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Research Article

Business Model and Management Decision-Making Method of Comprehensive Apartments for the Elderly

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With the development of the aging structure of the social population, ensuring the survival rights and interests of the elderly group and realizing the cultivation of the elderly are important issues that need to be solved urgently for the sake of social development. In recent years, the development of apartment industry for the elderly has provided new ideas and experience for the development of the pension system. However, at present, the development of elderly apartments in China is still in the initial stage, and there are many deficiencies to be solved. Therefore, this paper puts forward the business model and management decision-making method of comprehensive apartments for the elderly, so as to provide scientific and reasonable decision-making reference for the development of comprehensive apartments for the elderly. This paper evaluates the different combinations of operation and management decision-making modes of comprehensive old-age apartments through fuzzy set pair and fuzzy analytic hierarchy process. The experimental results show that the financing mode of comprehensive old-age apartments has a great impact on its operation and management decision-making. Through the corresponding screening and testing, among the five qualified old-age apartment combination modes and private nonenterprise team operation and management modes, financial fund policy capital combination mode is the best choice.

1. Introduction

Since the Second World War, the global economy and society have been developing in a relatively stable environment. The living standards and medical standards of many countries have been gradually improved, which not only improved the survival rate of newborn infants but also increased the life expectancy. However, at the same time, the population structure of many countries has gradually changed from young and adult to elderly, and the society has begun to enter the stage of aging. The aging of society not only increases the corresponding pressure on the younger generation but also challenges the national pension system. Due to the long-term lack of corresponding pension system norms at the institutional and legal levels in many regions, the protection of the rights and interests of many elderly people is lack of practical operability, and the purpose of providing for the elderly cannot be realized at all [1]. Therefore, how to provide an implementable and operable way for the elderly has become the focus of all sectors of society, and different pension infrastructure construction and financing modes have gradually come into people's vision. Some European countries provide elderly care facilities and services for the elderly through high-welfare systems and relatively perfect social elderly care welfare systems. Many elderly groups need to bear less costs [2]. The United States provides pension facilities and services for different situations through a relatively perfect financial system [3]. In areas with relatively backward economic development, the pension system is also relatively backward, but each country basically divides the attributes of pension facilities into public basic society and commercial facilities to meet special requirements. For pension infrastructure, some scholars have put forward innovative financing methods under the condition of marketization [4]. Other scholars pointed out that the government should regulate the

management of investment and financing of elderly industries, so as to avoid the failure of market mechanism [5]. Some scholars also put forward that private funds should be the main funds for the construction of residential buildings for the elderly, while the government regulates the investment and operation behavior and provides favorable guidance for the investment funds through relevant policies [6]. Thus, as the basic construction of the pension system, the choice of the business model and management decision-making method of the elderly apartment is not only related to the framework and improvement of the social pension system, but also related to the interests of the elderly group. Therefore, this paper puts forward the research on the business model and management decision-making method of comprehensive apartments for the elderly and evaluates the different combination of business and management decision-making modes of comprehensive apartments for the elderly through fuzzy set pair and fuzzy analytic hierarchy process, so as to provide a scientific and reasonable reference for the business management decision-making of comprehensive apartments for the elderly.

This paper puts forward the business model and management decision-making method of comprehensive apartments for the elderly, so as to provide scientific and reasonable decision-making reference for the development of comprehensive apartments for the elderly. The contribution of research innovation lies in the use of fuzzy set pair and fuzzy analytic hierarchy process to evaluate the different combinations of management and decision-making modes of comprehensive elderly care apartments. Through the corresponding screening and testing, the best choice is summarized in five qualified pension apartment combination modes and private nonenterprise team operation and management modes. This study provides a reference for the current private nonenterprise team operation and management model.

2. Classification of Business Models of Comprehensive Apartments for the Elderly

Generally, the construction standard of comprehensive apartments for the elderly meets the standard of three-star hotels or above. It is necessary to fully consider the physiological and psychological needs of the elderly group and meet the basic needs of the daily life of the elderly group [7]. At the same time, we should be able to provide medical and nursing services for the elderly groups and take care of their bodies. In order to ensure the normal operation of apartments for the elderly, it is necessary to establish a perfect normative system, so as to protect the rights and interests of the elderly groups and all operators of apartments for the elderly [8]. In addition, with the improvement of people's living standards, apartments for the elderly should also build a good natural and social environment and provide other supporting services for the elderly groups to meet the needs of different elderly groups and improve the living environment quality of the elderly [9]. The operators and managers of comprehensive apartments for the elderly should also have professional operation and management talents, improve the operation and management level of apartments for the elderly and the development ability of value-added services, and improve the income generating ability of apartments for the elderly while enriching the living needs of the elderly [10]. The business model of comprehensive apartments for the elderly has a great relationship with its investment and financing sources and managers. According to the source of funds of comprehensive apartments for the elderly, they can be divided into BOT financing mode, PPP (public-private partnership) financing mode, enterprise and individual investment mode, government and private investment cooperation mode, and other modes [11].

Among them, the BOT financing mode is the most common financing mode in toll roads and other projects with certain monopoly ability, but comprehensive elderly apartments generally do not have monopoly, and this kind of financing mode is easy to increase the economic burden of elderly groups and reduce the occupancy rate of elderly apartments, which does not have good feasibility [12].

