

A Study on the Environmental Quality of Pet Grooming Shops in the Kaoping Area

Chin-Yuan Hsiao, Yu-Ru Lee, and Pei-Ling Chung*

Bachelor's Degree Program in Pet Care and Grooming, Tajen University, Pingtung 907, Taiwan; Email: {a0938682571, yuru}@tjen.edu.tw

*Correspondence: plchung@tjen.edu.tw

Abstract—The study mainly focuses on the environmental quality of pet grooming shops in the Kaoping Area as it discusses the influence that the environmental quality of the shops has on consumers. The framework of the study is broken into two parts including a consumer questionnaire survey and instrument monitoring of indoor noise levels at the pet grooming stores. In the first part, a questionnaire survey was conducted in order to (1) understand the environmental quality of pet grooming stores in the Kaoping Area, and (2) investigate the influence that pet grooming store environmental quality has on consumer satisfaction in the Kaoping Area. The Cronbach's alpha coefficient for the questionnaire used for this study showed a high level of reliability at 0.78–0.95. In the validity analysis, the KMO spherical test value was 0.82–0.88. Twenty items in the survey addressed such things as the environmental quality of the pet grooming stores, satisfaction towards the pet grooming stores' environmental quality. Satisfaction levels for these fell between 5 (somewhat agree) and 6 (agree), demonstrating that consumers are satisfied with the environmental quality of the pet grooming stores. In the second part, the indoor noise quality of pet the grooming shops was analyzed. The results of this show that on workdays, from Monday to Friday, morning noise levels are between 70–80 dB, and afternoon levels are between 80–98 dB. On weekends, from Saturday to Sunday, morning noise levels are between 73–79 dB, and afternoon levels are between 85–98 dB. There was no significant difference in the monitored values on weekends and workdays. Hopes are that the results of this study can serve as a contribution to pet grooming and related businesses or agriculture policy units of the government.

Keywords—Kaoping area, pet grooming shops, environmental quality

I. INTRODUCTION

With demographic change over time, contemporary Taiwanese society has come to enter a stage marked by low birth rates and an aging population, while the proportion of those choosing to embrace singledom and refusing to marry has gradually grown. In light of improvements in the quality of medicine, advancements in technology, and increases in average life expectancy, 2012

figures from the Directorate General of Budget, Accounting and Statistics—a branch of the Executive Yuan—place the average lifespan in Taiwan for both sexes at 79.51; while already in 2011, elderly people accounted for 10.8% of the population. A consequence of all this is that large swathes of consumers have started diverting their affection toward pets, which are no longer merely kept as working dogs or guard dogs, or used to catch or trap rats. Adorable and good-natured, pets help fulfill the emotional needs of many consumers, and the demand for pets as companions for elderly citizens living alone has grown by the year. Pets are an extremely effective source of healing and stress relief (Wu, 2016).

According to the Council of Agriculture's Animal Welfare website, the number of dogs owned by Taiwanese households in 2017 reached 1,777,252, while the number of cats was 733,206. By 2021, the number of dogs kept as pets was 1,235,218, while the number of cats had climbed to 870,818. Given such development trends, the pet industry offers infinite opportunities for future growth. In 2008, a survey on pet ownership conducted by 104 Market Research Center found that 67.9% of respondents felt pets offered physical and emotional companionship; 52.9% felt pets helped nurture love and patience; and 49.4% felt they assisted in relieving stress. This suggests that, in the current social climate, characterized by increased interpersonal aloofness and immense work-related pressures, those turning to pets for companionship no longer constitute a small minority. As pet ownership continues to grow, pet-related industries offer the prospect of unlimited potential and boundless business opportunities (Yang, 2021 and Cryer *et al.*, 2021).

Indeed, as more and more families have come to own a pet of their own, pet grooming has emerged as one of the most popular and fashionable new industries. The wave of enthusiasm unleashed by this trend has molded pet grooming into a highly-desired profession, with licensed groomers a sought-after commodity. Meanwhile, opportunities in the pet market have grown rapidly, with annual sales exceeding NT \$50 billion. The range of pet

grooming services on offer has also evolved considerably. No longer limited to a simple haircut and wash, such services now include medicated baths, professional hair care, regular baths, massages, and hair dying. Also on offer are nail art for pets, anti-scratch nail caps specially for cats, and other, more wide-ranging service items. In this fiercely volatile and competitive landscape, then, the quality of the store environment appears to be ever more integral to the direction of such businesses' future development (Yang, 2019 and Lopes *et al.* 2022).

