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Case Study on the Business Model of Smart Senior Care Enterprises

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Abstract: As the aging problem is increasingly serious in China, the "Silver" industry rooted in seniors has brought huge market potential. Numerous private entrepreneurs swarm into the industry, and all kinds of innovative senior care business models are emerging. Particularly, accompanied with the swift development of the Internet, IoT, AI and big data, SSC (Smart Senior Care) has become the most prevalent business model at the moment. However, the SSC industry keeps reshuffling, and there are still few enterprises that have both the Internet gene and relatively mature models. In Chengdu, a city in western China, an Internet + SSC venture company - Maimai Senior Care has been successfully incubated by Chengdu Tianfu Software Park, whose rapid development in recent years and frequent obtaining of financing have caught the eye of quite a lot of insiders. It has truly become a dark horse in Chinese SSC market. As a representative of Chinese SSC enterprises, how could Maimai Senior Care develop so fast? What are the key factors for its swift development? In this study, the Business Model Canvas has been adopted, whose nine elements are used to develop operational definitions and metrics to identify the business model of Maimai Senior Care. Through case study, this paper has put forward specific key metrics to examine the connotation of business models of SSC enterprises, exploring and analyzing possible relationship among the proposition, creation and delivery of values in terms of the business model of Maimai Senior Care. According to the study, the relationship among these key factors of business models may vary from four constructs, namely service concept, customer interface, service transfer system and sci-tech application. Such variation can not only be used to interpret theoretical perspectives about business models in depth, but also allow managers of SSC enterprises to be better informed of the critical information. In response to the rapidly changing background of senior care industry, SSC entrepreneurs can, based on the outcome of this study, design novel business models.

Key words: smart senior care; business model innovation; value proposition; Maimai senior care; case study

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1. Introduction

According to the *2018 Statistical Bulletin on National Economic and Social Development* released by the National Bureau of Statistics of China in 2019, by the end of 2018, China has 248.6 million of population aged 0 to 15 (including those under 16), accounting for 17.8% of the total population. In contrast, the number of population aged 60 and above was 249.49 million, accounting for 17.9% of the total population. For the first time,

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the latter outnumbered the former. China is facing tremendous pressure of population aging, which keeps aggravating. Also, the population aging has also become a hot issue encountered by most countries in the 21st century. According to statistics, a rapid growth can still be witnessed of the senior population in China in the next 20 years. So far, China has 130 million of the senior population aged 65 and above, which accounts for 9.1% of the total population. By 2030, this number will reach up to nearly 200 million as predicted. In the wake of continuous development of society and the gradual improvement of living standards of seniors, general care of daily life doesn't suffice for seniors anymore, whose demands for services have significantly moved to a higher level. High-end guardianship & care service will become one of the development tendencies. How to guarantee the senior care will become increasingly highlighted as one of the hot and troublesome issues drawing the most social attention.

"SSC" model has got popular recently. The predecessor of SSC was "Smart Home Care" which was pioneered by British Life Trust Foundation. Called as "All-smart Senior System" at that time, this kind of care allowed a senior to live a high-quality and comfortable life in his/her own home without being restrained temporally and geographically. The concept of "SSC" was proposed by Meiyun Zuo (2011): SSC refers to, through application of modern scientific technologies (Internet, social networking, IoT, mobile computing, big data, cloud computing, AI, and blockchain), the provision of support to life services and management of seniors in terms of their daily life, safety guarantee, medical service, health care & rehabilitation, leisure & entertainment, learning and sharing, together with automatic monitoring, pre-warning and active processing of information involving seniors, to realize the friendly, autonomous and personalized smart interactions between these technologies and seniors. On one hand, SSC can improve seniors' life quality; on the other hand, it can make good use of experiences and wisdom of seniors to make technological smartness and wisdom of seniors complement each other, in order to let them live more happily, with greater dignity and higher values.

Currently, the supply of health and senior care resources is insufficient in China, and IT application is at a relatively low level, both of which add difficulty in meeting the increasing demands for health and senior care of the public. Fortunately, "SSC" is an effective solution to this situation. As early as in 2016, the Ministry of Industry and Information Technology, Ministry of Civil Affairs and National Health and Family Planning Commission had issued the *Action Plan for Development of Smart Health and Senior Care Industry (2017-2020)* (the *Action Plan*), which raised SSC to the level of national strategy. A market space with its value more than one trillion is being developed orderly.

Nonetheless, the entire SSC industry in China still stages at the market development, and most projects lack clear business or profit models. Therefore, large enterprises and capitals are particularly required to play an important role in leadership. These enterprises shall have strategies of long-term development in the senior care field, certain capabilities of R&D and market risk taking, and strong competence in market development and public service resource integration. Survival and development of the senior care industry depend on market income ultimately, and a relatively complicated business model is required for capital operation and resource allocation, to truly get the market in gear. Lack of distinctive or specially profiting business model for an SSC enterprise may find it difficult to survive, so how to establish a successful business model is a vital topic concerning the business competitiveness of all websites and their capability of sustainable operation.

In recent years, accompanied by the development of the Internet, IoT and AI, the "Silver" industry rooted in seniors has brought huge market potential, whose sound development is both economically and socially beneficial. The integration of "SSC" and daily life of seniors will contribute to the final realization of goals of active,

energetic, healthy and optimal senior care.

