctor, referral, making doctor's appointment, and medication guarantee. By 2022, institutions offering service for the elderly and the cooperative medical and health institutions in the province would open two-way referral green channels, allowing institutions offering service for the elderly providing medical and health service for hospitalized senior citizens with different forms, and more than 60% institutions offering service for the elderly could provide medical care and health service for hospitalized senior citizens. The province is constructed a medical care and health service integrated demonstration and training site to explore and develop long-term care service, do well the connection with social service, and guarantee the long-term care needs of senior citizens with special difficulty and disability. Aiming at senior citizens in Fujian Province, as the research samples, 480 copies of questionnaire are distributed, and 351 valid copies are retrieved, with the retrieval rate 73%.

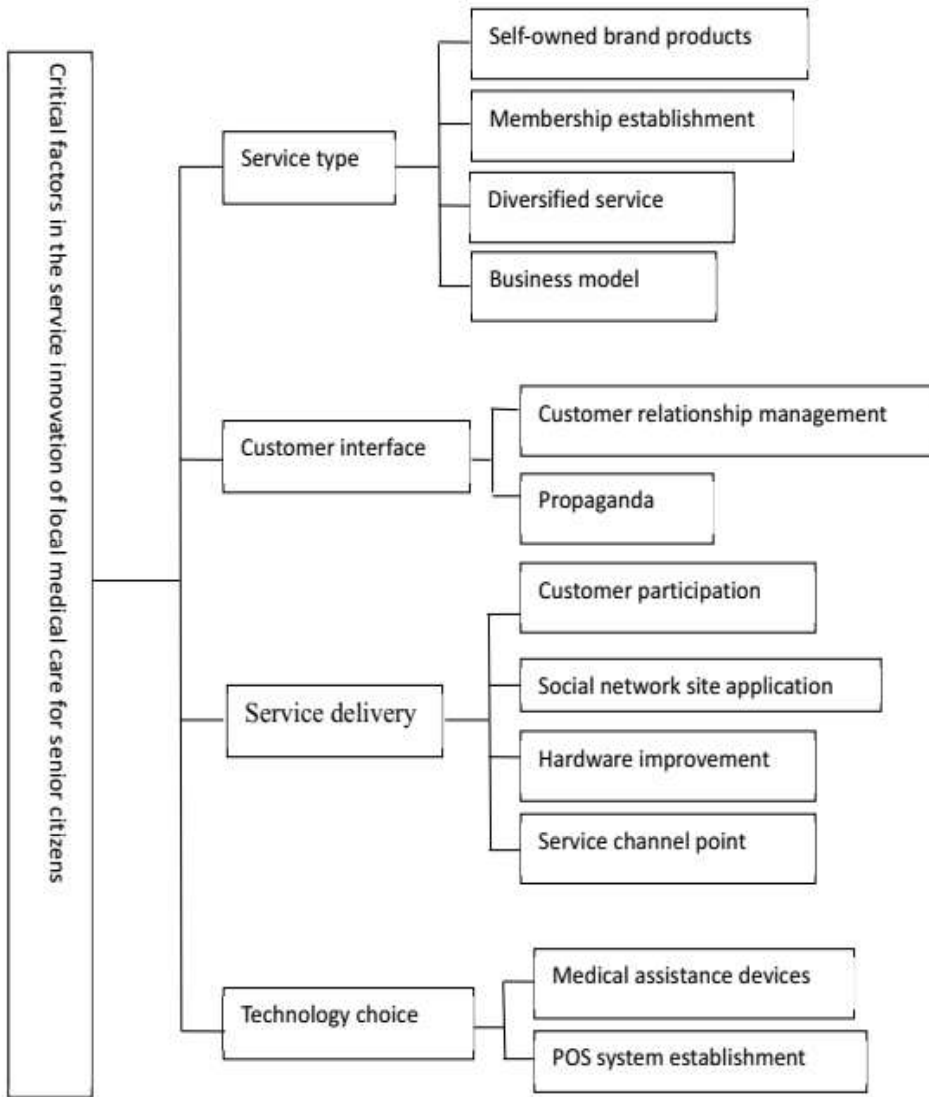


Figure 1. Concept framework

Results

Service innovation of local medical care for senior citizens in Hierarchy II

After completing the weights in Hierarchy II, the indicators are distributed according to the relative importance to reveal the importance of such indicators in the entire hierarchy. The overall weights of critical factors in service innovation of local medical care for senior citizens are further selected, *Table 1*.

