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The Influence of Brand Image and Service Quality on the Intention to Reside in Senior Housing: The Moderating Effect of Self-Determination

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Abstract

In the increasingly competitive market for elderly care services, the residential choices and intention to reside in senior living facilities among older adults are influenced by a multitude of motivations. This study aims to investigate the influence of brand image and service quality on the intention to reside in senior housing among older adults. Furthermore, it delves into examining the moderating effect of self-determination in these relationships. Employing a questionnaire survey method, this research formulated hypotheses after reviewing relevant literature and distributed online questionnaires using convenience sampling, collecting a total of 394 valid responses. Statistical software such as SPSS and PROCESS was utilized to conduct descriptive statistics, correlation analysis, regression analysis, and the Bootstrap method for testing mediation and moderation effects. The findings confirm that both brand image and service quality have a significant positive impact on older adults' intention to reside in senior housing. Moreover, service quality mediates the relationship between brand image and intention to reside, while self-determination significantly moderates the impact of brand image on the intention to reside. This study suggests that senior housing operators should emphasize the autonomy needs of older adults by providing diversified choices and customized services, serving as a reference for their consumer decisions and business management.

Keywords Brand Image, Service Quality, Intention to Reside, Self-Determination

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1. Introduction

In today's fiercely competitive market environment, brand image and service quality have become crucial elements for business success. Brand image, as an intangible asset, effectively attracts consumer attention, builds competitive advantages, and enhances consumer trust and loyalty towards the brand (Roberts & Dowling, 2002). Service quality, on the other hand, directly relates to consumer experience and satisfaction. Excellent service can strengthen consumer trust in the company and enhance brand reputation (Roland et al., 2012).

With the rapid aging of Taiwan's population and the continuous increase in the proportion of older adults (National Development Council, 2024), the demand for senior housing is also growing. Senior housing, as a new form of residential model, emphasizes the integration of community care centers and various life services, aiming to provide older adults with a familiar and convenient living environment that meets their needs for health, social support, and economic security (Blazer et al., 2005).

Through a review of the literature, Osei-Kyei et al. (2000) identified five key emerging areas in senior living research: sustainability, resident satisfaction, operational management, market models, and drivers of entry. Amid the global trend of population aging and the continuous growth of the elderly care service market, prior research indicates that older adults' intention to reside is influenced by multiple motivations. The study by Chaulagain et al. (2021) aimed to explore the push and pull motivations and perceived barriers influencing older adults' migration to senior living communities. Their findings revealed the mediating role of perceived barriers in certain relationships; for instance, family-related and psychosocial barriers weakened the relationship between health-related push factors and the intention to reside.

Undoubtedly, brand image and service quality are two critically important core elements in this context. High-quality service not only effectively enhances consumers' trust and preference for a brand, thereby positively influencing their intention to reside, but also shapes unique brand value in the face of intense market competition. Therefore, an in-depth exploration of the relationship between brand image, service quality, and older adults' intention to reside holds significant theoretical and practical implications for the future development strategies of the senior living facility industry.

Changes in family structure have also exacerbated the urgency of the senior housing issue (Mason & Lee, 2004). Although most older adults still prefer aging in place (Ministry of Health and Welfare, 2024), the proportion of older adults living alone without children is increasing year by year, indicating that the demand for support systems and suitable living environments among older adults in their later years is growing (Chan & Ellen, 2016). This indicates a growing demand among older adults in their later years for stable support systems and appropriate living environments. Senior living facilities, as a potential solution, will have their attractiveness directly influenced by brand image and service quality.

However, despite the widely researched importance of brand image and service quality in general consumer domains, their specific impact mechanisms on older adults' intention to reside in the context of senior living facilities still warrant deeper investigation (Osei-Kyei et al., 2000). In particular, existing research has paid less attention to individuals' intrinsic psychological factors (Chaulagain et al., 2021), such as the degree of self-determination, and how these factors might play a moderating role in the influence of brand image and service quality on the intention to reside. This study aims to fill this research gap by delving into the specific impacts of brand image and service quality on older adults' intention to reside when choosing senior living facilities, and further analyzing the moderating effect of self-determination in this relationship.