PPP financing mode is also a cooperation mode between public sector and nonpublic economic organizations. Such financing mode can build an operation system of risk sharing and benefit sharing. At the same time, both investors can complement each other's advantages and improve the competitiveness and operation and management ability of elderly apartments under the condition of ensuring sufficient funds [13].

Enterprise and individual investment mode is a fully market-oriented investment and financing mode, that is, the mode of investing and building comprehensive apartments for the elderly independently or led by qualified and reputable real estate developers. This mode does not have the responsibility and obligation to protect the social pension system and is mainly an investment behavior aimed at market demand and profit [14]. Therefore, this kind of apartment is mainly targeted at the elderly with a certain economic scope. At present, the cooperation mode of government and private investment is the main financing mode of projects such as apartments for the elderly and nursing homes for the elderly, and most elderly care institutions belong to public welfare projects, which is the performance of the government's responsibility to actively undertake and solve social public problems and its function of revealing the bottom of the society [15].

However, the economic development level and economic construction environment in different regions are different. The government finance in some regions cannot undertake the project of comprehensive apartments for the elderly alone. Therefore, we can obtain the guarantee of funds through cooperation with private investment. In addition to the above four financing modes, some large medical institutions and social organizations will choose affiliated structures or branches of comprehensive social welfare institutions for investment and construction, but the number of such modes is limited due to realistic conditions [16].

According to the interests represented by the operation and management team of comprehensive apartments for the elderly, i.e., the investors and builders, the operation and

management modes of comprehensive apartments for the elderly can generally be divided into three operation and management modes. The first is the enterprise operation and management mode, that is, the management team is the interest representative of enterprise investors. It must promise the target amount of bidding profit with market competitive advantage before it can win the bid [17]. Therefore, the elderly apartment management team in this mode will inevitably provide diversified services for the elderly in various ways, so as to improve the occupancy rate and profit margin of the elderly apartment, so as to achieve the annual bidding target and obtain profits. This form is conducive to promoting the market competitiveness of elderly apartment management enterprises and teams, but there is also the phenomenon of forming knowledge barriers to protect their own advantages, which is not conducive to the development of the service level of the whole industry.

The second is the private nonenterprise team management mode, that is, the public welfare elderly apartment management mode. The main bidding indicators of the management team under this mode are the rationality and scientificity of the scheme submitted by the management team and the service level of false promises, while the auxiliary indicators are economic profits. Therefore, the bidding of the management team is carried out under the restrictive conditions of clarifying the price limit charging rules and service rules. Only by providing relatively good pairs for the elderly can the contract conditions be met [18]. This comprehensive elderly apartment business model covers a wider range of elderly groups, which can promote internal exchanges and communication in the industry and improve the management and service level of the whole industry.

The third is the team management mode of the organization and management department, that is, the management team of the comprehensive elderly apartment is selected and stationed by the relevant organization and management department. Under this management mode, the ability level of the management team has a direct impact on the operation of apartments for the elderly [19]. Although this model can realize mutual secondment in the industry for communication and learning, which is conducive to improving the management and service level, due to its own nature, it is difficult to realize the alliance form adopted by private nonenterprise teams, which hinders the service upgrading [20]. Its advantage is that when the market mechanism is in a state of failure, the business model can ensure the stability of the operation and management of comprehensive apartments for the elderly. Figure 1 shows the profit diagram of comprehensive apartments for the elderly.

3. Business Model and Management Decision-Making Model of Apartments for the Elderly Based on Fuzzy Set Pair and Fuzzy Analytic Hierarchy Process

3.1. Analysis on the Demand Structure of Elderly Services. The service audiences faced by comprehensive apartments for the elderly are different, and their business model and management decision-making methods are different. Different elderly groups have different service aspirations for elderly apartments. Therefore, this paper investigates the material needs, spiritual needs, and other needs of 500 elderly people of different ages, income levels, and education levels by means of questionnaire, of which 458 are effective questionnaires. The service needs included in the questionnaire are 11 items, including basic care, elderly supplies, health care, physical health care, mental health care, hospice care, elderly counseling, recreational activities, cultural learning, personal hobbies, and special services, which are numbered in turn. As shown in Figure 2, it is the comparison result of the service demand of the elderly at different age levels. As can be seen from the figure, the age of the elderly is mainly divided into three levels. The first level is the low-age elderly group aged 60 to 69. Most of the elderly groups at this level are in the stage of just retirement, have good physical conditions, most have interests and hobbies, actively participate in social and recreational activities, and have high demand for spiritual life. Less than half of the elderly need basic care, while fewer need special care. The second level is the middle-aged elderly group aged 70 to 79. The physical function of the elderly in this group begins to decrease with the increase of age. Although there is still a certain demand for mental activities, the demand for material aspects continues to increase, and the number of people who need to be cared for also gradually increases. The third level is the elderly group over the age of 80. The physical function of the elderly in this group has been in a state of serious decline, and with the emergence of a variety of diseases, most of the elderly have degraded or even unable to take care of themselves, need good life care services, and the demand for special services has also increased significantly.

