

Facility preferences for senior housing among lifestyle segments in Taiwan

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Taiwan's governments used to motivate supplies to fit the expected increasing demands for senior housing, since the elders' share of population was 7% in 1993. However, the vacant rate was still high in budget senior housing whereas the demand for high-price dwelling has been fulfilled by private sectors during these two decades. It indicates that market segmentation is necessary, based on the heterogeneity among elders. In this study, lifestyle characteristics are introduced as a basis for segmentation in senior housing market. And I intend to figure out product combination for targeted elderly segment as well. Factor analysis and cluster analysis were employed to illustrate lifestyle and demographic characteristics of elders in each segment. And ANOVA tests were performed to reveal the differential preferences for housing facilities and services among elderly segments. The results show significant diversified preferences among elders, and suggest closer consideration of elders' lifestyles when creating and promoting senior housing services.

Keywords: senior housing; market segmentation; lifestyle; facilities and services.

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1. Introduction

Taiwan is rapidly ageing: the number of people aged 65 and over as a proportion of the population will double from 10% in 2006 to 20% in 2025. To fulfill the expected increasing demand of senior housing, local government tried to enhance supply of budget senior housing via enormous constructions by public sectors and offer tax treatments or subsidies to private sector operations since 1993. Meanwhile, the performances of those budget senior housing operations seemed under expectation because of high vacancy rates of the housing in these two decades. However, some private sectors which provide high-end commercial senior housing performed well since the occupancy rate of housing is almost 90%. It raises the issue that why the budget senior housing did not fit consumers' demands but the high-end ones did. The answer might be given through the discussion of heterogeneous consumers, segmentation, and product differentiation strategies of senior housing market.

Previously, the market segmentation has been used in the studies on elders' consume or travel behaviors (Shufeldt, Oates, and Vaught, 1998; Chen and Wu, 2005). Only few studied introduced the idea to investigate the elders' behavior in senior housing market. Kim, Kim and Kim (2003) showed the relationship between elders' lifestyle and their preferences on elderly housing. They found that most respondents valued location, surrounding environment, and physical equipment and facilities most when they chose their elderly housing. Kim, Kim and Kim (2003) also suggested that government should pay attention to the commercial opportunities of fee-based senior living facility market. Moschis, Bellenger and Curasi (2005) explored a segmentation approach and suggested four segments would best describe the elders' preferences of retirement community. They also revealed the most viable segment of the market are ailing outgoers, those would be appealed by independence

promoting facilities in retirement communities.

The literature that focuses on segmentation of senior housing market is few as well in Taiwan. Some limited studies indicate that elders lifestyle did affect their preference for choice of senior housing (Lin, 2005), and measured the consumptions of most viable segment base on the elders demographic factors (Li, 2006). However, the researches that mention above did not focus on the relationship between elder's lifestyle and their facilities preference. Thus, the present study seeks to investigate the elder consumer market, to examine the various segments in senior housing market base on the lifestyle variables, and to find out relevant facilities and service attributes into product for targeted elderly segment.

2. Methodology

Respondents for this study were selected by the convenience sampling method among males and females 50 years of age or older living in Tainan city in 2015. 382 valid respondents were conducted. A pilot survey was conducted and some confusing questions were redesigned based on the feedbacks. The final questionnaire involved three parts: (1) the socioeconomic and demographic characteristics of respondents; (2) lifestyle characteristics; and (3) the level of importance that the respondents place on various attributes of senior housing. Meanwhile, the amount of willingness-to-pay and the level of willingness-to-move into housing were also interviewed. All of these, except some demographic questions and willingness-to-pay amount, were measured using five-point Likert scales.

To support the market segmentation analysis for senior housing, the lifestyle factors were extracted from a series of lifestyle statements using factor analysis. Additional factor analysis on preferred senior housing attributes was also conducted

to extract facilities factor. By introducing lifestyle factors as segment variables, a cluster analysis was used to identify the segments among elders. Then a series of ANOVA tests were applied to reveal the diversity of facility preferences among elderly segments. And crosstab analyses were introduced to recognize demographic characteristics for targeted guests.

3. Results

Descriptive statistics of sample are presented in Table I. It shows that more males than females (52.6% vs. 47.4%) in the sample. The distribution of age among three age groups was almost uniform. Most respondents had children (89.8%) and lived with their children (65.7). Most of the samples had under senior high school educational attainment (80.6%) and owned their house (87.4). Except being military, public or teaching personnel (10.7%), the percentage of occupation among the other three groups was around 30%. Meanwhile, most respondents were considering or want to move into senior housing in the future (87.4%), and their willingness to pay for the housing was less than \$20000 per month.

Table 1 Descriptive statistics of respondents (N=382).

