Original Article

A cluster analysis examination of pet owners' consumption values and behavior – segmenting owners strategically

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ABSTRACT The industry of pet-related products and services has increased 10 times since the late 1990s, yet little is known about how pet owners consume pet-related services, let alone how best to segment owners into distinctive groups and market petrelated products to them strategically. To examine the segments within this market, this study forms its framework by incorporating factors from human-pet relationships, consumption values, information search behaviors and retail selection preferences. The main study included 578 Taiwanese pet owners. By using pet-related services, this research identified three segments of pet owners through cluster analysis. With this study's findings, the owners' characteristics are elaborated with potential strategic implications for the service industry. The contributions of this research's findings are discussed in light of recent consumer studies literature.

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INTRODUCTION

From 1997 to 2007, the pet market grew 10 times and became a US\$41 billion industry, 1-3 yet

Correspondence: Norman Peng Westminster Business School, University of Westminster, 35 Marylebone Rd., London, NW1 5LS, UK little is known about how pet owners consume pet-related products and services, let alone how best to segment owners into distinctive groups and market pet-related products to them strategically. ^{4,5} This gap in the literature is particularly relevant for pet-related services because they are intangible and are not for buyer's usage. So far, no known

research has quantitatively examined and categorized pet owners' consumption patterns of non-medical service-based products, such as grooming and shampoo. Although pet-related services are still smaller than food- or veterinaryrelated services, the growth potential of the former cannot be overlooked.² In the United States, pet services are booming at an impressive rate, although traditional pet products appear to have reached maturity. This trend will soon (if it has not already) appear in Asia-Pacific's major cities, such as Beijing, Shanghai and Guangzhou.^{6,7} This development presents commercial as well as research opportunities, as pets not only provide value to their owners but also influence their human companions' behaviors. For this reason, understanding the segments within this market and their characteristics, such as key value orientations and behavioral patterns, is imperative.

Among the research that studied pet owners based on their behaviors, human-pet relationships were considered by researchers as a crucial factor.^{8,9} Previous research on animal companionship can generally be divided into three categories: studies of the meaning of animal companionship and its dimensions;8,9 examinations of the pet's perceived values and roles in modern society^{4,5,10-12} and research on the pet's influence on its owner's behaviors, including consumption patterns. 13-18 Despite, progress having been made, scholars and practitioners still do not know how many meaningful segments exist within this market, what their characteristics are and how businesses, especially service-based companies, can market to them strategically. By investigating these issues, this study provides a synopsis of strategic segmentation approach and contributes to the emerging practice of applying marketing theories to generalize the behavior of consumers, as scholars have suggested. 19-24 Cavanaugh et al4 wrote 'future research could also explore how relationships with pets impact human consumption decisions'.

To explore these questions, this study develops its framework by focusing on the human-pet relationship's impact on an owner's consumption values, information search methods and retail selection preferences. ^{9,14,25} Both qualitative and quantitative studies are carried out to segment owners through the use of multiple pet-related services. This act is followed by the analysis and presentation of each cluster's characteristics. The final section presents the findings and implications of this research.

LITERATURE REVIEW

The pet and owner's consumption behaviors

In accordance with Serpell's²⁶ study on animal companionship, a pet in this research refers to an animal that is domesticated, is taken care of by its owner and with which the owner has some emotional bond. The companionship of animals has been shown to give a number of positive benefits to an owner's physical, psychological and social well-being, which makes pets an increasingly important addition to modern households. In addition, aging demographics and decreasing numbers of children within some modern societies (such as the United States and the United Kingdom) have also contributed to the increasing popularity of pets. ^{27–32}

Within the range of animals that can be classified as pets, dogs have a special significance. According to a recent census, approximately 30 per cent and 25 per cent of American and British families, respectively, have a dog. On an individual level, owners spend between \$9000 and \$14500 on their dogs throughout their dogs' lifetimes. 19,33-36 In a similar vein, dogs are the most common pets in Taiwanese households.³⁷ Moreover, Taiwanese owners have drastically increased their spending on pet-related products and services in recent years. Taiwanese pet owners spend about \$7800 on their dogs and cats throughout their pets' lifetimes. Nearly 40 per cent of the expenditures are on veterinary and other services.³⁸ During the same period, the birth rate in Taiwan has become the world's lowest.³⁹ Because certain Chinese cities such as Shanghai, Guangzhou and Chengdu are gradually showing similar trends (for example, having more pets, spending more on pets, aging demographics and declining birth rates), ^{6,40} Taiwanese owners' consumption behaviors can have important implications for practitioners and academics studying Chinese pet owners' consumption behaviors.

Despite the fact that owners are spending more on their pets, Shore et al⁵ suggest that some products (including services) are more appropriate when studying an owner's consumption behavior than others. In their view, non-necessities, including premium pet food, pet toys and other such accommodations, would be more appropriate for probing into the owner's relationship with his or her pet. Although these scholars' contributions to pet owner's consumption behavior are apparent, they have focused exclusively on physical products, such as name tags, dog houses, toys and pet foods. Despite the rapid growth of pet-related services, the implications of these scholars' studies are so far limited in their impact on this industry. Furthermore, no theoretical framework has been proposed to take into account the dimensions of relationships when examining consumption is made on behalf of the dependent. By including the pet's definition and market significance, the next section examines the dimensions of the owner-pet relationship.