As shown in Figure 3, it is the comparison result of the service demand of the elderly groups at different income levels. It can be seen from the results in the figure that, on the whole, the income of the elderly group has little impact on their needs for basic care, medical care, and health care. There is a positive correlation between the level of income and the demand of elderly groups for elderly apartment services, that is, the demand of elderly groups with relatively low income for various services of elderly apartment will be lower than that of elderly groups with high income, especially for spiritual needs and special envoy services. The high-income elderly group not only has higher demand for material life but also has higher demand for spiritual life than the low-income elderly group.

As shown in Figure 4, this is the result of the comparison of the service needs of the elderly groups with different income levels. Part of the service requirements on the material level is not so high. The higher the education level of the elderly group, the higher the demand for spiritual level. It can be seen from the data in the figure that, on the whole, the higher the education level of the elderly group, the higher the demand for the spiritual level, and the wider the type and scope of apartment services for the elderly, while the lower the education level of the elderly group, the lower the demand for the spiritual level and apartment services for the elderly.

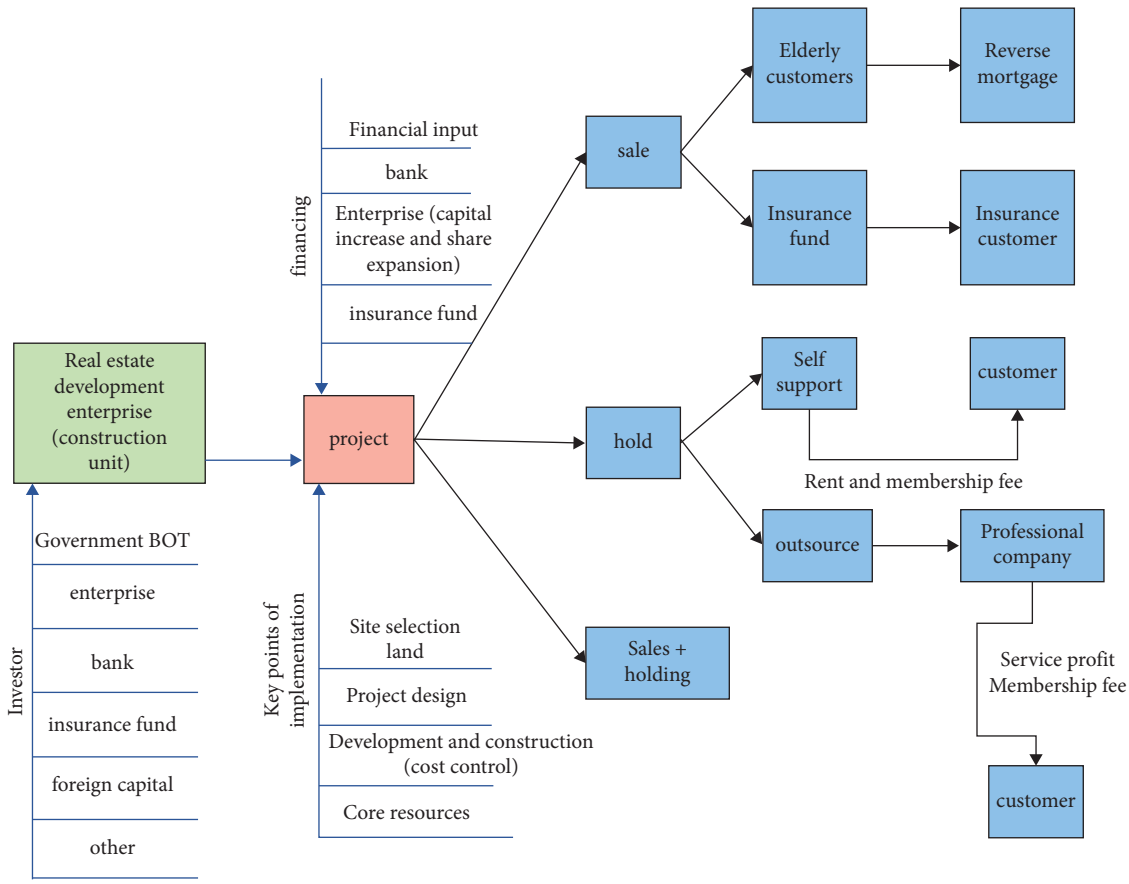

Figure 1: Schematic diagram of the operation and profit model of comprehensive apartments for the elderly.

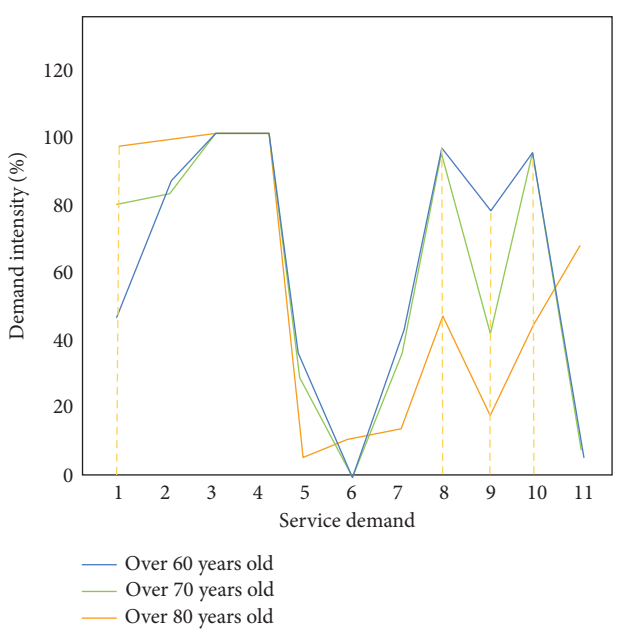

Figure 2: Comparison results of service demand of the elderly at different age levels.