A. Research Background and Motivation

In recent years, societal trends in Taiwan — population aging, low birth rates, and the growing prevalence of the nuclear family—have served to elevate the status and position of pets within the family unit. Additionally, due to large-scale growth and change in trends surrounding pet ownership, markets for pet products have diversified, and business opportunities for pet-associated merchandise have burgeoned (Wu, 2006 and Cooney *et al.* 2021). Owning a pet has become commonplace, a kind of trend. Looking more broadly at the lifestyle and care afforded today's pets, we see lavish clothes, products that please the eye, a nutritionally-balanced diet of fresh and dry foods, toys for entertainment, medical care, and insurance; but also, regular grooming and massage services. Owners are apt to spend at least NT \$1,000-3,000 per month on their pets, showering them with as much care and attention as they would their own child, ensuring that at all times their coat and overall exterior remain meticulously clean, hygienic, and attractive (Wang, 2012).

1) The current state of the taiwanese pet industry

With the rapid development of technology in recent years, and with the shift in people's lifestyles and attitudes, issues relating to population aging, non-marriage, and low birth rates have begun to receive widespread attention globally, just as the trend of pet ownership has appeared on the horizon. Meanwhile, a transformation has occurred in how people define pets and their reasons for owning them. In the past, the vast majority of domesticated animals assisted humans in their work, whether for hunting, guarding the home, or some other purpose. Today, however, the role of such animals has shifted to that of companion, or even close family member. Consequently, the pet industry has become more diversified, and its peripheral industries have flourished [1].

In Taiwan at present, dog owners still eclipse cat owners in number. However, according to estimates from the Council of Agriculture (COA) pet ownership survey, in 2019 there were over 530,000 pet cats in Taiwan's six major cities, accounting for almost 70% of the 760,000 plus pet cats around Taiwan. In 2011 there were an estimated 301,954 pet cats, which increased exponentially to 577,334 in 2013, thereby drawing the attention of relevant agencies. In 2017 the number had risen to 733,205, followed by 788,676 in 2018, and 763,771 in 2019. Thus, in the space of eight years, the number of cats

kept as pets had soared by 2.5 times, and was still rising. Chang-Young Fei, professor at the National Taiwan University School of Veterinary Medicine, states that "In New York, London and other such cities, the number of pet cats has already outstripped pet dogs. In the future, Taiwan's urban areas could develop along these same lines" (Yang, 2021).

The overall number of businesses in industries associated with pets has increased, too, rising annually from 3,734 in 2008 to 6,486 in 2018, during which time sales figures also climbed from 15.5 billion to 26.6 billion. In this ten-year period, growth in the overall number of businesses and sales figures reached 70%. Among these businesses, entities involved in the purchase and sale of pet accessories made up the largest number and received the highest sales figures, accounting respectively for 56% and 82% of overall industry figures. With low birth rates and an aging population, the number of Taiwanese people caring for pets has risen, and the relationship between owner and pet has grown closer, spurring increased demand for the pet care service industry. Accordingly, the number of stores in this industry has skyrocketed, rising from 269 in 2008 to 1,516 in 2018—a proportionate increase from 7% to 23% of the overall number of pet-related businesses. Sales have also grown from NT \$300 million to NT \$1.81 billion. Compared to the pet accessories and pet sales industries, which have grown by around 50% and 30% respectively, the pet care service industry has experienced almost five-fold growth over ten years, highlighting the fact that the market is still in a stage of rapid development [4].

2) The current state of pet grooming

Pet grooming is defined as the beautification of a pet's external appearance or behavior, and refers to the process of cleaning and tidying an animal. This understanding of "grooming" stems from the act of mutual preening displayed by monkeys. Both the pet and its "fur parents" thoroughly relish this experience (Fukuyama *et al.* 2007). So we can see that pet grooming refers to professional and technical services provided to pets, including bathing and styling, which not only help maintain the cleanliness of its physical form, but also beautify its external appearance.