Dimensions of pet ownership

On the basis of the review of the existing literature, the owner's consumption values, information search behaviors and retail selection

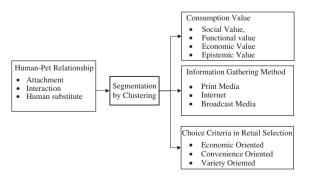


Figure 1: Research framework.

preferences are influenced by their relationships with their pets (Figure 1). In some studies on the influence of children and infants on their parents' consumption behavior, 41–43 scholars have stated that some of the influences can be attributed to the children's abilities to actively express their opinions through methods such as pestering. However, pets cannot vocally express their preferences, and their relationships with humans are subject to change. Thus, the owners' consumption decisions with regard to non-essential pet products can be attributed to their relationships with their pets. 3,20,44 Until now, coverage on this type of consumption scenario has been limited.

To build on the existing literature, this study proposes that certain dimensions of the human–pet relationship can be useful when segmenting owners' consumption behaviors, as these dimensions can help segment owners' general behaviors as well. 10,11,13,14,16
Furthermore, according to these scholars, this relationship is affected by both the owner's perceptions and the pet's characteristics. By considering the work on pet's roles in conjunction with the findings of anthrozoologists, three dimensions of pet ownership have surfaced: attachment, interaction and the role of the pet as a human substitute.

Attachment

This study uses the definition of attachment put forth by Johnson et al,9 which states that attachment is the 'degree of affection that may exist between individuals and their companion animals'. Attachment has been the key variable for a number of anthrozoology studies. 8,45 The prominent influence that pet attachment exerts on an owner's behavior has been acknowledged by scholars who have studied the pet owners' consumption behaviors.^{5,46–48} For example, Shore et al⁵ state that the influence of attachment can be observed during an owner's consumption of non-essential pet products, such as grooming and toys designed for pets. According to these scholars, the higher the attachment, the more likely the owners will purchase such luxury products.



Interaction

The second dimension, interaction, refers to a two-way partnership wherein both parties adjust their behavior to that of their partners.⁴⁹ In the studies conducted by Belk⁴⁷ and Harker et al,⁵⁰ both owners and pets have been shown to regularly adjust their behavior and lifestyle while interacting with one another. On the basis of their examples, interaction can be considered a significant dimension when examining human-pet relationships. There is evidence with regard to interaction's influence on the owners' consumption behaviors as well. 12,48,51 According to the aforementioned authors, some owners purchase products and services (for example, training lessons and equipment designed to engage pets in indoor and outdoor activities) that allow pets to be more sociable with their owners and other humans. Furthermore, issues such as the owner's willingness to incorporate pets into his or her life and the pet's role in the owner's social network are often investigated by scholars studying interaction.

Human substitute

According to the literature on anthropomorphism, more than 70 per cent of owners see their pets as human substitutes for children, siblings and/or friends.⁵² Given the significance of this dimension, this article suggests that human substitution deserves greater scrutiny. On the basis of Albert and Bulcroft's⁵³ definition of anthropomorphism, 'human substitute' in this article refers to the tendency to attribute human characteristics to things that are not human. This dimension has implications for the consumption patterns of pet owners. In Brockman et al's⁵⁴ research, some owners would pay for their pets' expensive medical treatments because animal companions were cherished as if they were human members of the pet owners' family. Similarly, Holak's¹ study finds that some owners would prepare religious ceremonies (for example, funerals) for their pets, just as they would for their human family members. To study this dimension of the human-pet relationship, this research will focus on the activities that owners engage in with their pets and the role pets play

in the owner's life in comparison to the roles other human companions play in the owner's life. 8,9 In consumption terms, this dimension implies that owners will do things that are beneficial to their pets, such as buying goods of superior quality. With respect to these three dimensions of pet ownership, this article hypothesizes that owners with different emphases will behave differently when purchasing services on behalf of their pets.

Consumption values, information search behavior and retail selection preferences

Consumption values

This study proposes that the human-pet relationship will affect the owner's consumption values, information search behaviors and retail selection behaviors. According to this article's review of the existing literature, these are three areas influenced by human-pet relationships. On the basis of the human-pet relationship literature reviewed previously and studies^{3,15,46} on the individual's relationship with his or her possessions, owners who emphasize different dimensions of the owner-pet relationship will have distinctive consumption values. To examine these values, this study adopt Sheth et al's²⁵ framework of consumption values. The four consumption values in this framework are the following: quality, economical, epistemic and social. Sheth et al's framework has been used in several consumer studies, where it has been shown to be consistently applicable and valid. $^{55-57}\,$ However, the products used in the existing studies are tangible products, and few studies have applied this framework to services.

Although no known research has explicitly adopted Sheth *et al*'s²⁵ framework to the context of animal companionship or has drawn correlations between pet relationships and consumption values, circumstantial evidence suggests the framework's applicability. For instance, Chen *et al*'s²⁰ studies have demonstrated that owners who have different relationships with their pets will have distinctive emphases on the quality or economical value of the products they



purchase. According to Sweeney and Soutar⁵⁶ and Wiedmann et al, 57 quality consciousness is defined by the owner's willingness to look for products that can provide superior performance, while being economical means that users will emphasize cost reduction when making consumption decisions. Similarly, other scholars have provided examples of how owners will seek social or epistemic values in their products because they have certain perspectives with regard to their relationships with their pets. 58-60 For instance, owners who see their pets as social mediators are likely to buy products that allow their pets to interact with the owners or the owners' social network. In this study, a service's social value lies in its ability to enhance a user's self-concept, and its epistemic value is related to the service's ability to arouse a consumer's curiosity, need for novelty and uniqueness.⁵⁵ Owners will look for services that underscore these values when making purchasing decisions on behalf of their pets.