SSC provides practical and effective solutions to population aging. The industry keeps reshuffling, and there are still few enterprises which have both the Internet gene and relatively mature models. In Chengdu, a city in western China, an Internet + SSC venture company - Maimai Senior Care has been successfully incubated by Chengdu Tianfu Software Park. The SSC & Nursing System independently developed by Maimai has won it numerous group customers, and its projects have been implemented in 30 cities, earning it the market share that ranks the top and the status as a black horse in Chinese SSC market.

In this regard, through reviewing literatures on business models, a systematic measurement framework for such models has been put forwards in this study, with an aim to answer the following questions via case study on Maimai Senior Care:

1) What's the connotation of business model adopted by an SSC enterprise?
2) What's the relationship among the key factors of business model adopted by an SSC enterprise?
3) How could the business model of Maimai Senior Care develop so rapidly? What are the key factors for its swift development?

This study proposes general theoretical principles and management implications based on the research, analysis and findings, and expects to provide constructive suggestions for the design of business models for SSC enterprises in the new era.

2. Literature Review

The definition of business model is quite broad. Perspective of technological innovation sees a business model as the transformation of technological innovation into market demand, whose core is technology commercialization. Such a model focuses on the innovation process of an enterprise, and serves as the value creation that transforming technologies into commodities (Chesbrough & Rosenbloom, 2002). Business model from this perspective must be in line with the evolution steps of the life cycle of an enterprise (Andries & Debackere, 2007). In contrast, the perspective of opportunity exploration believes that business model is a value-creating mechanism that cognizes and utilizes business opportunities (Afuah, 2003, 2004; Zott & Amit, 2008). Perspective of value creation proposes that business model is an architecture covering products, services and information flows, and it describes enterprise participants and their roles in the value network (Amit& Zott, 2012; Timmers, 1998; Cheng'en Ke, 2008; Linglang Tang, Weizhen Cai & Yingchao Wang, 2009). So far, there are plentiful definitions of business model (Eisenmann, 2006; George & Bock, 2011; Johnson, Christensen, & Kagermann, 2008; Shafer, Smith, & Lin der, 2005; Timmer s, 1998). Such blurring of constructive and academic definitions has caused divergent outcomes of empirical studies and difficulties in application (George & Bock, 2011; Xinxing Li & Changyong Liu, 2008). Therefore, major literatures on business model will be reviewed firstly in this study, in order to determine the connotation of business model and further define it.

Scholars believe that the true meanings of business model are profiting plans of an enterprise and its explanation of how to make profits by itself. The essence of business model is a set of theories that are constantly tested by the market (Magretta, 2002), or a business model must play two important roles: value creation and value acquisition. Detailed elements include the value proposition concerning the provision of specific commodities to customers, the location of a specific niche market, the value chain structure in which value is created and delivered, revenue-generating mechanism, positioning of an enterprise in the value network, and

inimitable competitive strategies (Chesbrough, 2003; 2010). Or, a business model is seen as the description of value acquisition model and value delivery approach of an enterprise, through which the enterprise can view six elements: definition of target customers, discussion of real customer needs, definitions of products or service combination, settings of customer-based channels, organization of value activities, and development of profit patterns, to examine a business model that has potentials (Sinfield, Calder, Mcconnell, & Colson, 2012). Alternatively, a business model consists of four interrelated elements: customer value proposition, profit patterns, key resources and key processes (Johnson et al., 2008).

According to Teece (2010), the business model is defined as a set of logics specified, and provided with evidences to explain the way of an enterprise's creating and delivering of values to its customers, and an overview made about revenue/cost/profit structure of an enterprise during its delivery of values. Business model is a mechanism that transforms creative ideas into value creation at reasonable costs to acquire value-based benefits. An enterprise must develop related value activities and accumulate resources to let its revenue outnumber costs and be more efficient than its rivals (Gambardella & McGahan, 2010). Business model shall include the business system, learning system and profit pattern. Business system leads the production and delivery of products and services; learning system can learn about new demands for operation from customers and suppliers - long-term learning and accumulation of such knowledge can help to shape the competitive advantages of an enterprise; and profit pattern is a formula used to explain the profit-making approach of an enterprise (Itami & Noshimo, 2010). Business model is also a system of interdependent value activities, which allows an enterprise to go beyond the scope of regional enterprises and expand its business range, and also describes the interaction between an enterprise and its customers, partners or suppliers; value activities enable an enterprise to create some values and share value-based benefits (Zott & Amit, 2010; Amit & Zott, 2012).

According to Cheng'en Ke, the Taiwanese scholar (2008), business model reflects the way of an enterprise to create and master the core logic of values and to select strategies in its own value network. Therefore, a business model can be adjusted (if necessary) to respond to environmental changes and gain opportunities of sustainable business. Yongrui Zhu, Pengting Chen and Xiaocheng Yu (2011) studied business model of an enterprise through the processes, profit approach, investment and key factors to success provided. Suqin Lin (2010) discussed the business model of Taiwanese energy technology industry from the value proposition, business scope, profitability and strategic control. According to Zheng'an Cai and Dazhi Zheng (2012), business model is defined as a set of logic system that provides the proposition, creation, delivery and acquisition of values, which must be constantly tested by the market; by doing so, customers can be satisfied for their specific needs and endowed with purchasing capacity, while enterprises can appropriately respond to customer needs, and deliver the values to customers to let them pay for such values, thus transforming these revenues into profits through proper design and operation of different value activities.