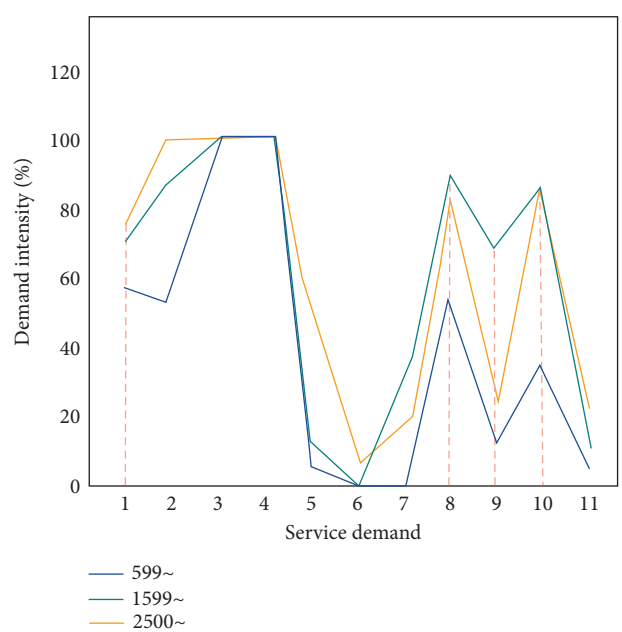

Figure 3: Comparison results of service demand of elderly groups at different income levels.

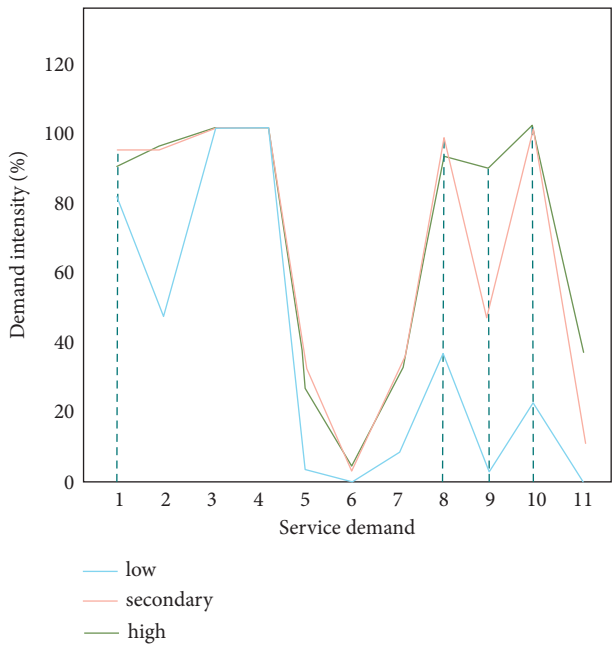

Figure 4: Comparative results of elderly groups at different levels of education on their demand for apartment services for the elderly.

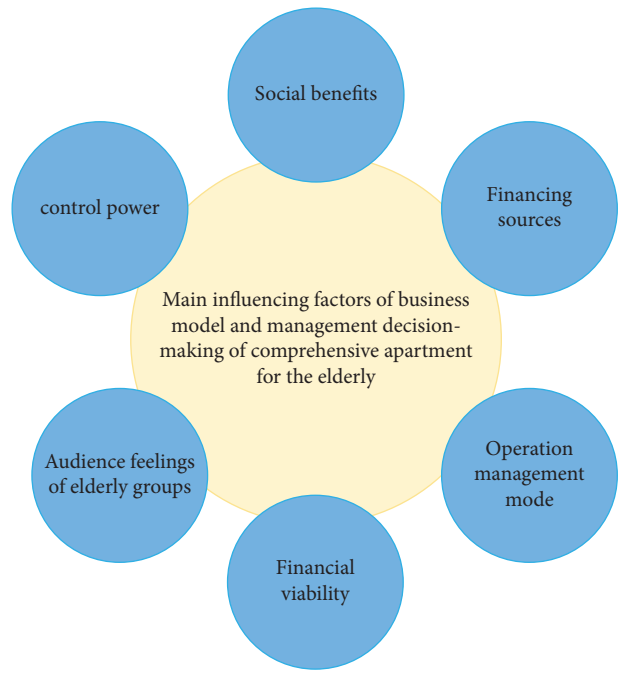

Figure 5: Main influencing factors of the business model and management decision-making of comprehensive apartments for the elderly.

To sum up, the elderly groups at different age levels, different income levels, and different education levels have different material and spiritual needs, so the service needs of elderly apartments are also different. Based on the analysis of the actual situation, at present, the needs of most elderly people are mainly material needs. The older the age, the stronger the demand for material needs and special services, the higher the education level, and the higher the spiritual demand, that is, the stronger the demand for the type and scope of apartment services for the elderly.