Information search behavior and retail selection preferences

In the marketing literature, scholars have shown that a consumer's information searching behavior will be affected by the perceived importance of the product being bought. 61-64 On the basis of this finding and the works by Lancendorfer et al¹⁷ and Holbrook,⁵¹ this research suggests that a pet owner's information search behavior will be affected by his/her relationships with pets. By that, it means consumers who are more attached their pets are more likely to use communication channels that are categorized as informational or need to be actively searched, such as print media (newspapers and magazines) or the Internet. In other words, these consumers like to and want to participate in this information search process. On the other hand, consumers who are less involved with their pets are more like to rely on broadcast media (television and radio) as the audiences of these media want to receive information passively. While analyzing involvement alone has its merits, this study can expand upon the current literature by drawing

correlations between the dimensions of animal companionship and information search behavior.

This study suggests that the owner's relationship with his or her pets will have an influence on his or her preferences when selecting a retail shop.^{5,54} This connection has been supported by previous studies in the literature. 65 For instance, scholars have found that owners who place higher values on their pets are more likely to visit pet department stores that offer superior quality and variety compared with their counterparts. These findings are explicated by Lalwani, 66 Lindquist, 67 and Spiggle and Sewall.⁶⁸ who have suggested that consumers' behaviors during the retail selection process can be affected by three choice criteria: convenience, economy and variety. Although these findings are valuable to the current understanding of pet owners, scholars have yet to focus on the service sector or to generalize their findings to a larger population. By reviewing the key variables that can influence a pet owner's consumption behavior, this research have established a framework that considers the owner's relationship with pets and its potential impact on his or her consumption values, information search methods and retail preferences. To examine the proposed framework, this article will introduce the methodology used in this research in the following section.

METHOD

Before measuring the underlying dimensions of the owners' value perceptions when selecting pet-related services against the background of the multidimensional model, this study followed Sweeney and Soutar⁵⁶ and Wiedmann et al's⁵⁷ procedures by conducting in-depth interviews with various subjects to modify existing measures and to identify the appropriate services to be used in the main study. After considering the pet products used by Shore et al,⁵ this research interviewed 12 pet store owners and veterinarians from Taipei City and New Taipei City to formulate the potential list of pet services. This article compared their opinions and identified the services that are common, fast growing and/or have high profit margins. The subjects also

confirmed that although tangible products still generate more revenue, pet-related services (for example, massages) generate higher profit margins and differentiate the subjects from their competitors.

This list was then cross-referenced with this study's in-depth interviews with 20 Taiwanese dog owners to ensure that the providers and consumers have similar opinions. The interviews were sampled through a purposive sampling method. The services examined in the main quantitative research were the following: (i) pet sitter and boarding services (for example, hotel), (ii) nutrition-related services (for example, spa and massage), (iii) grooming (for example, haircuts, styling and shampoo), and (iv) training (for example, obedience lessons). In addition, this study proposed framework appeared sensible in the view of the participants.

With respect to the geographic breakdown of this research, 30 per cent of the respondents were from Taipei City, 45 per cent were from New Taipei City, 3 per cent were from Keelung City and 22 per cent were from Taoyuan County. The four northern constituencies of Taiwan comprised 38.2 per cent of the human population and 37 per cent of the domesticated dogs in Taiwan.^{37,69} Trained interviewers were sent to and stationed at pet shops near major transportation hubs, such as subway and rail stations. Before the interview was conducted, the interviewers explained the purpose of this research to the participants. Once the survey was finalized, 685 participants were recruited through quota sampling. Within the survey sample, 578 were deemed to be valid, which means the study achieved a valid return rate of 84.3 per cent. The high response rate was likely because of two reasons: (i) gifts were given for completing the survey in the form of dog treats, and (ii) trained graduate students who could perform quick adjustments on the spot were used as interviewers. The participants were mostly female (58.7 per cent), worked in the service industry (28.6 per cent), and were between the ages of 20-39 (73 per cent). In addition, 56.2 per cent of the participants were the primary caretakers of their pets.

The participants completed a survey that evaluated the consumption value variables, 56,25 information search methods, 61,62,64 preferences when selecting retail shops^{67,68} and other key variables within the human-pet relationship.^{8,9,53,70} The study aimed to examine how owners' consumption values and behavioral patterns could be strategically segmented and marketed based on their human-pet relationships. All the variables in the model were measured with multiple criteria. The survey measurement criteria for each variable are presented in Table 1. The questionnaire items were rated on a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree). A descriptive analysis can be found in Table 1.

DATA ANALYSIS

The data were analyzed using SPSS and AMOS. All measures were analyzed for reliability and validity in accordance with the guidelines offered by Anderson and Gerbing⁷¹ and Joreskog and Sorbom.⁷² The following paragraphs explain how the data were analyzed. The human-pet relationship, the owner's consumption values, information search methods and retail selection preferences were uncovered by a factor analysis that used the principal component method with varimax rotation. The analysis produced three factors for the human-pet relationship, four factors for the owner's consumption values, two factors for information search methods and three factors for retail selection preferences, as shown in Table 1. A Kaiser-Meyer-Olkin measure of 0.89 summarized 12 items for the human-pet relationship, 15 items for the owner's consumption values, 3 items for the information search methods and 8 items for retail selection preferences. Given that the Cronbach's α of all the factors range from 0.75 to 0.91, the factors are deemed to be stable for any measurement.⁷³

The research was driven by the need for a clearer conceptualization and measurement of human—pet relationships and the pet owner's consumption values, information search behaviors and retail selection preferences. As a multifactor solution that largely confirmed the proposed conceptual framework, this study's results revealed