The findings of this study will contribute to a more comprehensive understanding of how to effectively enhance older adults' intention to reside by improving service quality and cultivating a positive brand image, ultimately meeting their diverse residential needs and improving their overall quality of life in later years. This research not only offers academic insights to address the challenges posed by Taiwan's rapidly aging society but also aims to provide practical strategic guidance for the senior living facility industry, with the hope of creating more comfortable, convenient, and dignified living environments for older adults.

2. Literature Review and Research Hypotheses

This study aims to investigate the relationships among intention to reside, brand image, service quality, and self-determination when older adults choose senior housing. The literature review for each construct is presented below:

2.1 Intention to Reside

Population aging is a significant global issue. [Dodds & Holmes \(2023\)](#) argue that intention to reside depends on consumers' perceived altruism and value of a product or service. As Taiwan moves towards a super-aged society, senior housing is gradually becoming one of the choices for older adults to age in place within familiar communities. [Tell & Cohen \(2019\)](#) point out that with population aging, the main considerations for senior housing include maintaining independence, medical care, freedom from household chores, living assistance, and housing costs.

[Stinner et al. \(1990\)](#) proposed four conceptual models that influence older adults' residential arrangements, as follows:

- **Privacy Model:** Emphasizes older adults' preference for independent living and the need to maintain interpersonal relationships.
- **Assistance Model:** Believes that physical and mental disabilities directly affect residential arrangements.
- **Characteristics Model:** Focuses on personal background characteristics (such as gender, age, marital status, number of children, education level, income, and place of residence).
- **Buffering Model:** Suggests that the interaction between health status and socioeconomic characteristics influences residential arrangements.

[Yang \(2017\)](#) found that older adults with better economic conditions usually have higher demands for privacy and personalized care. Additionally, the reasons for older adults choosing to reside in senior housing may include declining self-care ability, loneliness, and changes in family structure (such as living alone or having fewer children) ([Huang, 2012](#)). Maintaining autonomy and maintaining social connections and a sense of belonging are also important factors that affect older adults' intention to reside.

2.2 Brand Image and Intention to Reside

Brand image is the overall impression and perception of a brand by consumers, composed of multiple factors, and has a significant impact on consumer behavior. [Dunn & Schweitzer et al. \(2005\)](#) suggest that older consumers who have made a decision or have established a close relationship with a brand tend to have a high level of trust. As the role of brands in consumers' lives becomes increasingly important, scholars have also paid more attention to the study of the relationship between consumers and brands ([Loureiro, 2023](#)). The American Marketing Association made an initial definition of brand in the 1960s : "A brand is a name, term, sign, symbol, or design, or a combination of these." It reflects the perception of the brand as reflected in the brand associations in consumers' memory.

According to [Low & Lamb's \(2000\)](#) definition, brand image is the rational and emotional perception that consumers have of a particular brand. One thing that every definition conveys is that it is formed automatically based on consumers' understanding of what the brand means, and each brand can have as many images as it has consumers. [Park et al. \(1986\)](#) proposed that enterprises give unique meanings to brands to meet different product needs of consumers, and developed three different Brand Concept Images (BCM):

- **Functional:** Focuses on meeting the basic practical needs of consumers.
- **Symbolic:** Meets consumers' inner needs and self-concept.
- **Experiential:** Focuses on consumers' feelings and perceptions when using products or services.

[Keller \(1993\)](#) pointed out that brand image reflects consumers' perceptions of the brand, and if the benefits provided by the brand can meet consumer needs, it can establish a positive brand attitude. At the same time, [Keller \(2001\)](#) further added that brand associations include various intangible assets, such as user imagery, purchase experience, and brand history. Therefore, brand history and culture contribute to building consumer associations. For brands with tradition or nationality, their origin is particularly important. This study uses the BCM model proposed by [Park et al. \(1986\)](#) to measure older adults' perception of the brand image of senior housing, improve brand trust and operational efficiency, and use it as a measurement variable for brand image in this study.

When consumers purchase goods or services, they tend to choose familiar and trusted brands. This preference stems from subjective perceptions accumulated over long-term experience ([Park et al., 2010](#)). For older adults, a safe and barrier-free living environment and high-quality services can significantly improve their satisfaction and independence, thereby enhancing their intention to reside ([Tsai et al., 2020](#)). This view echoes the Service Quality (SERVQUAL) model proposed by [Parasuraman \(1998\)](#), which emphasizes service dimensions such as tangibility,

reliability, responsiveness, assurance, and empathy, which can effectively promote behavioral intentions. The research of Shen and Chang (2022) also pointed out that providing professional services such as medical consultation and activity planning, and creating a safe atmosphere for senior housing, can significantly improve residence satisfaction and intention.