Pet grooming stores in Taiwan can be sorted into three categories based on the scale of the store and the services it provides: pet grooming salons, hybrid-style pet supply stores, and pet grooming departments attached to animal hospitals. Professional pet grooming salons exclusively provide pet grooming services with no physical products sold. Hybrid pet supply stores, on the other hand, not only offer professional grooming services but also sell a wide array of pet lifestyle products, like dry food for both cats and dogs, snacks, toys, beds, and so on. Meanwhile, pet grooming departments in pet hospitals are generally managed by professional pet groomers hired specifically for this task. As the primary purpose of such hospitals is to treat animals medically, pet grooming is simply one of the auxiliary services provided (Wang, 2012).

3) *Service quality*

Definition of Service Quality

The definition of “service” can be divided into several facets. According to the definition proposed by the American Marketing Association (AMA), service can be viewed as “Activities, benefits and satisfactions which are offered for sale or are provided in connection with the sale of goods.”

Regarded as the founding father of quality management, Juran (1974) separated “service” into five distinct facets of “work completed for others”: 1) Internal qualities, 2) Hardware qualities, 3) Software qualities, 4) Time promptness, and 5) Psychological qualities. Service quality is the product of the consumer’s pre-purchase expectations, desires, and actual perceptions of service. If the customer’s expectations and desires are surpassed, the perceived service quality will be extremely satisfactory; and as this gap continues to expand, it slowly tends toward “ideal quality.”

Service Quality Dimensions

The SERVQUAL model, proposed in 1994 by Parasuraman et al., is used herein as a basis for measuring the dimensions of service quality. The difference between customers’ service-based expectations and desires, and their actual perceptions of service, is used as the standard value with which to gauge service quality. The dimensions of this evaluation model include tangibles, reliability, responsiveness, assurance, and empathy. Together, these five dimensions form a scale for systematically evaluating service quality; namely, SERVQUAL.

4) *Customer satisfaction*

Definition of Customer Satisfaction:

Yi (1990) [10] believes that consumer satisfaction is the outcome resulting from the consumption experience. That is, the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer’s prior feelings about the consumption experience. Oliver (1981), on the other hand, contends that consumer satisfaction refers to consumers’ experiences and descriptions of goal satisfaction.

Garbarino and Johnson (1999) argue that customer satisfaction is a special kind of commodity that accrues over time; the overall and summary expression of satisfaction in the dimension of service satisfaction, which includes multiple aspects of a business, such as its physical environment, and so on. Parasuraman et al. (1994) state that overall satisfaction is a function of all special transactions, and is an extremely stable moving average that tends toward the expression of the attitude as a whole.

B. *Research Objectives*

This study examined the environment quality of pet grooming stores in the Kaohsiung and Pingtung regions from January to August, 2021. It explored the impact of these store environments on consumers in these areas, and featured the following research objectives: a) Gain an understanding of the store environment of contemporary

pet grooming stores in Kaohsiung and Pingtung; b) Explore the effect of such stores’ environment quality on the satisfaction of Kaohsiung- and Pingtung-based consumers; and c) Analyze the interior noise quality of pet grooming stores in the same regions.

II. MATERIALS AND METHODS

By means of surveys, this study sought to investigate the environment quality and environment satisfaction of pet grooming stores in the Kaohsiung and Pingtung regions, as well as monitoring the noise in such store environments.

A. *Survey*

From January-August 2021, 400 questionnaires were distributed to customers of pet grooming stores in Kaohsiung and Pingtung cities (200 copies each), including major pet grooming franchises, pet grooming departments attached to animal hospitals, and small-sized pet grooming stores. Of the 400 questionnaires distributed, 375 valid copies were returned for a response rate of 93.75%.

This study adopted a purposive sampling technique. The consumer questionnaire used in the study consisted of four parts, with purposive sampling only applied to part two — quality of pet grooming store environments in the Pingtung / Kaohsiung region—and part three — environment satisfaction for Pingtung / Kaohsiung pet grooming stores. The questionnaire utilized a 7-point scale to elicit opinions on store environment quality and environment satisfaction, with scores of 1 to 7 representing level of agreement (7—strongly agree, 6—agree, 5—somewhat agree, 4—neutral, 3—somewhat disagree, 2—disagree, 1—strongly disagree).