Integrating viewpoints of relevant scholars, in this study, business model is directed at a certain target consumer (niche market), and defined as a set of logic system that provides the proposition, creation, delivery and acquisition of values, which must be constantly tested by the market; by doing so, target customers can be satisfied for their specific needs and endowed with purchasing capacity, while enterprises can appropriately respond to target customer needs, and deliver the values to target customers to let them pay for such values, thus transforming these revenues into profits through proper design and operation of different value activities. To put it another way, a business model is the basic assumption by an enterprise of the following items: what the target customers need, how they need them, why the target customers pay for them, and how an enterprise organizes to

satisfy the target customers and make profits.

3. Study Methodology

Seeing from the level of global industry, studies on theories related to business models are still at the exploratory stage, with few empirical studies carried out and many divergences among theoretical viewpoints. As for the Chinese SSC industry, the exploration into business model theories is even less (Xinxing Li & Changyong Liu, 2008). Given the relatively few empirical evidences or no determined theoretical viewpoints when exploring theories in a new domain, case study is the proper study methodology (Eisenhardt, 1989; Yin, 1994; 2003).

As required by Yin (1994, 2003) on case study methodology, the development of a set of sufficient operational metrics based on theoretical concepts can help to avoid the tendency to subjective judgment during data collection and analysis, which is necessary to increase the construct validity. Despite frequent discussions on this in previous literatures about business models, no effective operational architecture has been developed to examine the exact model of business operations of an enterprise.

Osterwalder et al. (2010) summarized the discussions made by previous scholars on business models, and put forward the Business Model Canvas, in which nine interworking constructs in a business model were brought up and a gridview model was drawn, to provide the model architecture for proposing a business model organizationally and scientifically. This study will cite the Business Model Canvas architecture to develop operational definitions and metrics of each construct, as shown in Figure 1.

<table>
<tr>
<td rowspan="2">Key Partners
Partners cooperating with enterprises to realize production and value proposition</td>
<td>Key Activities
A series of activities carried out by enterprises for delivering value propositions to consumers.</td>
<td rowspan="2">Value Proposition
Benefits gained by and needs satisfied for consumers through products and services provided by an enterprise.</td>
<td>Customer Relationships
Relationships established between an enterprise and consumers through the connection of channels and delivery of value propositions.</td>
<td rowspan="2">Customer Segments
Target customers of an enterprise - who the enterprise wants to sell its products and services to, and where to sell.</td>
</tr>
<tr>
<td>Key Resources
All resources required for realizing production and value proposition.</td>
<td>Channels
Channels through which an enterprise provides its products and services to consumers, and approaches adopted by the enterprise to establish its own channel groups to deliver products and services to consumers more rapidly and accurately.</td>
</tr>
<tr>
<td colspan="3">Cost Structure
Necessary costs of all resources and activities adopted for achieving the production and value proposition delivery.</td>
<td colspan="2">Revenue Streams
Revenues that an enterprise can earn.</td>
</tr>
</table>

Figure 1 The Business Model Canvas

Data source: Osterwalder and Pigneur (2010)

Yin (1994) pointed out that the adoption of single-case study design may be attributed to four points: firstly, the case is critical to test theoretical models; secondly, it represents an extreme or unique case; thirdly, it is a representative or a typical case in the industry; fourthly, it is a revelatory case that allows observations into phenomena that are hardly explorable in previous studies. The case selection in this study has representative significance and indicative status in the development of Chinese SSC industry; and the researcher's interpersonal

connections have provided opportunities for in-depth understanding and description of the case itself. This is a revelatory case, showing the phenomena hardly explorable using previous theories related to the business model of SSC industry in the Chinese mainland.

According to the *Blue Book of Smart Elderly Care: Report on Development of China Smart Elderly Care Industry (2018)* jointly released by the Hualing Intelligent High-tech Industry Development Center and Social Sciences Academic Press, three ministries and commissions announced 53 SSC demonstration enterprises, in which 20 were engaged in IT and 12 in medical technology. In order to select a representative case in the industry, this study has adopted the principles of enterprise selection as follows:

- It must be one of the SSC demonstration enterprises that were announced by three ministries and commissions
- Its annual turnover grows steadily
- It has been running for over 4 years
- Its operation has won recognition from the industry and customers
- Its operation is indicative in the industry and can serve as a fine example or reference
- It has obtained the venture investment or fund financing
- The company involved in the case study must agree to cooperate with the study, in order to provide relevant necessary materials

Based on the above conditions, Chengdu Maijiekang Science and Technology Co., Ltd. ("Maimai Senior Care"), established in 2014, is selected in this study. According to Baidu Baike, it obtained Round A financing of RMB30 million (investment led by China Merchants Innovation Investment Management Co., Ltd.) in June 2016. Main interviewees were the company's senior executives such as the general manager, deputy general manager and assistant to the general manager, and each interview lasted for 1h or 2h (about 28h in total). This study has followed the suggestion of Yin (1994, 2003), and provided multiple sources of case evidences, including formal interview data, official data and long-term observations. Through the in-depth interview, this study has made total recording upon approval of the interviewees, then turned recordings into verbatim transcriptions, based on which the open coding of grounded theory has been performed. Meanwhile, cross-validation of evidences has been conducted to validate value propositions from the viewpoints of multiple customers in the case, and multiple senior executives have been consulted to confirm the correctness of case analysis, thus improving the construct validity in this study.