In addition, past experience can also enhance older adults' emotional attachment to the brand, thereby promoting their intention to reside (Lin and Tai, 2016). A good brand image and high-quality products and services can enhance consumer satisfaction and loyalty, forming a virtuous circle between brand attachment and intention to reside. Based on the above, the following hypothesis is proposed.

H1: Brand image has a positive impact on intention to reside.

2.3 Service Quality, Brand Image, and Intention to Reside

Service quality has been a significant management issue since the 1980s. Compared to the quality measurement of tangible products, the definition of service quality is more subjective. Good service quality can increase the frequency and willingness of customers to repurchase from a store (Carrillat et al., 2009). Kotler et al. (1993) defined service as an intangible activity or benefit that does not result in the transfer of ownership. Therefore, service quality is the subjective overall evaluation of the service by customers.

Roland et al. (2012) emphasized that service quality management needs to understand its significance to customers, including the interaction between customer satisfaction, service quality, and customer values. Parasuraman, Zeithaml, and Berry, three experts, proposed a most representative conceptual model in 1985, abbreviated as the PZB model, which is widely used and has become an important basis for service quality-related research.

Parasuraman et al. (1985, 1998) defined service quality as the comparison between the quality that customers actually perceive or experience and the service expected by customers. The subjective measurement of service quality is mainly carried out from five dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy.

- **Tangibles** refer to the venue and equipment for providing services and the personnel providing services.
- **Reliability** means being able to provide customers with the promised services correctly and reliably.
- **Responsiveness** means that service personnel are willing to help customers immediately and provide services.
- **Assurance** means the professionalism, courtesy, and reliability of service personnel.
- **Empathy** means that service providers care about customers and provide other special care.

Therefore, the SERVQUAL scale measures service quality based on the gap between customer expectations and actual perceived services (Lin, 2005). This study uses the measurement dimensions of the SERVQUAL scale proposed by Parasuraman et al. (1998) to explore the service quality of senior housing.

As an intangible asset, the uniqueness and value of a brand are difficult to imitate, which is the key for enterprises to achieve continuous excellent performance (Roberts and Dowling, 2002). A positive brand image not only consolidates the enterprise's position in the market (Sukawati, 2021), but also enhances consumers' trust and loyalty to the brand.

Service quality is regarded as the degree of fit between consumers' perception and expectation of services. Simoes and Dibb (2001) emphasized that in the service industry, brands play a vital role in effectively reducing consumers' perceived risk of intangible services and enhancing their trust in brands.

Tseng (2017)'s research also confirmed the positive impact of brand image and service quality on customer satisfaction, especially in the international tourist hotel industry. This shows that service quality plays an indispensable role in shaping brand image. Therefore, enterprises should regard improving service quality as an important strategy to strengthen brand image, so as to consolidate their competitive advantage in the market.

In terms of older adults' accommodation choices, brand image and service quality are the two key factors that affect their intention to reside. There is a close mutual relationship between these two factors, which jointly shape consumers' expectations and evaluations of accommodation experience. If enterprises can closely integrate brand image and service quality, they can not only effectively enhance older adults' intention to reside, but also build strong brand competitiveness. Based on the above, the following hypothesis is proposed.

H2: Brand image has a positive impact on service quality.

In addition, service quality may also have a mediating effect between brand image and intention to reside. Service quality is the result of comparing consumers' expected and actual service experience (Berry et al., 1985). When the service meets or exceeds expectations, it is considered high quality; otherwise, the quality is poor. Wong et al. (2023) further pointed out that service quality is the customer's subjective evaluation of the overall service.

Research shows that high-quality service quality can strengthen brand image by building trust and providing satisfactory experience. At the same time, positive word-of-mouth, as a two-way communication method between customers, can effectively transmit brand information, thereby affecting consumers' behavioral intentions (Darinka et al., 2023). To sum up, service quality not only directly affects intention to reside, but also plays an important mediating role between brand image and intention to reside by strengthening brand image and promoting positive word-of-mouth. Based on the above, the following hypothesis is proposed.