Table 1: EFA, descriptive analysis of human-pet relationship and pet service value factors

Items	Factor loading	Cronbach's α	Mean	SD	Eigenvalue	Variance Explained (%)	Accumulated variance explained (%)
Social value (by buying this service for my pet)	_	0.91	4.31	1.25	6.11	33.95	33.95
It would give me social approval	0.88	_	_	_	_	_	_
It would make a good impression on other people	0.87	_	_	_	_	_	_
It would help me to feel acceptable	0.80	_	_	_	_	_	_
It would improve the way I am perceived Functional value (I will)	0.77	_ 0.85	_ 5.70	_ 0.90	_ 2.40	_ 15.31	_ 62.66
Select services that my pet really needs	0.86	_	_	_	_	_	_
Select services that are beneficial to my pet	0.84	_	_	_	_	_	_
Buy service that has consistent quality	0.80	_	_	_	_	_	_
Buy services that make me feel good	0.68	_	_	_	_	_	_
Economical value (I will)	_	0.75	4.92	1.08	1.23	6.82	69.48
Buy service that is reasonably priced	0.90	_	_	_	_	_	_
Buy service that would be economical	0.87	_	_	_	_	_	_
Buy service that offers value for money	0.81	_	_	_		_	_
Epistemic value (I will)	_	0.847	4.68	1.10	1.17	6.49	75.96
Buy a service because it is interesting Change service provider because I get	0.83 72	_	_	_	_	_	_
tired of the existing one Buy services that I like	0.62						
Change service provider because I am unsatisfied with the existing one	0.60	_	_	_	_	_	_
Attachment	_	0.91	5.37	0.98	5.55	30.36	30.36
Owning a pet has helped my health	0.85	_	_	_	_	_	_
I consider my pet to be a great companion	0.84	_	_	_	_	_	_
Owning a pet adds to my happiness	0.82	_	_	_	_	_	_
My pet understands me	0.74	_	_	_	_	_	_
I am very attached to my pet	0.74	_	_	_	_	_	_
My pet and I have a very close relationship Interaction	0.70 —	0.81	_ 4.44	_ 1.35	1.40	_ 22.05	_ 52.40
I play with my pet quite often	0.88	_	_	_	_	_	_
I often travel with my pet I often take pet along when I visit my	0.83 0.76	_	_	_		_	_ _
friends or relatives		0.040	4.00	4.00	4.00	00.00	70.00
Human substitute	_	0.818	4.80	1.22	1.03	20.20	72.60
Quite often I confide in my pet I love my pet because he/she is more loyal to me than most of the people in	0.80 0.80	_	_	_	_	_	_
my life	0.77						
I love my pet because it never judges me Information search (I was actively collecting information from)	_	0.86	4.84	1.11	3.89	55.52	55.52
Print media (newspaper and magazine)	0.92	_	_	_	_	_	_
Internet	0.88	_	_	_	_	_	_
Broadcast media (TV and radio) Channel selection	0.79	_	_	_	_	_	_
Economic oriented (The stores I visited)	_	0.86	4.88	1.11	3.55	44.35	44.35
Have many bargain opportunities	0.90	_	_	_	_	_	_
Offer lower prices than other stores	0.86	_	_	_	_	_	_
Are discounted stores that offer low prices	0.85	_	_	_	_	_	_
Convenience oriented (The stores I visited)	_	0.78	5.08	0.97	1.17	21.50	65.85
Are closer to my home	0.51	_	_	_	_	_	_
Are closer to my place of employment	0.93	_	_	_	_	_	_
Can be easily accessed	0.91	_	-	_	-	_	
Variety (The stores I visited)	_	0.91	4.56	1.28	1.17	14.61	80.47
Have wide range of varieties Have multiple choices (for example, doctors, stylists, rooms, sitters)	0.95 0.92	_	_	_	_	_	_

an interesting view of the set of dimensions underlying pet service consumption. In sum, the owners' consumption values (quality, economical, social and epistemic values), information search behaviors and retail selection preferences (economy, convenience and variety) appear to be determined mainly by their relationships with their pets.

The factor-based structure of the model proved to be reliable (Bartlette χ^2 test=5257.283(P<0.00) and KMO=0.936) for the measurement of the human-pet relationship. This finding demonstrated that the data were suitable for factor-based analysis. This calculation was followed by a utilization of the principal component method with varimax rotation, where the components with Eigenvalues greater than 1.0 were retained. The analysis revealed that after three rounds of deletion, 72.60 per cent of the variance can be attributed to three factors, which are defined as follows: attachment, interaction and human substitute (see Table 1).

Factor 1: Attachment: Referring to the degree of affection shared between the two parties, attachment measures one of the three dimensions of the human–pet relationship. Statements like 'Owning a pet has helped my health' and 'I consider my pet to be a great companion' best describe this dimension, as these statements have loadings ranged of 0.85–0.84. In other words, this study's examination of attachment revealed that the pet's emotional benefits are linked to its owner.

Factor 2: Interaction: This factor explicates the cognitive and behavioral steps that the owners took to incorporate pets into their social network, which includes family and friends. In the context of this study, the key statements that describe interaction are 'I play with my pet quite often' and 'I often take my pet along when I visit my friends and relatives'. The loading ranged from 0.88 to 0.76.

Factor 3: Human substitute: This factor shows the owners' attitude to their pets and the steps the owners took to anthropomorphize their pets. In other words, human substitute refers to the owner's tendency to attribute human characteristics to his or her animal companions.