Data analysis in this study was conducted in three stages. In Stage I, concepts and implications were clarified of the variables of operational metrics studied. Based on operational definitions of 9 constructs in the theoretical architecture of business model, cross-validation was performed on field data of the case, with operational metrics gradually developed. All case analyses would follow the coding of this architecture. In Stage II, the relative importance of each operational metric of the enterprise studied was analyzed and evaluated. Missions of this stage were to discuss the variables of operational metrics one by one, to provide a subjective assessment through the collection of all data and analysis & determination by researchers, and to determine the importance of operational metrics on the enterprise studied. Arabic numerals from 0-5 were adopted as the scoring standard (0-none, 1-weakest, 2-weak, 3-strong, 4-stronger, 5-strongest) to compare different extents to which activities were implemented by the enterprise studied, or to use Yes or No to indicate the qualitative outcome. In Stage III, analyses of similarities/differences and relevance were conducted between different operational metrics in the case. Variables of operational metrics scoring above 3 and evaluated as being quite important were selected, in order to

explain the relevance between constructs for an individual case.

4. Case Analysis

4.1 Case Introduction

Enterprise studied in the case is Maimai Senior Care, a senior care brand subordinate to Chengdu Maijiekang Science and Technology Co., Ltd. Established in China in July 2014, it is mainly engaged in smart care services, providing software/hardware-based smart care solutions to senior care undertakings in middle-to-high-end institutions, communities and at home. Headquartered in Chengdu, it has wholly-owned subsidiaries in Beijing, Shanghai and Guangzhou, and is doing business in 30 domestic cities, such as Beijing, Shanghai, Guangzhou, Shenzhen, Chengdu, Tianjin, Shijiazhuang, Ningbo, Hangzhou, Guiyang and Xi'an. Series products provided by Maimai Senior Care rank the top as for its shares in China's middle-to-high-end senior care market, and the software & hardware products of its smart care system have also obtained multiple intellectual property rights.

4.2 Analysis of the Business Model of Enterprise Studied

This study attempts to, through in-depth analysis of the business model of Maimai Senior Care, identify key factors among nine constructs it has provided, i.e., Value Propositions, Customer Segments, Key Resources, Key Activities, Key Partners, Customer Relationships, Channels, Cost Structure and Revenue Streams.

(1) Construct of Value Propositions

Customer value propositions of the business model must be segmented on the basis of target markets, before the customer value drivers can be stipulated; therefore, value propositions are divided into sub-constructs: niche markets and value drivers. According to interview data in the case, the given niche markets are: Business Markets like institutions and communities that provide senior care services. Again, according to interview data in the case, there are eight customer value drivers, as shown in Table 1:

Table 1 Customer Value Propositions Of The Enterprise Studied - Niche Markets And Value Drivers

Primary construct	Sub-constructs	Operational metrics	Scoring
Value propositions	Niche markets	Business Markets like institutions and communities that provide senior care services	4
	Value drivers	Reduction of care-related risks	5
		Improvement of the operational efficiency of senior care institutions	5
		Establishment of an external communication platform to help brand building	5
		Integration of senior care resources	5
		Zero learning costs	4
		Continuity of quality services	5
		Rapid iteration and agile development to get adapted to changes	4
		Promotion of the information-based application	4

By summarizing the above data, and analyzing the construct of main value activities for customer value creation in the "Internet + senior care" industry, it can be seen that the enterprise studied has grasped the needs of niche markets or Business Markets that provide senior care in institutions, communities and at home, and have solved three major problems entirely in virtue of smart care and the IoT sensors, tools and approaches:

Firstly, help to timely find unforeseen circumstances and reduce operational risks;

Secondly, assist in nursing via sci-tech approaches, thus improving working efficiency;

Thirdly, establish an external communication platform for brand building

Through the rational design of products, development of operational system, grayscale import, rapid iteration & agile development and information-based application, both informatization and intellectualization are imported into processes rapidly.

As for rational design of products, the senior care scene is different from those related to Internet consumption, and caregivers and seniors are much weaker than the young people in their learning abilities, so the products shall be usable as long as they are powered on, to incur zero learning costs.

The Internet can't serve as a solution to the evil in human nature. Products and tools developed must be combined with operational & management systems in depth, so as to achieve effective promotion, and realize sustainability in the case of demission or flow of care workers and managers.

As for grayscale import, the Internet's gated launch strategy is used to import from a care unit or group, to be adapted from a small scope to the overall application.

As for rapid iteration, the entire senior care service has been gradually refined since 2014 and diversified the senior care business types, so the entire design of product & IT shall respond to operational needs rapidly and achieve agile development to get adapted to changes.

All the informatization, intellectualization and smartness-based processes require business data to be promoted, and the core business data in nursing homes are those related to the daily care of seniors, which must be retained to promote the information-based applications at senior care groups and institutions.

(2) Construct of Customer Segments

Customers are the "heart" of all business models. Any company won't stand a chance of long survival if it has no customers that can bring revenue. In order to satisfy customers to a higher extent, a company can divide its customers into different customer segments, each of which share the same needs, behaviors or other attributes. An enterprise must decide: which customer segments to serve and which to ignore. Once the decision is made, it can design a business model elaborately for the needs of a certain customer segment. According to interview data in the case, there are three customer segments of Maimai Senior Care, as shown in Table 2.