H3: Service quality mediates the relationship between brand image and intention to reside**2.4 The Moderating Effect of Self-Determination**

Self-Determination Theory (SDT) was proposed by Deci and Ryan in 1985. This theory uses interpersonal interaction as a framework to explore individuals' motivation to pursue optimal challenges and new experiences (Deci & Ryan, 1985, Deci & Ryan, 1991, Dick, Basu, 1994, Ryan and Deci, 2000). Deci and Ryan (1985) distinguished between intrinsic motivation and extrinsic motivation, emphasizing that human behavior originates from self-pursuit, rather than external pressure. Self-determination theory believes that humans have intrinsic activity and are affected by the social environment. These characteristics develop over time and play an important role in the learning process. Deci and Ryan (1985) proposed three basic psychological needs:

- **Autonomy:** Refers to the individual's desire to have the right to choose and engage in activities that he is interested in.
- **Competence:** Refers to the individual's belief that he has the ability to be competent for activities and achieve goals.
- **Relatedness:** Refers to the individual's desire to establish emotional connections with others.

When these three needs are met, individuals will be more motivated to pursue goals. Applied to older adults' intention to reside, Self-Determination Theory points out that autonomy, sense of competence, and social belonging will affect their choices in senior housing. Therefore, this study believes that older adults' needs for autonomy and maintaining social connections in a new environment will significantly affect their intention to reside.

Self-Determination Theory emphasizes that individual behavioral choices are driven by basic psychological needs such as autonomy, competence, and sense of belonging (Deci and Ryan, 1985). When an individual's self-determination is disturbed, it may weaken his perception of brand image and thus reduce his intention to reside.

As consumers' cognitive and emotional association with a brand, the influence of brand image is moderated by the degree of self-determination. Consumers with a high degree of self-determination pay more attention to whether the brand meets their personal values and needs, and rely on brand image for choice evaluation; consumers with a low degree of self-determination are easily affected by external factors such as price and promotion.

When choosing a living environment, individuals with high self-determination prefer residential brands that can meet their personal needs and values, especially choices that can support their independence and comfort. When brand image resonates with these psychological needs, the positive impact on intention to reside will be more significant. Therefore, self-determination can be regarded as a moderating variable between brand image and intention to reside, strengthening the influence of brand image on intention to reside. Based on the above, the following hypothesis is proposed.

H4: Self-determination moderates the relationship between brand image and intention to reside.

In summary, brand image, service quality, and intention to reside jointly constitute the complex decision-making process for older adults to choose senior housing. Service quality is not only a mediating variable between brand image and intention to reside, but also affects behavioral intentions through positive word-of-mouth; self-determination moderates the influence of brand image on intention to reside. Understanding the interaction of these factors will help relevant institutions and policymakers design more attractive senior housing programs to meet the

diverse needs of older adults, thereby enhancing intention to reside and market competitiveness (the research framework is shown in Figure 1).

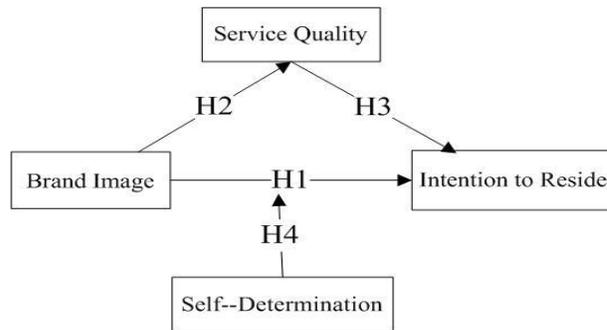


Figure 1: Research Framework

3. Research Methodology

This study primarily explores the relationships among brand image, service quality, intention to reside, and self-determination. The research method employed is a questionnaire survey, targeting individuals aged 50 and above. The study will analyze the impact of factors such as brand image and service quality on intention to reside. Based on the introduction and literature review, research hypotheses are formed through the collection and organization of literature and related theories, and the research framework is designed and implemented.

3.1 Research Subjects

This study employed convenience sampling to collect data through an online questionnaire administered via Google Forms and the social media platform Line communities. The target sample consisted primarily of individuals aged 50 years and above who were members of volunteer groups, teacher reading clubs, and senior learning organizations. To ensure the reliability and validity of the questionnaire, a pilot test was conducted initially. The pilot questionnaires were distributed from June 19 to 20, 2024, and 60 responses were collected. Following the pilot test analysis, items with low discrimination were removed, and the formal questionnaire was subsequently developed. The formal questionnaire was administered from July 4 to 21, 2024, resulting in 425 collected questionnaires. After reviewing, 31 invalid questionnaires were excluded, yielding a final sample of 394 valid questionnaires, with an effective response rate of 92.7%.