In the context of this study, the sample statements included were 'Quite often I confided in my pet' and 'I love my pet because it never judges me'. The loading ranged from 0.80 to 0.77.

After analyzing the human–pet relationship, the owner's consumption values, informationgathering methods and retail selection preferences were examined through a similar approach to determine whether each factor was suitable for analysis. This study's examination confirmed that each factor was indeed viable. The criteria for these factors and Cronbach's α for each can be found in Table 1. Following the two-step approach recommended by Anderson and Gerbing,⁷¹ after exploratory factor analysis (EFA), this study employed a confirmatory factor analysis (CFA) to understand whether the underlying structure could form a tenable measurement model of the construct (although with any necessary modifications and adjustments). It should be noted that the data used in this study were standardized before the EFA was performed. Table 2 shows the CFA results average variance extracted ranged from 0.53 to 0.83, which is higher than Fornell and Larcker's 74 recommended value (that is, 0.50). In addition, this study's composite reliability ranged from 0.7663 to 0.9071, which is also greater than Fornell and Larcker's⁷⁴ suggested value (that is, 0.60). Lastly, this article's model had a good fit, as for the 11 dimensions, $\chi^2/df = 3.575$, CFI = 0.900 and RMESA = $0.067.^{75}$

To identify different groups of pet owners, the factor scores for each respondent were used to cluster the owners into market segments. These scores have been standardized before the cluster analysis. In this study, the focus of the cluster analysis was on the comparison of cases in accordance with the natural relationships between the hypothesized human—pet relationship dimensions and the consumption-related factors. An initial hierarchical clustering procedure was employed to obtain a viable number of clusters and seed points for a *k*-means cluster analysis. To identify the appropriate number of clusters, this study partitioned the respondents by a hierarchical procedure. Ward's method of minimum variance



Table 2: Measure correlations, squared correlations, reliability coefficients and AVE

	Att.	Int.	Hum.	Eco.	Ері.	Soc.	Fun.	REco.	Con.	Var.	Inf.	AVE
Att.	0.792	_	_	_	_	_	_	_	_	_	_	0.628
Int.	0.670	0.774		_	_	_	_	_	_	_	_	0.599
Hum.	0.609	0.689	0.780	_	_	_	_	_	_	_	_	0.609
Eco	-0.117	-0.061	-0.035	0.803	_	_	_	_	_	_	_	0.646
Epi.	0.253	0.330	0.211	0.225	0.7272	_	_	_	_	_	_	0.529
Soc.	0.071	0.367	0.285	0.356	0.482	0.8510	_	_	_	_	_	0.724
Fun.	0.111	0.284	0.252	0.121	0.325	0.111	0.811	_	_	_	_	0.658
REco.	0.294	0.312	0.232	0.531	0.142	0.341	0.261	0.825	_	_	_	0.680
Con.	0.256	0.150	0.113	0.261	0.218	0.094	0.441	0.331	0.786	_	_	0.618
Var.	0.275	0.440	0.307	-0.004	0.377	0.396	0.255	0.238	0.409	0.911	_	0.830
Inf.	0.616	0.667	0.506	-0.003	0.297	0.257	0.428	0.378	0.239	0.435	0.875	0.766
Composite reliability	0.905	0.812	0.822	0.845	0.766	0.913	0.852	0.865	0.819	0.907	0.907	_

Note: ATT=Attachment; Int=Interaction; Hum=Human substitute; Eco=Economical Value; Epi=Epistemic value; Soc=Social value; Fun=functional; REco=economic (retail selection); Con=convenience (retail selection); Var=Variety (retail selection); Inf=Information search.

Bold numbers on the diagonal parentheses are square root of each construct's AVE value.

Table 3: Pet owner segments: k-means cluster results

Human-pet relationship	Cluseter 1 (n=163)	Cluster 2 (n=205)	Cluster 3 (n=210)	F ^a
Attachment	0.536	0.953	- 0.564	207.355 ^a
Interaction	- 0.930	0.203	0.368	127.733 ^a
Human substitute	0.716	-1.274	0.0858	221.929 ^a

Note: Classification matrix revealed that 99.8 per cent of the cases were classified correctly.

was used to check the cluster differences in each stage of the combination and to maximize homogeneity and heterogeneity within and between the clusters, respectively. The results, which were validated using non-hierarchical k-means clustering, strongly suggested the presence of three clusters. The k-means cluster membership was identical to Ward's membership for 99.8 per cent of the cases. 57,76

In accordance with the conventional criteria for segmenting pet owners' consumption behaviors based on previous literature and this study's framework, the three emerging clusters were distinct from one another (as shown in Table 3). In addition to their distinctive characteristics, the clusters were large enough to be managerially useful, and they provided operational data that were practical, usable and readily translatable into strategy. 77,78 Once the clusters were identified, a discriminant analysis was used to check the cluster groupings. 75,79 Overall, 99.8 per cent of the cases were assigned

to their correct groups, which validated the results of the cluster analysis. Next, a post-hoc analysis conducted through the Scheffe method was applied to differentiate these clusters. The standardized mean of each cluster's dimensions can be found in Table 4. This study's interpretation of the results started with a set of ANOVAs. This article's findings showed that consumption values, information search behaviors and retail selection preferences help explain the differences across the three clusters. 80 On the basis of this study's analysis, Cluster 2 (attachment) has a higher score in most dimensions, including valuing service's quality and epistemic value, with the sole exception of broadcast media usage. In addition, Cluster 3 (interaction) scored low in most areas, with the exception of service's social value, service's functional (economical) value and reliance on the broadcast media while searching for information. Lastly, Cluster 1 (human substitute) had mixed results. Having presented

^aReported *F* values are significant at 0.000.