Table 2 Customer segments of the enterprise studied

Construct	Operational metrics	Scoring
Customer Segments	Middle-to-high-end senior care service provider	5
	Day care centers	5
	Home caregivers	5

By summarizing the above data, the Health Cloud has established Senior Terminal, Nurse Terminal, Child Terminal and Management Platform, in order to solve and manage high-risk problems for middle-to-high-end senior care service providers. Meanwhile, in virtue of the Health Cloud management platform and based on the reference of the Internet's S2C idea, S end of resources is integrated to energize C end, to explore paths of commercialization of community senior care. The S end refers to powerful supply chain platforms; the B end refers to day care center in communities; and the C end refers to seniors in communities. Day care centers and seniors in communities are connected through the establishment of supply chain platforms, so as to finally link the community senior care and the senior care at home.

(3) Construct of Key Resources

Key resources are necessities in each business model, which allow an enterprise to create and provide value

propositions, reach out to markets, maintain relationships with customer segments and finally earn revenues. Different key resources are required by business models in different forms. Key resources can be physical, financial, wisdom-based or human-related. Besides, a company can own these key resources by itself or rent them, or acquire them from its key partners. According to interview data in the case, there are eight key resources in total, as shown in Table 3 below.

Table 3 Key Resources of the Enterprise Studied

Construct	Operational metrics	Scoring
Key Resources	Technology R&D capability of the team	5
	Business model research capability	5
	Operation & promotion capability	5
	Product training & explanation capability	3
	Regional distribution (the number of hardware (outlets, etc.))	4
	Supply chain	4
	Team cohesiveness	5
	Financing from venture capital institutions	4

By summarizing the above data, and analyzing the construct of Key Resources of "SSC", it can be seen that, in order to maintain the applicability of products, a team must be highly capable of making explorations into business models to transform such models into product models. User-oriented products are needed and must have superior functionality to support a large-scale network of business operations, which also poses a great challenge to the capability of technical team. Products in the senior care market are inseparable from hardware facilities, and outlets to which customers have direct access are indispensable. For the internetization of such a traditional market, strong operation & promotion capability is a must-be quality in order to impress users with products. In this regard, not only the cohesiveness of operation team is tested, but also all fund sources supporting software & hardware are indispensable.

(4) Construct of Key Activities

Every business model requires some key activities. A company longing for success must carry out these critical activities. Just like key resources, key activities are necessary for an enterprise to create and present value propositions, enter markets, maintain relationships with customers and finally earn revenues. Again, like key resources, different key activities are needed by business models in different forms. According to interview data in the case, there are eight key processes in total, as shown in Table 4 below.

Table 4 Key Activities of the enterprise Studied

Construct	Operational metrics	Scoring
Key Activities	Independent R&D of core hardware to obtain patents	5
	Incentive measure of internal education system	3
	Establishment of an explicit partnership mechanism	5
	Operation & promotion of SOP	4
	Business process at the outlet	5
	Provision of a sound benefits system	4
	Clear division of work	4
	Establishment of a team dedicated to financing operation	5

By summarizing the above data, and analyzing the construct of Key Activities of "SSC" model, it can be seen that an enterprise must achieve independent R&D of software & hardware with core patents, so as to gain competitive advantages in products. An explicit partnership mechanism shall be established to integrate resources, actually connect the Internet products with daily life, and energize physical products with the Internet products. Moreover, through internal incentive measure, a system of work division will be established to provide superior benefits and enhance the cohesiveness of internal team, so that the team is capable of dealing with difficulties and breaking through obstacles during operation & promotion or product R&D. Finally, via professional capital operation, market values of products can be raised.

(5) Construct of Key Partners

Establishment of partnership between companies can be resulted from multiple causes, and partnership has also become a cornerstone requiring business models. Causes for establishing partnership include the optimization of business models, reduction of risks, and acquisition of resources. According to interview data in the case, there are nine partner networks in total, as shown in Table 5 below.

Table 5 Key Partners of the Enterprise Studied

Construct	Operational metrics	Scoring
Key Partnerships	Large and medium-sized senior care institutions at home and abroad	5
	Hospital/care center	5
	Aging community	5
	Venture capital fund	5
	Governmental agency	5
	Numerous smart wearable device suppliers	5
	Association and philanthropic organization	4
	Elderly association	4

According to the interview data, the business model's gene of "Internet + enterprise" decides that it calls for partners in all aspects. Partners involved in "Internet + senior care" products can be classified on several levels: the Internet terminal media that can provide physical senior care venues, such as the senior care institutions, communities and hospitals; authorities that provide policy support, such as the government and associations; organizations that provide active services to seniors, such as charitable organizations; venture partners that provide financial support for the operation to make the virtualized products valued.

(6) Construct of Customer Relationships

A company shall figure out what kind of relationship it would like to establish with each customer segment. The so-called customer relationships may range from personal relationships to automated relationships. The motivations driving customer relationships may include acquiring customers, maintaining customer relationships, and increasing turnover. For example, in those early days, the motivation driving customer relationship established by the mobile network practitioners was the strategy to acquire customers actively (including free mobile phones). When the market got saturated, practitioners converted their focus to maintaining customer relationships, and raised the average contribution brought by each customer. The customer relationship needed by business model of a company has a profound impact on its overall customer experience. According to interview data in the case, there are ten key processes in total, as shown in Table 6 below.