3.2 Questionnaire Design

This questionnaire aims to explore the degree of recognition of older adults regarding brand image, service quality, intention to reside, and self-determination when choosing senior housing. The questionnaire uses a seven-point Likert scale for measurement, with response options ranging from "strongly agree," "agree," "slightly agree," "no opinion," "slightly disagree," "disagree," to "strongly disagree," assigned scores from 7 to 1, respectively, for quantitative analysis.

Regarding brand image, this study, based on the classic viewpoint of Park et al. (1986), subdivides it into three dimensions: functional, symbolic, and experiential. Referring to the research results of Su (2016) and Hsieh (2018), adjustments were made to the characteristics of older adults choosing senior housing, and nine items were designed to better reflect their real needs.

Regarding service quality, this study draws on the five dimensions of service quality in the SERVQUAL scale, combines the research of Shen and Chang (2022) and Hsieh (2018), and designs twelve items to comprehensively evaluate the service quality of senior housing.

Regarding intention to reside, this study adopts the four conceptual models proposed by Stinner et al. (1990), and refers to the research of Su (2016) and Lin (2018), and designs eight items to deeply understand the intention of older adults to reside.

Finally, regarding self-determination, drawing upon Deci & Ryan's (1985) Self-Determination Theory and referencing the research of Chu (2020), its core three basic psychological needs – autonomy, competence, and relatedness – were operationalized. For autonomy, example questionnaire items included: "I can make the choices I want," "I feel I am doing what interests me," and "I have freedom of choice within my control." For competence, example items included: "I am confident I can do things well," "I am sure of my abilities in what I do," and "I have the capacity to achieve the goals I set for myself." For relatedness, example items included: "I feel that people I care about also care about me," "People I interact with make me feel warm," and "I feel close to those who are important to me." A total of nine questionnaire items were designed to assess the level of self-determination among older adults in senior living facilities. Through this questionnaire, this study aims to comprehensively understand the factors older adults consider when choosing senior living facilities, providing valuable references for the design and services of these residences.

3.3 Reliability and Validity Analysis

This study used Principal Component Analysis (PCA) to calculate the variance explained by all variables together. As summarized in Table 1, which presents the results of the reliability and validity analysis of the formal questionnaire, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for service quality was 0.888, the Bartlett's test of sphericity had a chi-square approximation of 1784.075 with 66 degrees of freedom ($P < 0.001$), reaching a significant level. The KMO measure of sampling adequacy for brand image was 0.827, and the Bartlett's test of sphericity had a chi-square approximation of 1643.869 with 36 degrees of freedom ($P < 0.001$), reaching a significant level. The KMO measure of sampling adequacy for intention to reside was 0.914, and the Bartlett's test of sphericity had a chi-square approximation of 2097.850 with 28 degrees of freedom ($P < 0.001$), reaching a significant level. The KMO measure of sampling adequacy for self-determination was 0.887, and the Bartlett's test of sphericity had a chi-square approximation of 2070.850 with 36 degrees of freedom ($P < 0.001$), reaching a significant level. The questionnaire scale is suitable for factor analysis. The Cronbach's α reliability values for the four dimensions were 0.859, 0.845, 0.914, and 0.892, all greater than 0.7, indicating a certain degree of internal consistency (Kaiser, 1974).

Table 1: Summary of Reliability and Validity Analysis Results for the Formal Questionnaire.

Variable	Cronbach's α	Bartlett's test of sphericity		KMO
		chi-square approximation	df	
Service Quality	0.859	1784.075***	66	0.888
Brand Image	0.845	1643.869***	36	0.827
Intention To Reside	0.914	2097.850***	28	0.914
Self-Determination	0.892	2070.850***	36	0.887

*** $P < 0.001$

3.4 Statistical Analysis Methods

Descriptive statistics and correlation analyses were conducted using SPSS 22.0. Moderated mediation effects were examined using Model 4 and Model 5 in the PROCESS 4.2 program developed by Hayes (2022). Parameter estimations were performed with 5000 bootstrap samples, and 95% confidence intervals were established.