Table 4: Pet owner consumption category (characteristics)

Measure	Means	(Standardized m	F	Significance	9	
	Cluster 1 (n=163)	Cluster 2 (n=205)	Cluster 3 (n=210)			
Social	3.99 (-0.25)	4.50 (0.17)	4.44 (0.12)	11.79	0.000	2,3>1
Functional (quality)	6.01 (0.33)	5.96 (0.28)	5.18 (-0.60)	66.52	0.000	1,2>3
Functional (economic)	4.60 (-0.07)	4.68 (0.00)	4.72 (0.04)	0.87	0.419	_
Epistemic	5.05 (0.15)	5.08 (0.17)	4.61 (-0.26)	7.48	0.001	1,2>3
Retail-economic	4.83 (-0.02)	5.28 (0.23)	4.30 (-0.14)	3.03	0.049	2>1,3
Retail-convenience	5.17 (0.10)	4.78 (0.21)	4.80 (-0.29)	14.41	0.000	1,2>3
Retail-variety	4.56 (0.03)	5.22 (0.20)	4.35 (-0.13)	5.79	0.003	2>3
Information search - Print media	4.98 (0.02)	5.27 (0.19)	4.39 (-0.19)	26.30	0.000	1,2>3
Information search - Internet	5.03 (0.20)	1.34 (0.36)	4.33 (-0.31)	32.48	0.000	1,2>3
Information search - Broadcast media	3.71 (-0.16)	3.90 (-0.01)	4.08 (0.12)	3.26	0.039	3>1

the analytical method and the initial findings, the next section will elaborate the three segments of pet owners, including their consumption characteristics, in the next section (Table 5).

DISCUSSION AND IMPLICATIONS

By examining human—pet relationships, consumption values, information search and retail selection methods, a deeper understanding of how consumers choose pet-related services has been gained. On the basis of this article's findings, three market segments, which are generally consistent with this study's review of the three different types of human—pet relationships, have surfaced. Marketing practitioners can tailor the appropriate marketing strategy while targeting each segment. In the following sections, this study presents the characteristics of each segment and follows up by analyzing potentially effective targeting strategies.

Cluster 1: Anthropomorphic owners who value quality

This cluster comprised 27.6 per cent of this study's sample. In terms of age distribution, the owners of Cluster 1 are quite similar with the rest of the population, except that slightly more participants are concentrated between the ages of 20–29 years old and 50–59 years old than usual. As for their socioeconomic characteristics, these owners have the highest educational degrees and the greatest disposable incomes. When compared with the other two groups'

consumption characteristics, owners from this cluster scored the medium on six out of ten characteristics. These owners have a rather balanced approach when it comes to treating their pets.

Owners in this group scored the highest in the human substitute factor as well. In other words, they have anthropomorphic attitudes toward their pets and believe that pets should be treated as semi-dependent humans (similar to the roles of young children). For this reason, when purchasing services for pets, these owners place heavy emphasis on superior quality and epistemic value. The strong emphasis on quality can be expected given that these owners have ample financial resources and perceive their animal companions as children. Second, these consumers' desire for high epistemic value can stem from their superior financial ability, which leads them to try new services. Third, among the three groups, these owners have the least amount of concern for a service's social value. This study's interpretation suggests that these owners view animal companionship as an intimate relationship that should be restricted to a small social or family network.

With regard to their information search behaviors, Cluster 1 owners place a moderate emphasis on print media, which they regard as more informative than other types of media. In all likelihood, these owners regard the information in newspapers as more informative, whereas the content in magazines has other qualities. In addition, they also search for