Table 6 Customer Relationships Needed by the Enterprise Studied

Construct	Operational metrics	Scoring
Customer Relationships	Product recognition	5
	Good interaction and trust	5

The interview data show that, according to feedback from the customers of Maimai Senior Care, the smart care system of Maimai can help an institution to save about 20% of the labor cost and 30% of energy. It has gained extensive recognition from customers on the market level. There are 136 outlets of "Xiaomai" and 226 co-construction users. For the first batch of co-construction users, the average accurate customer source conversion rate has increased by 32%, and the amount of consumption made by seniors has increased by 150% after one year.

(7) Construct of Channels

A company will make full use of communication, distribution, sales and other channels to establish an interface of interconnection with customers. These channels are contact points of customers, playing significant roles in customer experience. According to interview data in the case, there are four key resources in total, as shown in Table 7 below.

Table 7 Channels Adopted by the Enterprise Studied

Construct	Operational metrics	Scoring
Channels	Senior care service providers	5
	TV show	5
	News/media/Internet/advertising	5
	Word of mouth	4

The Internet products, through their application in physical institutions, provide good services to customers, and the customers then give word of mouth, plus online recommendation by netizens and advertising in TV shows, the multiple customer sources can be therefore obtained.

(8) Construct of Cost Structure

This construct refers to the most important cost incurred when a specific business model operates. Costs will be incurred in the creation & delivery of values, maintaining of customer relationships, and generating of revenues. If the Key Resources, Key Activities and Key Partners are clearly defined, such costs will be easier to calculate. According to the interview data, the cost structure has been obtained for value acquisition in the enterprise studied, as shown in Table 8.

Table 8 Cost Structure of the Enterprise Studied

Construct	Operational metrics	Scoring
Cost Structure	Per customer profit	35%-45%
	Hardware equipment R&D cost ratio	30%-40%
	Human resource cost ratio	10%-15%
	Office venue leasing & maintenance cost	3%-5%
	Management & marketing (e.g. routine maintenance) cost	35%-45%

Data from the case show that, the per customer profit in the case is 35%-45%, hardware equipment R&D cost ratio is 30%-40%, human resource cost ratio is 10-15%, office venue leasing & maintenance cost ratio is 3%-5%, and management & marketing (e.g., routine maintenance) cost ratio is 35%-45%.

(9) Construct of Revenue Streams

If customers were the “heart” of a business model, revenue streams would play the role of artery. A company must ask itself: what kind of value is it that each customer segment is willing to pay for? If this question can be answered smoothly, the company can earn at least one revenue stream from each customer segment. Every revenue stream may have a unique pricing mechanism, such as unified pricing, negotiated pricing, auction, or dependence on the market supply & demand or the quantity, or revenue management. According to interview data in the case, there are ten key processes in total, as shown in Table 9 below.

Table 9 Revenue Streams in this Case Study

Construct	Operational metrics	Scoring
Revenue Streams	Sales of SSC terminal and wearable monitoring equipment	5
	Royalties for patented technology	5
	Software SAAS service charge	5

As shown in this case study, the Internet products present services at terminals, and generate revenues, royalties of patented technology, and service charge for software maintenance via terminal devices.

Based on massive secondary data about Chinese SSC and Maimai Senior Care, and analyses of data from the interview between me and senior executives at the headquarters of Maimai Senior Care, this study aims to find contemporary and mature solutions to the service innovation of SSC enterprises, thus forming business models for such innovation of the said enterprises. Based on the analysis results, a Business Model Canvas of Maimai Senior Care has been drawn under the service innovation model, as shown in Figure 2.

5. Study Findings and Discussion

A business model consists of nine interrelated constructs, namely the Customer Segments, Value Propositions, Channels, Customer Relationships, Key Activities, Key Resources, Key Partners, Cost Structure and Revenue Streams. All of them must be combined to create values. A successful business model begins with the development of strong customer value propositions, the search for real market needs, and then the determination of major value activities necessary to creating customer values. Such activities will be supported and integrated in virtue of the key resources and activities of the company, with values delivered to customers. Finally, the profit formula and cost structure are established for value acquisition in the company, thus creating some values for the company.

Bilderbeek, Hertog et al. (1998) put forward the service innovation model (as shown in Figure 3), which covered four major constructs related to services.

This study, according to the explanation (based on data analysis) of relevance construct, has adopted the operational metrics of an enterprise scoring above 3. Firstly, the variables of customers’ operational metrics of value drivers are classified into four constructs: service concept, customer interface, service delivery system and sci-tech application. Explicit explanations are made about relevance between the detailed key metrics of these four constructs and the value creation/delivery.

5.1 Explanation of Business Model’s Relevance Concerning Service Concept

In this case study, Business Markets such as institutions and communities providing senior care services are defined as niche markets of the “construct of value propositions”. Therefore, in terms of services, value drivers provided to consumers of such niche market shall be the reduction of care-related risks, improvement of the

operational efficiency of senior care institutions, establishment of an external communication platform to help brand building, integration of senior care resources, provision of products with zero learning costs, realization of the continuity of quality services, rapid iteration and agile development to get adapted to changes, and promotion of the information-based application. To provide the above values, multiple value activities must be implemented to create values, including independent R&D of core hardware to obtain patents, incentive measure of internal education system, establishment of an explicit partnership mechanism, operation & promotion of SOP, business process at the outlet, provision of a sound benefits system, clear division of work, and establishment of a team dedicated to financing operation.