Demographics	Number	Percentage (%)
<i>Gender</i>		
Male	201	52.6
Female	181	47.4
<i>Age</i>		
50-54	124	32.5
55-64	137	35.9
65 and above	121	31.7
<i>Have children or not</i>		
Have children	343	89.8
No child	39	10.2
<i>Existing living arrangement</i>		
Live with children	251	65.7
Live with spouse only	78	20.4
Live alone	36	9.4
Live with relatives or friends	17	4.5
<i>Education</i>		
Elementary school	114	29.8
Junior high school	93	24.3
Senior high school	101	26.4
College degree	65	17.0
Graduate school/ advanced degree	9	2.4
<i>Tenure</i>		
Owner	334	87.4
Renter	48	12.6
<i>Occupation</i>		
Agricultural, Forestry and Fishery Workers	101	26.4
Military, public and teaching personnel	41	10.7
Service and sales workers	114	29.8
None	126	33
<i>Willingness to move in</i>		
Yes	132	34.6
Under consideration	166	22.0
No	84	43.5
<i>Willingness to pay</i>		
\$9999 or less	179	46.9
\$10000-\$19999	177	46.3
Over \$20000	26	6.8

3.1 Identifying lifestyle factors and senior housing facilities factors using factor analysis

According to Plummer (1974), the lifestyle construct is defined by AIOs. Actives refer to how time and money are spent, interests refer to what is important and opinions refer to the individuals' views of themselves and the world. In this paper,

the lifestyle statements were submitted to a factor analysis which performed a principal components analysis along with a varimax rotation. Eigenvalues greater than one were used as the indicator for the extraction of factors. The seven factors generated and the related lifestyle variables within each factor, as well as their respective loadings of each, are shown in Table 2.

Table 2 Factor analysis of elders' lifestyle variables.

Factor	Lifestyle variables	Factor loading
Factor 1. Leisure activities oriented	Enjoy social activities	0.801
	Enjoy travelling and visiting	0.756
	Enjoy spending money for leisure	0.718
	Enjoy purchasing new items	0.505
Factor 2. Family oriented	Place importance on family	0.854
	Enjoy eating dinner with family	0.790
Factor 3. Fashion oriented	Enjoy living in big cities	0.692
	Like trendy and novel items	0.668
	Trust product advertisement for purchasing	0.658
	Being optimistic about cancer treatment in the future	0.456
Factor 4. Self-reliant	Prefer imported products more than domestic ones	0.393
	Fully knowing product before purchasing	0.683
	Care health-related information	0.587
Factor 5. Learning oriented	My poor health might increase burden on children	0.571
	Enjoy Chinese culture related activities such as Chinese calligraphy or painting	0.680
	Often read newspapers or magazines	0.647
Factor 6. Adaptive	Well arranging retirement life	0.608
	I think I am healthier than others of the same age	0.779
Factor 7. Social oriented	I can adapt well to new conditions	0.754
	I go to church or temple often	0.698
	I participate volunteering often	0.686

Factor 1 includes four lifestyle variables related to respondents' traveling and money spending preferences. Thus, factor 1 reflects respondents' leisure activities orientation. Other lifestyle factors can be interpreted in a similar way: factor 2 reflects respondents' family orientation; factor 3, 4, and 5 would be used to identify respondents into the other three orientations, that is, fashionable, self-reliant, and learning, respectively. Factor 6 includes two elders' adaptive behaviors when they are

aging. It identifies respondents as an adapted retiree. Moreover, factor 7 can be used to recognize elders as a social oriented person.

To reduce the number of attributes of senior housing facilities, the 30 questionnaire items, which were based on Chan (2008), were submitted to another factor analysis. After varimax rotation, five factors with eigenvalues greater than 1 emerged. As Table 3 shows, factor 1 includes 11 facility attributes which reflects responsiveness dimension of service quality. Other four facility factors reflect the other dimensions; those are empathy, interior tangibles, outdoor tangibles, and assurance, respectively.

Table 3 Factor analysis of housing facility attributes.

Factor	The preferred attributes of senior housing facilities	Factor loading
Factor 1. Responsiveness	Adequate service from staff	0.821
	Staff can respond to emergency	0.770
	Ambulance offering	0.740
	There are calling bells in bedrooms	0.732
	Barrier-free environment	0.717
	Disaster-free environment	0.643
	Shuttle bus offering	0.639
	Health care institution in neighborhood	0.619
	Public security	0.572
	Collaboration with hospital	0.566
	Install surveillance cameras in entrances	0.481
Factor 2. Empathy	Provide meal services for visitors	0.707
	Cleaning service for bedrooms	0.686
	Provide guest rooms for visitors	0.671
	Adequate daily services	0.614
	Special bus for medical care	0.570
	Room services	0.544
	Shopping tour weekly	0.468
Factor 3. Interior Tangibles	Attractive interior design	0.893
	Attractive buildings' appearance	0.887
	Diversified room types	0.630
Factor 4. Outdoor Tangibles	There are parks near by	0.719
	There are walking paths near by	0.657
Factor 5. Assurance	Special diet service	0.765
	Clinic services regularly	0.508
	Religion-related facilities	0.472