4. Results

4.1 Descriptive Statistics and Correlation Analysis

The first question of the questionnaire was set as an age screening question to ensure that respondents met the research age requirements. Among them, 8.1% were aged 50-54, 13.5% were aged 55-59, 25.6% were aged 60-64, 19.3% were aged 65-69, 25.4% were aged 70-74, and 8.1% were aged 75 and above. 21.3% were male, and 78.7% were female, with a higher proportion of females than males. In terms of education level, 51.3% had a university (including college) degree, 33.5% had a graduate degree, 12.7% had a high school degree, and 2.5% had a junior high school degree or below. Regarding marital status, 67.8% were married or cohabiting, 13.2% were single, 10.2% were widowed, and 8.9% were divorced or separated. In terms of the number of children, 44.7% had both sons and daughters, 19.0% had only sons, 18.5% had only daughters, and 17.5% had no children. Regarding employment

status, 68.3% were mostly retired, and 31.7% were still employed. In terms of average monthly income, 29.0% had an income between NT\$40,000 and NT\$60,000, 28.2% had an income between NT\$20,000 and NT\$40,000, 16.8% had an income below NT\$20,000, 13.7% had an income between NT\$60,000 and NT\$80,000, and 11.4% had an income above NT\$80,000. In terms of occupation, 41.3% were in the military, public service, or education sectors, 18.0% were in the service industry, 15.0% were self-employed or in other occupations, 10.7% were in industry or commerce, 10.4% were homemakers, and 4.6% were in the manufacturing industry. Regarding health status, 49.2% felt healthy, 36.3% felt their health was average, 9.6% felt very healthy, and 4.9% felt unhealthy or very unhealthy. Regarding living arrangements, 43.7% lived in elevator buildings, 27.7% lived in detached houses, and 27.4% lived in apartments.

The descriptive statistics of all variables and the correlation analysis of the variables are shown in Table 2. Brand image, service quality, intention to reside, and self-determination were all significantly correlated with each other ($P < 0.001$).

Table 2: Descriptive Statistics and Correlation Analysis (N=394)

	Mean	S.D	1	2	3	4
1 Brand Image	6.32	0.525	1			
2 Service Quality	6.45	0.429	0.631***	1		
3 Intention to Reside	5.99	0.729	0.548***	0.422***	1	
4 Self-Determination	6.09	0.589	0.521***	0.340***	0.526***	1

*** $P < 0.001$

4.2 Hypothesis Testing of Brand Image, Intention to Reside, and Service Quality

This study employed Model 4 from Hayes' PROCESS macro and Bootstrap with 5000 resamples to calculate the 95% confidence intervals (CIs) (Hayes, 2022) for testing the mediating effect of service quality on the relationship between brand image and intention to reside. The results, as shown in Table 3, indicate that brand image has a significant positive effect on intention to reside ($\beta = 0.650$, $P < 0.001$). The Bootstrap analysis with 5000 random samples yielded a 95% CI of (0.503, 0.798), which does not include zero, thus supporting Hypothesis H1 is supported, and brand image has a positive significant effect on intention to reside. After including the mediating variable, service quality, the direct predictive effect of brand image on intention to reside remained significant ($\beta = 0.214$, $P < 0.05$), with a Bootstrap 95% CI of (0.033, 0.395). Furthermore, brand image has a significant positive predictive effect on service quality ($\beta = 0.515$, $P < 0.001$), with a Bootstrap 95% CI of (0.453, 0.578). This confidence interval does not include zero, indicating a significant relationship between brand image and service quality, thus supporting Hypothesis H2: is supported, and Brand image has a positive impact on service quality.

Based on the hypothesized research model, service quality mediates the relationship between brand image and intention to reside, acting as a partial mediator. As shown in Table 4, the direct effect of brand image on intention to reside accounts for 85.41% of the total effect, while the indirect effect through service quality accounts for 14.59%. This indirect effect is transmitted through the mediation of service quality, This proves that H3 is supported, and service quality mediates the effect between brand image and intention to reside.