<table>
<tr>
<td rowspan="2">In this case study, Business Markets such as institutions and communities providing senior care services are defined as niche markets of the “construct of value propositions”. Therefore, in terms of services, value drivers provided to consumers of such niche market shall be the reduction of care-related risks, improvement of the operational efficiency of senior care institutions, establishment of an external communication platform to help brand building, Key Partners
1. Large and medium-sized senior care institutions at home and abroad
2. Hospital/care center
3. Aging community
4. Venture capital fund
5. Governmental agency
6. Trade enterprise
7. Numerous smart wearable device suppliers
8. Association and philanthropic organization
9. Elderly association</td>
<td>Key Activities
1. Independent R&D of core hardware to obtain patents
2. Incentive measure of internal education system
3. Establishment of an explicit partnership mechanism
4. Operation & promotion of SOP
5. Business process at the outlet
6. Provision of a sound benefits system
7. Clear division of work
8. Establishment of a team dedicated to financing operation</td>
<td rowspan="2">Value Proposition
1. Business Markets like institutions and communities that provide senior care services
2. Reduction of care-related risks
3. Improvement of the operational efficiency of senior care institutions
4. Establishment of an external communication platform to help brand building
5. Integration of senior care resources
6. Zero learning costs
7. Continuity of quality services
8. Rapid iteration and agile development to get adapted to changes
9. Promotion of the information-based application</td>
<td>Customer Relationships
1. Product recognition
2. Good interaction and trust</td>
<td rowspan="2">Customer Segments
1. Middle-to-high-end senior care service provider
2. Day care center
3. Home caregivers</td>
</tr>
<tr>
<td>Key Resources
1. Technology R&D capability of the team
2. Business model research capability
3. Operation & promotion capability
4. Product training & explanation capability
5. Regional distribution (the number of hardware (outlets, etc.))
6. Supply chain
7. Team cohesiveness
8. Financing from venture capital institutions</td>
<td>Channels
1. Senior care service providers
2. TV show
3. News/media/Internet/advertising
4. Word of mouth</td>
</tr>
<tr>
<td colspan="3">Cost Structure
1. Per customer profit
2. Hardware equipment R&D cost ratio
3. Human resource cost ratio
4. Office venue leasing & maintenance cost
5. Management & marketing (e.g. routine maintenance) cost</td>
<td colspan="2">Revenue Streams
1. Sales of SSC terminal and wearable monitoring equipment
2. Royalties for patented technology
3. Software SAAS service charge</td>
</tr>
</table>

Figure 2 Business Model Canvas of the Enterprise Studied

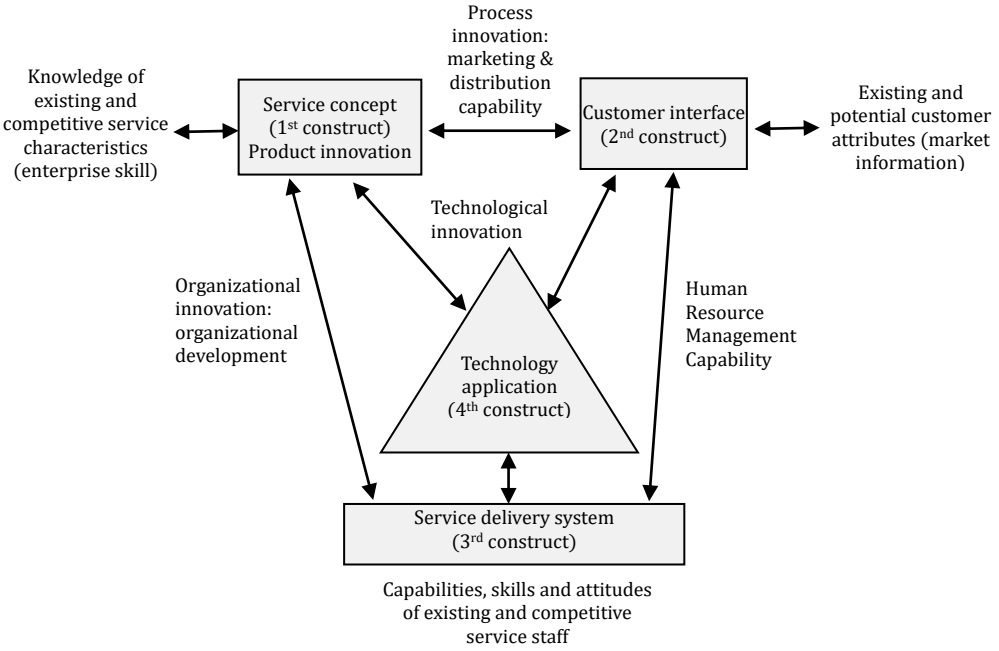

Figure 3 Service Innovation Model

Source: sorting of data in this study

In addition, key resources are required to support major key activities, including the technology R&D capability of the team, business model research capability, operation & promotion capability, product training & explanation capability, regional distribution (the number of hardware (outlets, etc.)), supply chain, team cohesiveness, and financing from venture capital institutions. Major value activities can be coordinated with each other and got improved in efficiency under the assistance of key processes, including the incentive measure of internal education system, establishment of an explicit partnership mechanism, operation & promotion of SOP, business process at the outlet, provision of a sound benefits system, and clear division of work.