Table 5: Segmentation of pet owners by clusters

Summary statistics			Segmentation I	χ^2	Significance		
Variable	n	%	Cluster 1	Cluster 2	Cluster 3		
Gender	_	_	_	_	_	18.689	0.000
Male	239	41.3	64 (39.3%)	65 (31.7%)	110 (52.4%)	_	_
Female	339	58.7	99 (60.7%)	140 (68.3%)	100 (47.6%)	_	_
Age	_	_	_	_	_	_	_
Under 20	62	10.8	15 (9.2%)	14(6.8%)	33 (15.7%)	_	_
20–29	293	50.7	90 (55.2%)	113 (55.1%)	90 (42.9%)	_	_
30–39	129	22.3	33 (20.2%	56 (27.3%)	40 (19%)	_	_
40–49	64	11.1	16 (9.9%)	15 (7.3%)	33 (15.7%)	_	_
50-59	26	4.5	9 (5.5%)	5(2.4%)	12 (5.7%)	_	_
60 or above	4	0.7	` o ´	2(1.1%)	2(1%)	_	_
Education	_	_	_		_	23.422	0.009
High school degree or below	152	26.3	36(22.1%)	48 (23.4%)	68 (32.4%)		_
University degree	360	62.3	97 (59.5%)	133 (64.9%)	130 (61.9%)	_	_
Graduate degree	57	9.9	25(15.3%)	21 (10.2%)	11 (5.2%)	_	_
Other	9	1.5	5(3%)	3(1.5%)	1 (0.5%)	_	_
Occupation	_	_	- (G70)	-	- (0.070)	31.526	0.005
Student	194	33.6	60 (36.8%)	64(31.2%)	70 (33.3%)	_	_
Homemaker	33	5.7	6(3.7%)	7(3.4%)	20 (9.5%)	_	_
Public sector	24	4.2	8(4.9%)	14(6.8%)	2(1%)	_	_
Service sector	165	28.5	44(27%)	72 (35.1%)	49 (23.3%)	_	_
Manufacture sector	66	11.4	20(12.3%)	17 (8.3%)	29 (13.8%)	_	_
Freelancer	35	6.1	8(4.9%)	10(4.9%)	17 (8.1%)	_	
Retired	8	1.4	4(2.5%)	1 (0.5%)	3(1.4%)	_	_
Other	53	9.2	13(8%)	20(9.8%)	20 (9.5%)	_	_
Income (per month; in US\$)	33	9.2	13 (0 70)	20 (3.070)	20 (9.570)	29.930	0.071
Below \$678	223	38.6	63 (38.7%)	68(33.2%)	92 (43.8%)	29.930	0.071
\$679_\$1,017	142	24.6	,	63 (30.7%)	47 (22.4%)	_	_
\$1,018_\$1,356	97	16.8	32 (19.6%) 31 (19%)	34(16.6%)	32 (15.2%)		
	54	9.3	` ,	,	, ,	_	_
\$1,357 - \$1,695	28		13(8%)	20(9.8%)	21 (10%)	_	_
\$1,696–\$2,034 \$2,035,\$2,036		4.8	16(9.8%)	7(3.4%)	5(2.4%)		_
\$2,035-\$2,373	6	1	0	3(1.5%)	3(1.4%)	_	_
\$2,374-\$2,712	4	0.7	2(1.2%)	0	2(1%)	_	_
\$2,713-\$3,051	6	1	2(1.2%)	2(1%)	2(1%)	_	_
\$3,052-\$3,390	2	0.3	1 (0.6%)	0	1 (0.5%)	_	_
Above \$3,391	16	2.8	3(1.8%)	8 (3.9%)	5 (2.4%)	_	_
Participant's role in human–pet relationship	_	_	_	_	_	20.58	0.002
Primary caretaker	325	56.2	90 (55.2%)	125 (61%)	110 (52.4%)	_	_
Secondary caretaker	168	29.1	56 (34.4%)	59 (28.8%)	53 (25.2%)	_	_
Occasional caretaker	69	11.9	15 (9.2%)	19 (9.3%)	35 (16.7%)	_	_
Not a caretaker	16	2.8	2(1.2%)	2(1%)	12 (5.7%)	_	_
Spending on pet (per month; in US\$)	_	_	· — ,	· —	· —	21.82	0.04
\$0	2	0.3	0	0	2(1%)	_	_
Below \$1-\$34	134	23.2	35(21.5%)	42 (20.5%)	57 (27.1%)	_	_
\$35-\$102	267	46.2	76 (46.6%)	102 (49.8%)	89 (42.4%)	_	_
\$103-\$169	138	23.9	45 (27.6%)	39 (19%)	54 (25.7%)	_	_
\$170-\$271	20	3.5	5 (3.1%)	10 (4.9%)	5(2.4%)	_	_
\$272–\$339	16	2.8	2(1.2%)	11 (5.4%)	3 (1.4%)	_	_
\$340 or above	1	0.2	` o ´	1 (0.5%)	O	_	_

information through the Internet. This preference may be because the Internet contains a range of information and some content can be novel and entertaining. These preferences are consistent with their consumption values, which highlight novelty and quality. They also tend to prioritize convenience with regard to their selection of providers, although they have little concern for the economical value and variety of services. The desire to look for channels and services that are convenient and have superior quality may stem from these owners' higher disposable incomes and from the fact that many are not their pets' primary caretakers.

Given the characteristics and backgrounds of these owners, the opportunities in this segment are lucrative for marketers. Not only do Cluster 1 owners have the motivation to treat their pets well, but they also have the financial resources to do so. Moreover, this segment, though the smallest of the three, is still reasonably large. To appeal to these owners, providers need to view the consumer's pet as a human customer. In addition, the quality and novelty of their services should be emphasized. However, service providers should not underestimate these consumers, as they can be demanding due to their perceptions of their animal companions as family members. In addition, they tend to be experienced and informed shoppers, which may bring other difficulties to providers' interactions with these customers.

Cluster 2: Attached owners who seek a service's epistemic value

This cluster comprised 36 per cent of the sample. Most of the owners in this cluster are between 20 and 39 years old, and this cluster had the highest proportion of this age group of the three clusters. In addition, this group consists of the highest percentage of female participants. As for these participants' socioeconomic backgrounds, many of them work in the public and service sectors. Their income lies in between those of the other two groups, and their education level is the highest of the three groups. In addition, the percentage of owners in this cluster who identified themselves as their pet's primary caretaker is the highest of the three groups.

Among the three value dimensions, this group scored the highest on attachment. According to anthrozoologists, such as Stallones *et al*,⁸ pet attachment can provide an indication of how an owner will treat his/her pet. Higher levels of pet attachment will usually lead owners to treat their pets better.⁵ This is supported by this study's results. In terms of consumption characteristics, these owners scored the highest on eight out ten consumption characteristics, except for functional value (economic) and information search—broadcast media. By considering the literature on pet attachment, there is a consistency between

these owners' relationships with their pets, their above average socioeconomic backgrounds and how they treat their pets.