3.2. Main Influencing Factors of Business Model and Management Decision-Making of Comprehensive Apartments for the Elderly. This paper selects a comprehensive elderly apartment project in an area with better economic development to solve the selection of business model and management decision-making methods. The project reduces the pressure of financial funds by introducing social funds and plans to introduce a professional management team to operate a comprehensive apartment for the elderly, so as to ensure its ability and level of operation, management, and service. As shown in Figure 5, it is the main influencing factors of the business model and management decision-making of comprehensive apartments for the elderly, including six aspects: social benefits, financing model and source, business management model, financial viability, audience feelings of the elderly group, and control power. In terms of social benefits, it is mainly to fix the occupancy charge conditions of apartments for the elderly according to the annual per capita disposable income of local residents and the minimum wage standard, so that the vast majority of the elderly can meet the occupancy charge conditions. According to the nature of apartments for the elderly, the audience range of the elderly groups it can ensure is also different. Apartments for the elderly with economic applicability can cover more than 80% of the elderly groups. The higher the grade, the smaller the coverage. The coverage of high-grade apartments for the elderly is about 20–30%. The financing modes and sources mainly include enterprises, banks, social funds, government financial funds, and policy funds, while the operation and management modes are mainly the three modes introduced above. In terms of financial viability, the financial viability of government behavior is relatively lower than that of enterprises, while the financial viability of private nonenterprise organizations is generally between the two. In terms of the audience's feelings of the elderly group, the purpose of the elderly apartment invested by the government is to provide services for most of the elderly group, so the number of the elderly group audience who feel good is the largest. In order to obtain corresponding profits, the elderly apartments with enterprise investment behavior have high requirements for the elderly groups and only provide services for a small part of the elderly groups, and most of the elderly groups feel poor. The investment behavior of private nonenterprise organizations in the elderly apartment is public welfare, and profit is not the ultimate goal. Therefore, it can achieve profit while balancing the finance of the elderly apartment, ensure the normal operation of the elderly apartment project, and realize a win-win situation between investors and the elderly audience, and most of the elderly audiences feel good. Due to different national conditions, the types and characteristics of elderly housing are also different. Comprehensive apartments for the elderly are increasingly recognized by all sectors of society because of their comprehensive

community functions, efficient and professional management, integrated services, and flexible cost settlement mechanism. The influence of key factors should be considered in the decision-making stage of such large-scale construction financing projects. In particular, the two important factors of project financing mode and business mode restrict each other. The comprehensive decision-making of the business model and project financing is directly related to the success or failure of project construction. Control refers to that different financing modes and different management modes have different effects on the control right of elderly apartments.

In order to further solve the business model selection and management decision-making methods of comprehensive apartments for the elderly, the interaction between different model combinations is different. Therefore, further analysis, evaluation, and selection are needed. After corresponding scientific analysis, the main evaluation indexes to solve the selection of business model and management decision-making methods of comprehensive elderly apartments in this paper are the audience coverage of elderly groups, financial viability, audience feelings of elderly groups, and control power.

3.3. Business Model and Management Decision-Making Model Combining Fuzzy Set Pair and Fuzzy Analytic Hierarchy Process. Different business models and management decisions of comprehensive apartments for the elderly have their own advantages and risks. The composition of evaluation indicators is relatively complex and has great uncertainty and fuzziness. If we quantify the different business models and management decisions of comprehensive apartments for the elderly, it will increase the amount of relevant calculation and do not conform to the concept of fuzziness, and will improve the error of evaluation results. Considering that the simplification of quantification will have a direct impact on the accuracy of the final evaluation results, this paper selects fuzzy set pair and fuzzy analytic hierarchy process to evaluate the different business models and management decisions of comprehensive elderly apartments. The evaluation model first qualitatively analyzes the sample indicators through the corresponding methods, then quantitatively calculates the fuzzy connection degree, and determines the fuzzy weight of the evaluation indicators through the fuzzy analytic hierarchy process.

Suppose that set pair is composed of set U and set V, and its uncertainty relationship is expressed by connection degree, as shown in the following formula:

$$\mu_{(U-V)} = \frac{S}{N} + \frac{F}{N} i + \frac{P}{N} j. \tag{1}$$

The total number of set characteristics is N, the number of identity is S, the number of opposites is P, the number of neither identity nor opposites in the two sets is F, the difference coefficient is i, and the opposition coefficient is j. Generally, formula (1) can be recorded as

$$\mu_{(U-V)} = a + bi + cj. \tag{2}$$

In the formula, the identity of the two sets under the specific evaluation criteria is expressed as a, the difference degree is expressed as b, and the opposition degree is expressed as c, and $a + b + c = 1$, $j = -1, i \in [-1, 1]$.

The difference coefficient i in set pair analysis indicates the degree of uncertainty. Set $i = \mu$ for many times until the coefficient of its value reaches a small value, and let $i = 0$ and μ be determined as follows.