3.2 Cluster analysis

The *K*-means clustering method is used to group respondents into distinct segments. Individuals within the same segment share the same value that can be acted upon. In this study, seven lifestyle factors are selected to perform the market segmentation for the potential residents of senior housing. According to the hierarchal cluster analysis and *K*-means method, I select five-cluster solution. The clusters contain 95, 36, 55, 54 and 84 observations, respectively.

Market segmentation's purpose is to generate different groups with distinctive demographic and behavior characteristics. Based on the ANOVA test results as Table 4 shows, there are significant differences among five lifestyle segments. Members of the first segment (S1), which is labeled as "leisure and activities seeker", are most active, leisure activities oriented, quite Self-reliant and social oriented. But they are not very keen on shopping and learning. Members of the second segment (S2), which is labeled as "quiet learners", are self-reliant and family oriented. But they are not enthusiastic about fashionable, social and leisure activities. Members of the third segment (S3), which is labeled as "traditional retiree", are most family oriented, moderately fashionable, but not self-reliant, and not enthusiastic in learning as well. Members of the fourth segment (S4), which is labeled as "independent retiree", are adaptive but not oriented toward other six lifestyle factors. Members of the last segment (S5), which is labeled as "new-age retiree", are fashionable, keen to learning, leisure activities, and social activities. But they are not family oriented and not self-reliant.

Table 4 Segment members' mean lifestyle factor scores.

Lifestyle factors	Segment					F-test
	S1 (N=95)	S2 (N=36)	S3 (N=55)	S4 (N=54)	S5 (N=84)	
Leisure activities oriented	0.4320	-1.4032	-0.4313	-0.3016	0.3485	43.864***
Family oriented	0.2628	0.6352	0.7084	-1.4983	-0.0415	76.065***
Fashion oriented	-0.7955	-0.4601	0.1382	0.0793	0.5651	40.489***
Self-reliant	0.5802	0.8239	-1.1580	-0.2721	-0.0450	51.411***
Learning oriented	-0.1175	0.3070	-0.9624	-0.1180	0.4183	25.553***
active	0.4140	-0.8261	0.2857	0.3430	-0.3087	19.466***
Social oriented	0.2379	-0.6934	0.01392	-0.7742	0.3056	20.595***

*** Significant at the 1% level.

To reveal among-groups differences of demographic characteristics and to identify the most attractive customers, the crosstab analysis results are summarized in Table 5. Chi-square tests on the distribution of segment members across levels of demographic variables indicate significant differences among the segments. The willingness to reside of S3 members was higher relative to the one of other four segments. This indicates that S3 members might be targeted in senior housing markets in the near future. These “traditional retirees” are older, with less educational attainment, and live with their children now. However, they will not pay much money to senior housing, relative to other groups will.

Table 5 crosstab analysis results.

Demographic variables	Level	Segment				
		S1 (N=95)	S2 (N=36)	S3 (N=55)	S4 (N=54)	S5 (N=84)
Willingness to move in (***)	Yes	42.1%	22.2%	54.5%	38.9%	23.2%
	Under consideration	43.2%	52.8%	20.0%	38.9%	52.1%
	No	14.7%	25.0%	25.5%	22.2%	24.6%
Willingness to pay (***)	Below 9999	51.6%	36.1%	63.6%	48.1%	39.4%
	10000-14999	24.2%	52.8%	29.1%	31.5%	35.2%
	15000-19999	13.7%	8.3%	3.6%	18.5%	17.6%
	20000-24999	10.5%	2.8%	0.0%	1.9%	4.2%
	25000 and above	0.0%	0.0%	3.6%	0.0%	3.5%
Age (***)	50-54	30.5%	30.6%	10.9%	24.1%	45.8%
	55-59	15.8%	36.1%	9.1%	22.2%	21.8%
	60-64	17.9%	16.7%	16.4%	24.1%	11.3%
	65 and older	35.8%	16.7%	63.6%	29.6%	21.1%
Existing living arrangement (***)	Live with children	67.4%	72.2%	63.6%	51.9%	69.0%
	Live with spouse only	18.9%	22.2%	16.4%	20.4%	22.5%
	Live alone	10.5%	2.8%	10.9%	25.9%	3.5%
	Live with relatives or friends	3.2%	2.8%	9.1%	1.9%	4.9%
Education (***)	Elementary school	25.3%	25.0%	60.0%	31.5%	17.6%
	Junior high school	23.2%	38.9%	18.2%	14.8%	27.5%
	Senior high school	33.7%	22.2%	12.7%	31.5%	28.9%
	College degree	16.8%	13.9%	9.1%	22.2%	20.4%
	Graduate school/ advanced degree	1.1%	0.0%	0.0%	0.0%	5.6%