Because they have some disposable income and they are attached to their pets, their emphasis is on service quality. In addition to quality, owners in this cluster look for offers that can provide epistemic value. One possible explanation gleaned from this study's qualitative and quantitative research is that some participants want their pets to be able to experience services that are both novel and fulfilling. The emphasis these owners place on these consumption values is coherent with their shopping and information searching behavior. Overall, they look for shops and information sources that are credible and novel. Nevertheless, the ability of pet shops to provide value for money is also important for them. To be more specific, with regard to this group's information search behaviors. Cluster 2 owners will actively search for relevant information using the Internet and print media. They scored the highest in both categories. Considering their attachment to their pets and their desire for high-quality and novel services, these pet owners would naturally gather information via Internet (which is regarded as having a wide range of information) and rely on print media (which is generally considered to have higher quality of information than the Internet). Last but not least, when selecting their retail options, these owners underline the importance of variety, economy and convenience. This study's interpretation suggests that stores with a variety of options will be more likely to provide services that are both high-quality and novel. Furthermore, because these owners' incomes are average, economy and convenience are both favorable attributes, as consuming these services will not cause extra financial burdens to the pet owners.

To appeal to this cluster of pet owners, a variety of marketing strategies can be adopted because these owners' top priority is to be more attached to their pets. Service providers can highlight the superior quality and unique attributes of their services and thereby help strengthen the relationship between owner and pet. In addition, marketers for pet-related services



can rely on print media and the Internet to communicate with this segment of consumers because these owners will actively search for the information that they need. However, marketers should be aware that this cluster's growth potential can be limited, as the participants are informed consumers with average incomes.

Cluster 3: Owners who look for interaction and a service's functional (economical) value

Comprising 36.3 per cent of the sample, this cluster is the largest of the three groups and includes primarily consumers who are between 40 and 59 years old or less than 20 years old. Furthermore, this group has the highest percentage of male participants. In terms of their socioeconomic background, this group contains the largest portion of homemakers, students and freelancers, and their average income and education level are the lowest among the three groups. Except for functional value (economic), social value and information search—broadcast media, these owners scored the lowest on the remaining seven consumption characteristics.

After examining the data gathered from these owners, their relationships with their pets were found to be generally consistent with their consumption values and behavior. To elaborate, because the lifestyles and work schedules of these participants are more flexible yet more isolated than those of the other two groups, Cluster 3 owners value their interactions with their pets more than do the other two groups. This finding fits the interaction dimension of pet ownership to be found in the literature. Due to their emphasis on interaction, this group of participants focuses on the social value of the services they purchase. In other words, the capacity to enhance the animal companion's interactions with both the owner and the owner's social network will be the crucial determinant behind the owner's purchasing decisions. Because their income is the lowest of the three groups and they desire social value in their purchases, these owners have less concern for the quality and epistemic value of a service in comparison to the other two groups. Compared with the other two groups, they place

more emphasis on the economical value of a pet service.

In terms of media consumption patterns, this group relies on the broadcast media more than the other two groups. This channel is more passive than print media. 63 As for the methods used to select service providers, this group does not have a strong opinion regarding the convenience or variety of offers that a shop may have. Moreover, they also do not place significant emphasis on whether the shop is economical. To summarize, although pet owners in this cluster like to interact with their dogs, they have less concern for retail shop characteristics and petrelated information sources compared with owners from other groups. The fact that a higher percentage of owners in this cluster are young students, have less income, and are not very attached to their dogs may also contribute to their consumption behavior. These behavioral patterns are consistent with one another and with this study's findings that a higher percentage of owners within this group are not the pet's primary caretakers or secondary caretakers.

Because this group of owners is the largest of the three, Cluster 3 presents significant opportunities for pet-related service providers. These opportunities are magnified by the simplicity of this segment, as these owners primarily seek services that are economical and can enrich their pet's ability to interact with them or empower the animal companions' capacity to become a social mediator between the owner and his or her social environment. However, targeting this group has its challenges because they are only responsive to broadcast media and do not display any significant preferences when selecting service providers. Furthermore, they have limited financial resources to spend on pets.

FUTURE STUDIES, LIMITATIONS AND CONCLUSIONS

In conclusion, this research proposes that the type of relationship between owners and pets can be used to derive clusters of consumption values and behaviors. Through the use of multiple petservices, this study established that human—pet

relationships have a diverse effect and that owners do indeed differ regarding their consumption values, information search behaviors and retail selection preferences. On the basis of this article's findings, service providers and marketing strategists need to recognize the relative significance of certain aspects of their service offerings when targeting different types of pet owners. The contributions of this research are as follows. First, this study proposes a segmentation framework to examine when service consumption is made for the third party (for example, dependent) to use by considering relationship dimensions. With modifications, this study's model can be applied to other relationship contexts. This provides further insight into segmentation strategy as Dibb²¹ and Foedermayr and Diamantopoulos²³ suggested. Second, this article segments pet owners into three distinct groups based on their demographic and socioeconomic background. Third, each group's unique consumption values, information search behaviors and retail selection preferences are also identified. Fourth, consumption values, which have traditionally been used to describe the consumption of physical products, have been applied to service-based products. Fifth, this research examined the pet's influence on the owner, which is different from children's impact on their parents because children can express their views vocally and actively, whereas pets cannot. Lastly, implications on targeting each segment strategically have been proposed to scholars and practitioners.

Although this research has divided pet owners into three segments and identified each cluster's unique consumption values and behaviors, there are some limitations that may provide directions for future studies. Due to this study's sampling method, the participants are likely to stem from urban or suburban areas. Although this procedure and sample selection method fit this study's definition of pets and pet's roles in modern families, future research can apply this article's framework to include owners who live in rural areas as well. Because dogs and cats in rural areas often have utility functions, such as guarding properties and

catching rats, their owners may want economical pet products and services. Consequently, the question of whether rural inhabitants form a distinctive new segment remains to be explored. Scholars can also examine this study's results by recruiting owners from other cultures to improve the generalizibility of this research.

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