Table 3: Mediation model Test Table

	Service Quality			Intention to Reside		
	β	se	Boot95%CI	β	se	Boot95%CI
Brand Image	0.515***	0.032	0.453, 0.578	0.650***	0.075	0.503, 0.798
Service Quality				.214*	0.092	0.033, 0.395
R ²		0.398			0.310	
Adjusted R-squared		0.397			0.307	
F		259.581***			87.952***	

* $P < 0.05$, *** $P < 0.001$

Table 4: Total Effect, Direct Effect, and mediate Effect Analysis Table

	Effect	se	LLCI	ULCI	Percentage
Total Effect	0.761	0.059	0.646	0.876	
Direct Effect	0.650	0.075	0.503	0.798	85.41%
Indirect Effect	0.111	0.054	0.010	0.223	14.59%

4.3 Moderating Effect Test of Self-Determination

Next, Model 5 was used to test the moderating effect of self-determination on the overall path of the mediating effect. The results in Table 5 show that the interaction term between brand image and self-determination can significantly predict intention to reside ($\beta = 0.115, P < 0.05$), indicating that self-determination plays a moderating role on the overall path in the model of brand image–service quality–intention to reside.

Table 5: Moderated Mediation Effect

	Service Quality			Intention to Reside		
	β	se	Boot95%CI	β	se	Boot95%CI
Brand Image	0.515***	0.032	0.453, 0.578	0.448***	0.079	0.293, 0.603
Service Quality				0.168	0.088	-0.005, 0.340
Self--Determination				0.447***	0.060	0.329, 0.565
Brand image \times Self-Determination				0.115*	0.052	0.013, 0.216
R^2		0.398			0.396	
Adjusted R-squared		0.397			0.390	
F		259.581***			63.794***	

* $P < 0.05$, *** $P < 0.001$

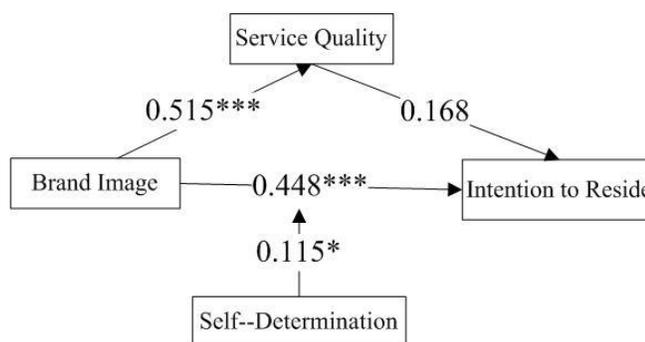


Figure 2: Research Hypothesis Model

To test the indirect effect of brand image on intention to reside under moderating effects, Bootstrap tests were conducted using values of self-determination one standard deviation above and one standard deviation below the mean. The results are shown in Table 6. The mediating effect was significant at low self-determination with a 95% confidence interval of (0.224, 0.537), at medium self-determination with a 95% confidence interval of (0.293, 0.603), and at high self-determination with a 95% confidence interval of (0.341, 0.691). Therefore, the moderated mediating effect exists. Hypothesis H4 is supported, indicating that self-determination has a moderating effect on the relationship between brand image and intention to reside.

Table 6: Self-Determination Group Test Analysis

	β	se	Boot95% CI
Low Self-Determination	0.381	0.080	(0.224, 0.537)
Overall Self-Determination	0.448	0.079	(0.293, 0.603)
High Self-Determination	0.516	0.089	(0.341, 0.691)

A simple slope test was used to further examine the effect values when self-determination was one standard deviation above and below the mean, specifically analyzing the moderating effect of self-determination on the overall path in the model. The simple slope test of the path showed that among participants with high self-determination ($M + 1SD$), brand image had a significant positive predictive effect on intention to reside ($t = 6.232, P < 0.001$); among participants with low self-determination ($M - 1SD$), brand image also had a positive predictive effect on intention to reside ($t = 5.706, P < 0.001$) (Figure 3).