The transaction relationship between such a niche market and the enterprise studied is long-term stable, embodying good interaction and trust. Such a niche market usually obtains market information and conduct transactions through senior care service providers, word of mouth, online recommendation and advertising in TV shows and magazines.

5.2 Explanation of Business Model's Relevance Concerning Customer Interface

Through the above description, the relationships among value proposition, value creation and value delivery of the business model adopted by the enterprise in the study shall be clearly understood. Discussion of these relationships is aimed at responding to the second question in this study. To put it another way, the niche market of the enterprise studied sees senior population who is keen on health care as its main target, so it shall emphasize on the added value and experience of service. In order to realize superior quality of service and convenience of parking, the enterprise studied has provided valet parking service for free. Also, in order to convey the concepts of "customer-oriented" and "providing customer-satisfying service", it has organized and authorized the management and personnel optimization/training, with five senior executives giving on-site instructions and interacting with customers directly. Through handling and management of customer complaints by the after-sales service staff, the handling & tracking system of service negligence has been set up, to continuously improve internal processes and quality based on customer feedback, and to achieve customer satisfaction.

Then, both the SOP and a clear & dedicated DOR (division of responsibilities) have been established, in order to control the ascription of responsibilities concerning processes, and to guarantee the implementation of SOP. Application and integration of POS system have been imported, combining the needs of front-end outlets with logistic works to improve the efficiency of operation flow, accelerate service process and shorten waiting time of customers.

What's more, to provide friendly service, a standardized service process has been established to turn the intangible service into tangible evidence. Good interactions with customers are realized in the service process, with customer preferences recorded to improve their loyalty and frequency of consumption. Therefore, accumulation of numerous, long-term stable and loyal customers has earned the enterprise a major competitive advantage, serving as a key resource inimitable to its rivals.

6. Conclusion and Suggestion

This study aims to discuss the way an SSC enterprise shall take to meet consumer needs through redesign of business models, since it's difficult for such an enterprise to, based on the traditional senior care model, search for new business models to meet special forms of needs of a special population - seniors.

In order to answer the question "What's the connotation of business model adopted by an SSC enterprise?", this study has firstly discussed literatures related to business models, integrating viewpoints of relevant scholars (Chesbrough, 2003, 2010; Demil & Lecocq, 2010; Gambardella & McGahan, 2010; Itami & Noshimo, 2010; Johnson et al., 2008; Magretta, 2002; Sinfield et al., 2012; Teece, 2010; Yongrui Zhu et al., 2011; Cheng'en Ke, 2008; Suqin Lin, 2010; Ruicong Qiu et al., 2011; Linglang Tang et al., 2009; Zheng'an Cai & Dazhi Zheng, 2012); also, as required by Yin (1994, 2003) about the case study methodology, in order to avoid the tendency to subjective judgement during data collection and analysis, a set of sufficient operational definitions have been developed and used to examine exact differences between the new and old business models, with specific key metrics put forward in the case analysis to serve as a more practical reference for other enterprise examining its own business model. Such a business model with construct validity is one of theoretical contributions in this study.

In order to answer the second question "What's the relationship among the key factors of business model adopted by an SSC enterprise?", This study has, based on the information obtained from case study, further analyzed the relationship among three constructs: value proposition, value creation and value delivery. Study outcome has shown that the relationship among these key factors may vary from the constructs of product, service and environment, and such variation can not only be used to interpret theoretical perspectives about business models in depth, but also allow managers to be better informed of the key. This is the second theoretical contribution of this study.

In response to the rapidly changing background of senior care industry, SSC enterprises can develop operational metrics that cover all constructs based on this study, in order to design new business models to examine the variation among all constructs. This is the third theoretical contribution of this study.

In terms of management implication, this study has brought about operational approaches to examine strategic differentiation-based positioning and business model innovation. Firstly, the strategic differentiation-based positioning is closely related to the construct of value propositions, which indicates that an enterprise shall provide specific value drivers to attract and meet the needs of a certain target customer segment,

and to further check if such value drivers are different in the market. Secondly, an enterprise must check to see what kinds of key resources and partner networks are owned by itself, and through which key processes can major value activities be supported, to complete value creation to meet value propositions claimed by the enterprise.

In another word, an enterprise can also check to see what kinds of key resources are owned by itself, which ones have competitive advantages, and what kinds of advantages brought by such key resources can provide value drivers to the niche market's consumer population. In this way, the major value activities of the company can be designed and developed on the basis of customer value proposition, and key processes exclusive inside the company will be configured for such activities.

Business model deals with the way of an enterprise to run and make money. Regardless of their relatively small scale, SSC enterprises are still equipped with a full set of business models in business & management. Operators are suggested to, based on the business model design, always properly adjust key processes along with the customer value drivers and key resources of the company, and realize differentiation-based positioning. Only by doing so can an enterprise survives in the broad and fiercely competitive market of senior care industry, and get gradually expanded and developed to establish a self-owned brand for sustainable business.

Confined by time and ability, this study finds it quite difficult to search for proper cases. It's recommended to include more cases and conduct cross-case comparative analysis in the future, to find out the differences between their business models, and provide references about business planning for SSC project operators who are longing for innovative development.

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