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

In order to figure out suitable facilities and services for s3 members, another ANOVA test is applied and the result is shown as Table 6. The F-test in Table 6 indicated that the mean facility factor scores were significant different among five segments. Compare with other four segments, the members of S3 pay more attention to “empathy” and “outdoor tangibles” factors. The practical meaning of the results is this targeted group, which is labeled as “traditional retirees”, places a great deal of importance on meal services providing, cleaning services, special bus for medical care, and so on. In addition, they also care about outdoor facilities such as park and walking path.

Table 6 Segment members' mean facilities factor scores.

facilities factors	Segment					F-test
	S1 (N=95)	S2 (N=36)	S3 (N=55)	S4 (N=54)	S5 (N=84)	
Responsiveness	0.2229	0.2882	0.0859	-0.1270	-0.2072	3.885***
Empathy	0.0034	0.1434	0.1680	-0.5370	0.1005	5.029***
Interior Tangibles	-0.1464	-0.3768	-0.1430	-0.1187	0.2940	5.583***
Outdoor Tangibles	0.0983	-0.2185	0.1186	-0.0835	-0.0246	0.968
Assurance	0.1235	-0.5573	0.0150	-0.1761	0.1198	4.228***

*** Significant at the 1% level.

Table 7 shows the reason frequencies for some s3 members' who expressed that they would not move into senior housing or those who are considering moving into it. Two predominant reasons for elders, who would not move into senior housing, are "have bad impression on senior housing", and "prefer to live with their children". The results imply that appropriate promotion strategies are necessary to switch elders' attitude toward senior housing from negative to positive. Moreover, the phenomenon that respondents prefer to live with their children than to move into senior housing might be changed for the next decade, because the percentage of elders' preference for living with their children decreased from 65.72% in 2013 to 54.34% in 2017.²

Table 7 Frequencies of reason for under consideration / no willing to move in.

Reason	Under consideration	No willing
Have bad impression on senior housing	2	5
Worry about the unfitted facilities of senior housing	3	3
Worry about the unfamiliar environment	4	3
Worry about their affordability of senior housing	4	3
Have been satisfied with existing place	7	2
Prefer to live with their children	5	4

² Citation from Ministry of Health and Welfare (2017), p. 14.

On the other hand, two predominant reasons for elders, who would be considering moving into senior housing, are “have been satisfied with existing place”, and “prefer to live with their children”. In addition, some respondents worry about “the unfamiliar environment” and “their affordability of senior housing” as well. To overcome these obstacles, the providers not only adopt promotion strategies but also need to reconsider the bundle of attribute and facility for senior housing. The results also suggest lower price product might attract this targeted group.

4. Conclusions and implications

The purpose of this study is to use lifestyle as a segmentation basis for senior housing market. 382 valid respondents were selected by the convenience sampling method among males and females 50 years of age or older living in Tainan city in 2015. This study applied factor analysis to extract seven lifestyle and five facilities factors.

In order to recognize the targeted segment in senior housing market, this study then use seven lifestyle factors as segment variables and applied cluster analysis to group respondents into five distinct segments. According to the reports of crosstab, the members of targeted segment (S3), which are labeled as “traditional retirees” are family oriented, moderately fashionable, but not self-reliant, and not enthusiastic in learning. These targeted consumers are older, with less educational attainment, and live with their children now. They also won’t pay much money to senior housing.

Another ANOVA test is applied to figure out suitable facilities and services for s3 members. Compare with other four segments, the members of S3 pay more attention to “empathy” and “outdoor tangibles” factors. The above results suggest lifestyle segmentation can help recognize targeted consumers and observe their

preference for senior housing facilities and services.

Managerial implications from this study suggest that the promotional tools of senior housing should reflect the type of customers they want to attract. Along with lower affordability of these “traditional retirees”, the provider should create empathic and low-price product to fulfill elders’ need. Accordingly, this study indicates that market segmentation is necessary, then the strategic approach, that is segmentation, targeting, and positioning (STP), should be taken to increase occupancy rate of senior housing.

Inasmuch as a convenience sample was utilized in this study, the results of this research may not be directly transferrable to other parts of Taiwan. But the findings can be applied by senior housing provider and policy makers for focusing senior housing service to those attributes which the potential customer would care.

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