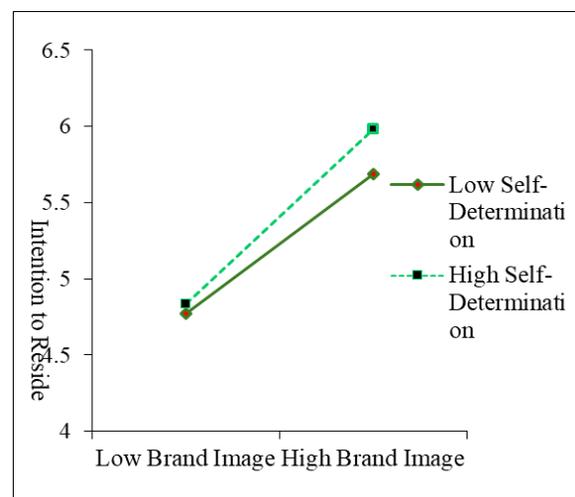


Figure 3: Moderating Effect of Self-Determination on the Relationship Between Brand Image and Intention to Reside

5. Conclusions and Recommendations

5.1 Conclusions

This study empirically analyzed the relationships among brand image, service quality, intention to reside, and self-determination in the context of senior living facilities in Taiwan, using a questionnaire survey. The findings indicate that high-quality service significantly enhances older adults' trust and positive perception of senior living facility brands, consequently positively influencing their intention to reside. Service quality was found to have a significant positive impact on brand image ($\beta = 0.515, p < 0.001$). Furthermore, service quality played a significant mediating role between brand image and intention to reside ($\beta = 0.214, p < 0.05$). These findings are consistent with previous research (Shen & Chang, 2022; Franco et al., 2021; Tsai et al., 2020), which suggests that excellent service strengthens brand image and further enhances the intention to reside. For instance, Shen and Chang (2022) argued that while residents may place less emphasis on the physical hardware of living spaces, superior service performance significantly contributes to older adults' satisfaction. Tsai et al. (2020) demonstrated the significant influence of service quality and brand image on the choice of senior living facilities.

More importantly, when older adults' level of self-determination is higher, the positive impact of brand image on their intention to reside is significantly strengthened. The interaction effect between brand image and self-determination on intention to reside was found to be significantly positive ($\beta = 0.115, p < 0.05$), and the influence of brand image on intention to reside was also stronger. This result supports previous research findings (Chaulagain et al., 2021), which indicated that socio-psychological barrier factors mediate the relationship between health-related push factors and intention to reside. The moderating effect of self-determination further highlights the importance older adults place on autonomy when choosing a living environment.

Simultaneously, the findings of this study hold significant implications for the senior living facility industry. Operators should prioritize enhancing service quality by providing reliable, secure, and personalized services to build a positive brand image. Concurrently, actively shaping a favorable brand image is crucial to foster consumer trust and identification with the brand. Furthermore, addressing the autonomous needs of older adults is an important aspect. Operators should respect their autonomy by offering diversified choices and services to meet their individual differences.

5.2 Management Recommendations

Firstly, consistent with the findings of Osei-Kyei et al. (2000) and Chaulagain et al. (2021), this study recommends that senior living facility operators continuously enhance their service quality, emphasizing their unique strengths and characteristics to differentiate themselves from competitors and foster brand identification among older adults. To cater to the diverse needs of this population, senior living facility operators should offer a variety of residential options, such as different unit types and price points, as well as diversified service packages to enhance brand recognition.

Secondly, senior living facility operators should prioritize community engagement, encouraging residents to participate in community activities to foster a strong sense of belonging. They should also actively integrate with community resources to provide a more comprehensive living environment for older adults.

Furthermore, the government should provide greater policy support to encourage the development of the senior living facility industry and establish relevant regulations and standards to ensure the quality of services. Simultaneously, it is crucial to strengthen the supervision of the senior living facility industry to protect the rights and interests of older adults.

5.3 Research Limitations and Future Directions

The sample in this study was primarily drawn from the Taiwan region, and the cross-sectional research design employed may limit the external validity of the findings and the ability to infer causal relationships between variables. Future research is recommended to broaden the sample sources and consider adopting longitudinal or experimental designs to examine the causal mechanisms between variables more deeply.

Furthermore, subsequent research could incorporate the influence of internet and Artificial Intelligence (AI) technologies into the research scope, exploring their impact on elderly healthcare. Existing research has already highlighted the increasing importance of online resources for older adults, for instance, as a tool for lifelong learning. Therefore, future studies could conduct a more extensive investigation into the internet usage behaviors of older residents in senior living communities and explore the relationship between these behaviors and the concept of brand attachment. Ambient Assisted Living (AAL) offers innovative solutions to address the challenges of an aging society. Incorporating additional potential influencing factors (such as price and social support) and moderating variables (such as health status) could provide a more comprehensive analysis of the residential decision-making process among older adults.

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