Let $U = (x_1, x_2, \ldots, x_k, \ldots)$ represent the set of indicators to be evaluated, $V = (V_1, V_2, \ldots, V_f, \ldots)$ represent the corresponding set of evaluation criteria, and when there are F indicators x in U and V_2, the evaluation criteria are represented as sets X and $x \in [m, n)$, the boundary value between the evaluation criteria V_1, V_2 is expressed as m, the boundary value between V_2, V_3 is expressed as n, and the boundary value between V_3, V_3 is expressed as p. The connection degree between the set U and the evaluation criteria V_1 is shown in the following formula:

$$\mu_{(U-V_1)} = \frac{S}{N} + \frac{1}{N} i_1 + \frac{1}{N} i_2 \cdots \frac{1}{N} i_F + \frac{P}{N} j. \tag{3}$$

Among them, the proportion of indicators belonging to V_1 is expressed as S/N, the proportion of adjacent evaluation indicators is expressed as $(1/N)i_1 + (1/N)i_2 \cdots (1/N)i_F$, and the proportion of separated evaluation standard indicators is expressed as P/N.

The formula for calculating the difference coefficient between any x and V_1 in the set X is shown in

$$\mu_{(x-V_1)} = a + bi + cj. \tag{4}$$

When x approaches m to m/x and x approaches n to n/x, then $x = m$ or $x = n$, $m/x + x/n$ reaches the maximum value $1 + m/n$. After normalization, $mn/(m+n)x, x/m + n$ can be obtained, that is, the affirmation and negation of the proximity between x and V_1 evaluation criteria, as shown in the following formulas:

$$a = \frac{mn}{(m+n)x}, \tag{5}$$

$$c = \frac{x}{m+n}. \tag{6}$$

Because $a + b + c = 1$, $b = 1 - a - c = (n-x)(x-m)/(m+n)x$ can be obtained, which is brought into formula (2):

$$\mu_{(x-V_1)} = \frac{mn}{(m+n)x} + \frac{(n-x)(x-m)}{(m+n)x} i + \frac{x}{m+n} j. \tag{7}$$

According to the value standard of connection degree,

$$\mu_{(x-V_1)} = \begin{cases} 1, & x \in [0, m), \\ \dfrac{mn}{(m+n)x} + \dfrac{(n-x)(x-m)}{(m+n)x} i + \dfrac{x}{m+n} j, & x \in [m, n), \\ -j, & x \in [n, +\infty). \end{cases} \tag{8}$$

Similarly, the connection degree between x and other evaluation criteria can be obtained, as shown in

$$\mu_{(x-V_2)} = \begin{cases} 0 + \dfrac{m-x}{m} i + \dfrac{x}{m} j, & x \in [0, m), \\ 1, & x \in [m, n), \\ \dfrac{np}{(n+p)x} + \dfrac{(p-x)(x-n)}{(p+n)x} i + \dfrac{x}{n+p} j, & x \in [n, p), \\ -j, & x \in (p, +\infty), \end{cases} \tag{9}$$

$$\mu_{(x-V_3)} = \begin{cases} -j, & x \in [0, m), \\ \dfrac{mn}{(m+n)x} + \dfrac{(n-x)(x-m)}{(m+n)x} i + \dfrac{x}{m+n} j, & x \in [m, n), \\ 1, & x \in [n, p), \\ \dfrac{pl}{(p+l)x} + \dfrac{(l-x)(x-p)}{(p+l)x} i + \dfrac{x}{p+l} j, & x \in (p, l), \\ -j, & x \in [l, +\infty). \end{cases} \tag{10}$$

Set the number of indicators in the set of indicators to be evaluated as N, the number of V_1 evaluation grade indicators as S, and the corresponding weight as w_s; the number of V_2 evaluation grade indicators is F, and the corresponding weight is p_F; V_3 the number of evaluation grade indicators is G, and the corresponding weight is expressed as q_G. According to formula (3), the expression formula of $\mu_{(U,V_1)}$ fuzzy connection degree can be obtained, as shown in

$$\mu_{(U,V_1)} = \sum_{i=1}^{S} w_i + \sum_{k=1}^{F} p_k i_k + \sum_{l=1}^{G} q_l j. \tag{11}$$

According to formulas (4) and (9),

$$\mu_{(U,V_1)} = \sum_{i=1}^{S} w_i + p_1 \mu_{(x_1-v_1)} + p_2 \mu_{(x_2-v_1)} \cdots p_k \mu_{(x_p-v_p)} + \sum_{l=1}^{G} q_l j. \tag{12}$$

Then, the fuzzy judgment matrix $R = (r_{ij})_{n\times n}$ is constructed, and the weight value of each index set is obtained by the least square method, as shown in

$$w_i = \frac{1}{n} - \frac{1}{2a} + \frac{1}{na} \sum_{k=1}^{n} r_{ik}, \tag{13}$$

where $r_{ij} = a(w_i - w_j) + 0.5$ and $a \geq n - 1/2$, and the difference between the weights of any two indicators and a are inversely proportional.

The calculation of the maximum eigenvalue of the judgment matrix is shown in the following formula:

$$\lambda_{\max} = \sum_{i=1}^{n} \frac{(RW)_i}{nw_i}. \tag{14}$$

The maximum eigenvalue of the judgment matrix is expressed as $\lambda_{\max}$, and the i element of the vector RW is expressed as RW_i. After obtaining $\lambda_{\max}$, the consistency index CI can be calculated and tested. The calculation formula is shown in

$$CI = \frac{\lambda_{\max} - n}{n-1}, \tag{15}$$

where the order of the judgment matrix is expressed as n.