Table 1. Weights in Hierarchy II service innovation of local medical care for senior citizens

Hierarchy II		
dimension	dominance weight	order
service type	0.298	1
customer interface	0.241	3
service delivery	0.264	2
technology choice	0.197	4

Overall service innovation of local medical care for senior citizens

After completing all hierarchical weights, the indicators are distributed according to the relative importance to show the importance of the indicators in the entire evaluation system. The overall weights of critical factors in service innovation of local medical care for senior citizens are also selected, *Table 2*.

Table 2: Overall weight of service innovation of local medical care for senior citizens

Dimensions in Hierarchy II	Third level (Hierarchy II × Hierarchy III)		
	Indicator	Overall weight	Overall order
service type	self-owned brand products	0.068	9
	membership establishment	0.047	12
	diversified service	0.129	1
	business model	0.094	4
customer interface	customer relationship management	0.108	3
	propaganda	0.072	8
service delivery	customer participation	0.086	5
	social network site application	0.077	7
	hardware improvement	0.059	11
	service channel point	0.116	2

technology choice	medical assistance devices	0.080	6
	POS system establishment	0.064	10

Discussion

Apparently, senior citizens present high needs for medical care service for aging in place. In order to approach senior citizens' medical service needs, medical care service industry, under difficult business, executes innovative service strategies, increases industrial strengths and opportunities, and enhances medical value. To positively develop and support senior citizens' healthy aging in place and senior citizen medicine integrated treatment service, the industry enters community activity centers, senior learning centers, community care spots, day-care centers, and remote areas through village offices and the participation of civil groups to provide complete health education and medical service. Through such interaction & exchange and warm medical service, senior citizens' body, mind, and spirit are cared. Senior citizen medicine is established in various hospitals at present. In order to cope with senior citizens' needs and the convenience for seeking medical advice, integrated outpatient medical service plans are promoted, and medical care service presents good effectiveness on the clinical diagnosis and treatment of senior citizens' diseases. Senior citizen medicine integrated medical service is therefore positively included. In addition to reinforcing the professional knowledge of senior citizen medicine in primary hospitals and clinics, referral network system is included to cope with integrated medical service and achieve quality local medical care network.

Conclusion

From the questionnaire survey analysis, *Table 1*, the following results are acquired.

Among dimensions in Hierarchy II, "service type" was mostly emphasized, weighted 0.298 and about 29.8% of overall weight, followed by "service delivery" (weighted 0.264), "customer interface" (weighted 0.241), and "technology choice" (weighted 0.197). Accordingly, service type is mostly emphasized in the service innovation of local medical care for senior citizens.

The hierarchical weights of indicators in Hierarchy III are ordered as followings.

- 1) Indicators in service type are ordered diversified service, business model, self-owned brand products, and membership establishment.
- 2) Indicators in customer interface are ordered customer relationship management and propaganda.
- 3) Indicators in service delivery are ordered customer participation, hardware improvement, service channel point, and social network site application.

- 4) Indicators in technology choice are ordered medical assistance devices and POS system establishment.

From the overall weights of critical factors in service innovation of local medical care for senior citizens, top five indicators, among 12, are ordered (1) diversified service, about 0.129 of overall weight, (2) service channel point, about 0.116 of overall weight, (3) customer relationship management, about 0.108 of overall weight, (4) business model, about 0.094 of overall weight, and (5) customer participation, about 0.086 of overall weight.

Recommendations

According to above analyses of critical factors in service innovation of local medical care for senior citizens, references are provided for industry, as below.

- 1) To reinforce the practicability of senior citizens' aging in place, primary hospitals and clinics should positively join in local community organizations and cooperate with volunteer organizations in local community to increase the opportunities and promotion effectiveness of interacting with senior citizens. Local associations and national association groups apply the rich resources and finance to support, plan, and execute plans, e.g. undertaking clinical courses for senior citizen medicine experts, producing high-quality health education promotion, undertaking health authority's programs, and overall planning to join in local medical care system integration model.
- 2) For senior citizens with relatively high and stable functions, monitoring and prevention strategies are primary. Starting from senior citizens' needs and accessibility to service, correct and suitable health knowledge is promoted through paper, broadcast, communication software, and television media, and warm medical care is offered to enhance senior citizens' self-care and function improvement as well as effectively control and prevent chronic diseases for early treatment.
- 3) Seed instructors and student volunteers of medical universities could be organized and trained through local associations and groups. For the combination of local primary hospitals and clinics with budgets and manpower support, activities (e.g. festivals or community activities) could be held to positively promote healthy medical care innovation service of Chinese medicine to local senior citizens as well as to promote the proof of clinical effectiveness.
- 4) Senior citizen market presents infinite potential. Products and service of health products and diet are promoted, revealing the market development and consumption power. Service innovation of local medical care should combine the expertise for cross-industry alliance as well as develop and research quality products matching senior citizens' needs to check the product quality and safety for senior citizens.

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