The calculation method of consistency ratio is shown in the following formula:

$$CR = \frac{CI}{RI}. \tag{16}$$

4. Simulation Experiment of Comprehensive Elderly Apartment Business Model and Management Decision-Making Model

As shown in Figure 6, the comprehensive elderly apartment is affected by the financing mode combination scheme. From the data in the figure, it can be seen that when the financing mode and source are only pure financial funds, the audience coverage of the elderly group can reach 80%, the financial viability is 50%, the audience of the elderly group can feel 70%, and the control is 100%. In the case of pure market funds, the coverage area of the elderly group is 40%, the financial viability is as high as 70%, the audience of the elderly group feels good from 50%, and the control right is 40%. Take these two as the criteria to screen the financing portfolio scheme. The combination of financial funds and policy funds will increase the audience scope and financial viability of the elderly groups by 10%, respectively. The combination of organization and stationed business model can improve the audience feeling of the elderly group by 10% but will reduce the audience range and financial viability of the elderly group by 10%. The combination with the enterprise business model can improve the financial feasibility by 20%, but it will reduce the audience scope of the elderly group by 20%, and the audience feeling and control power of the elderly group by 30%. The combination with the nongovernmental business model will reduce its control by 10%, but it will improve its financial feasibility and the feelings of the elderly audience by 10%. On the whole, the combination mode of fiscal funds and policy funds is the best, followed by the combination of fiscal funds and civilian nongovernmental business model.

In order to combine the operation and financing modes of comprehensive apartments for the elderly, the following nine groups of combinations are described through codes. The combination of policy funds and market funds is expressed as EM + FPM, the civil nonbusiness model + financial funds and policy funds are expressed as PNM + FP, the civil nonbusiness model + pure market funds are expressed as PNM + mm, the civil nonbusiness model + financial funds. The combination of policy funds and

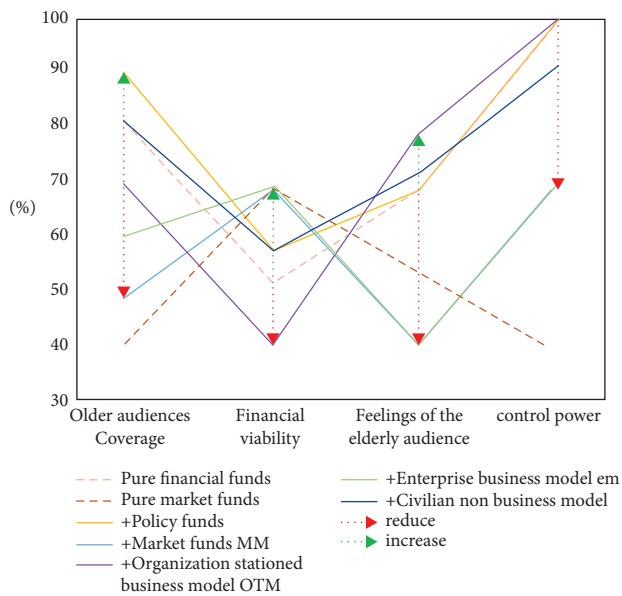

Figure 6: The relationship between the main influencing factors of comprehensive elderly apartment financing and comprehensive decision-making of the business model.

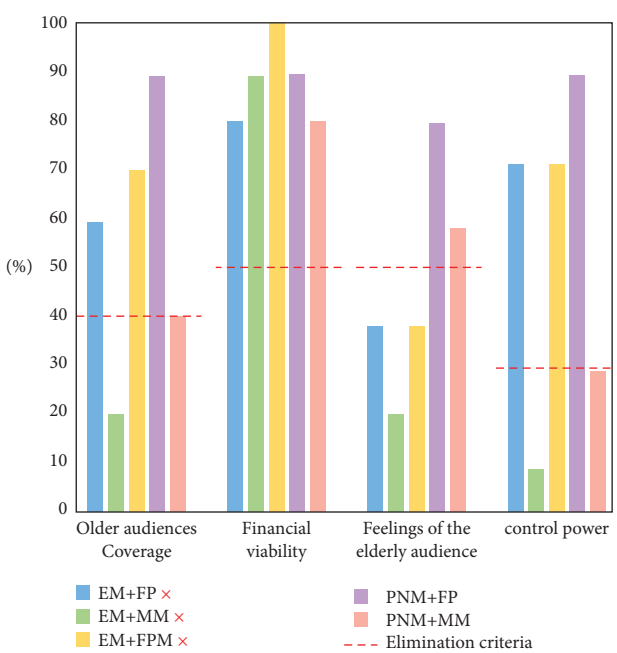

Figure 7: Screening results of five combinations of the comprehensive elderly apartment business model and financing.

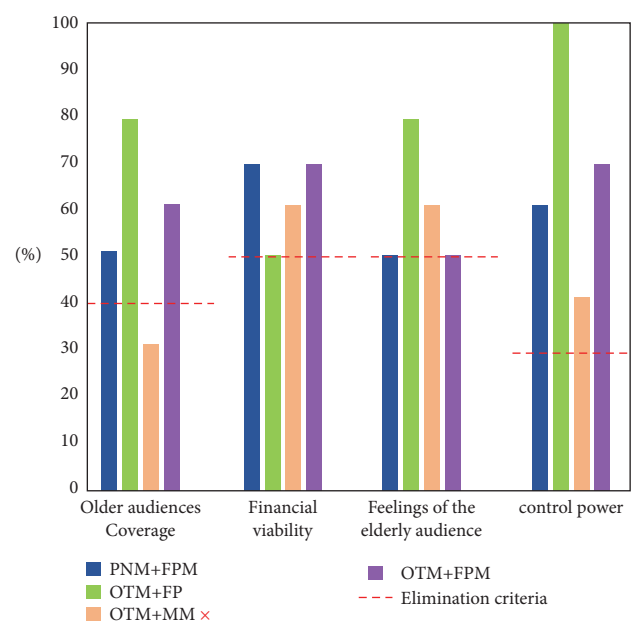

Figure 8: Screening results of four combinations of the comprehensive elderly apartment business model and financing.

market funds is expressed as PNM + FPM, the organization stationed business model + financial funds and policy funds are expressed as OTM + FP, the organization stationed business model + pure market funds are expressed as OTM + mm, and the organization stationed business model + financial funds, policy funds, and market funds are expressed as OTM + FPM. As shown in Figures 7 and 8, the screening results of nine combinations of the comprehensive elderly apartment business model and financing are shown. It can be seen from the results in the figure that EM + FP, EM + mm, and EM + FPM do not meet the screening requirements, while the other combinations can be discussed in the next step.

As shown in Figure 9, it is the general ranking and consistency test results of management decision-making levels of the comprehensive elderly apartment operation and financing mode. From the results in the figure, we can get the one-time index and random consistency proportion test of the hierarchical total ranking of the five combination modes,

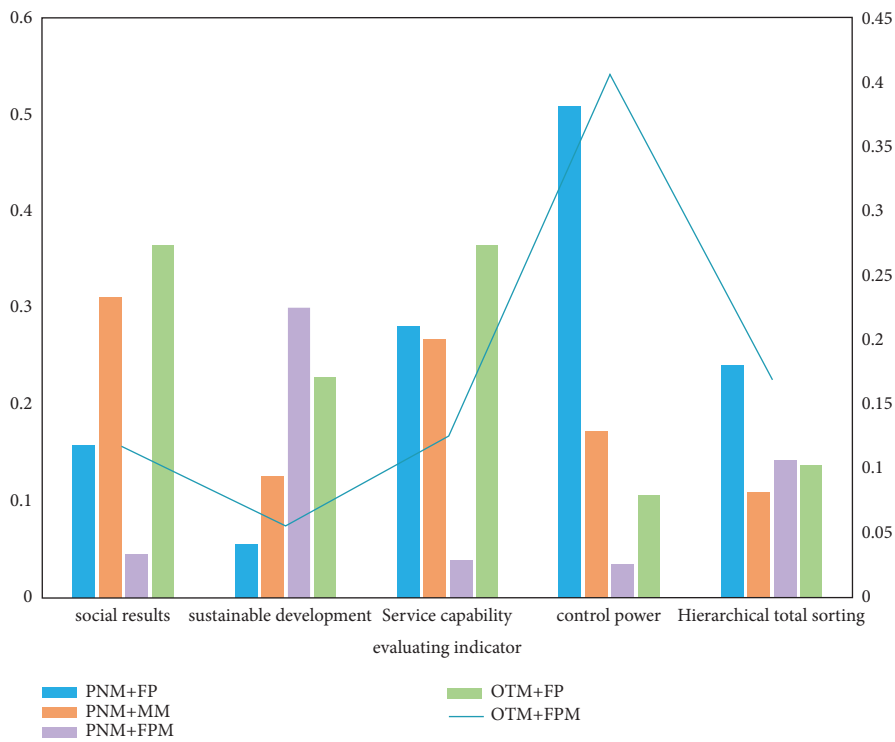

Figure 9: General ranking and consistency test results of management decision-making levels of the comprehensive elderly apartment management and financing model.

which shows that the conclusion is basically reasonable. From the overall ranking of the five portfolio models, we can also see that the PNM + FP portfolio model has the largest proportion among the five portfolio models, which indicates that in the current situation, the private nonenterprise team operation and management model, financial fund, and policy fund portfolio model meet the needs and requirements of comprehensive elderly apartment operation and management decision-making, and is the best choice model at present.

5. Conclusion

With the development of economy and society, the aging of population structure is an inevitable and nonnegligible problem in the development of a country. How to build a sound, scientific and reasonable pension system, build pension infrastructure, and provide high-quality services for the elderly has become the focus of research. The development of apartments for the elderly can not only provide basic pension facilities for the elderly but also meet the needs of the elderly. However, at present, the operation and management system of apartments for the elderly is not perfect, the operation condition is not ideal, and the audience feeling of the elderly group is low as a whole. Therefore, this paper puts forward the business model and management decision-making method of comprehensive elderly apartment, analyzes the main influencing factors of the operation and management of elderly apartment through fuzzy set pair and fuzzy analytic hierarchy process, and evaluates the different combinations of operation and management decision-making models of comprehensive elderly apartment. The experimental results show that different financing modes have a great impact on the operation and management of comprehensive apartments for the elderly. Through the corresponding screening, five of the nine combination modes can meet the needs of the operation and management of comprehensive apartments for the elderly. Further research shows that the current private nonenterprise team operation and management mode and the combination mode of financial funds and policy funds are the best choices at present.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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