B. *Statistical Analysis*

The Chinese version of SPSS 20.0 statistical software was used to analyze the data from the completed questionnaires. Based on the research objectives, an analysis was carried out on variables such as environment quality, environment satisfaction, intention to return, and so on. The method applied for statistical analysis is outlined as follows:

1) *Reliability and validity analysis*

The study employed Cronbach’s alpha to determine the scale coefficients, and to test the reliability, consistency, and validity of the questionnaire and each of its dimensions. If the Cronbach’s alpha value is higher than 0.7, it means the questionnaire has reached an acceptable level of reliability. The Kaiser-Meyer-Olkin (KMO) and Bartlett’s sphericity test were used for the validity analysis, wherein a value higher than 0.8 would determine whether the questionnaire items and dimensions represented a suitable level of reliability and validity.

2) *Descriptive statistical analysis*

Using a frequency distribution table for the collected sample data, a demographic variable analysis was

conducted. Frequency and valid percent were used to present survey sample items, such as “gender,” “age,” “marital status,” “pet grooming store consumption habits,” etc., so as to sort and summarize the sample’s characteristics and distribution.

3) Independent samples *t* test

The authors used the independent samples *t* test to test items such as “gender,” “marital status,” and “pet grooming store consumption habits.”

4) One-way ANOVA

The study employed a one-way ANOVA to test for any significant differences in the means at each level of the independent variables for “age” and “place of residence.” If there were significant differences, post hoc comparisons would be carried out to explore the relationship between the levels and the dependent variables.

5) Correlation and regression analysis

To test the degree of relation between the variables of two separate dimensions, the study used the Pearson correlation coefficient. It then applied regression analysis to verify the relevance, direction, and strength of each of the correlated dimensions. The *F* value was deployed to test the significance of the regression model, and the coefficient of determination, *R*², was also used to determine the explanatory power of the regression model.

C. Interior Noise Monitoring and Analysis

1) Interior noise quality monitoring

The study conducted interior noise quality monitoring in pet grooming stores within the Kaohsiung and Pingtung regions, analyzing noise quality within such stores both during the week (Monday to Friday) and on weekends (Saturday and Sunday). The monitoring was conducted using equipment that measures interior noise, with the aim of better understanding the noise quality situation in pet grooming stores. More specifically, the measurement was carried out with the CESVA DC122, which made records of the noise quality both on weekdays and weekends.

III. RESULTS AND DISCUSSION

The Chinese version of SPSS Statistics was used to analyze and understand the interrelationship between the

environment quality and consumer satisfaction for contemporary pet grooming stores, as well as to carry out data analyses and results discussions related to the noise monitoring of such stores.

A. Reliability Analysis for Consumer Questionnaire on Pet Grooming Salons in the Kaohsiung and Pingtung Regions

Reliability analysis measures the correctness and precision of a questionnaire. It was used in this study to test the internal stability and consistency of the dimensions and items in both the second and third parts of the questionnaire; namely, the environment quality (Part 2) and environment satisfaction (Part 3) of pet grooming salons.

The study conducted its reliability analysis by applying the Cronbach’s alpha coefficient. (Nunnally, 1978) believes that a Cronbach’s alpha higher than 0.7 represents high reliability; 0.35 – 0.7 suggests fair reliability; and an alpha under 0.35 signifies low reliability, and should not be adopted. In the analysis results for the scale variables of this study, the Cronbach’s alpha for the second part of the questionnaire (environment quality of pet grooming salons) was 0.78, while the third part (environment satisfaction for pet grooming salons) obtained a Cronbach’s alpha of 0.9. Thus, the Cronbach’s alpha coefficients were between 0.78 and 0.9, indicating that the scale adopted by this study, shown in Table I, was highly reliable.

Validity analysis refers to the characteristics or functions that can be detected with the use of testing or measurement tools. This study used the KMO and Bartlett’s spherical tests to test the validity of its sampling method, and the KMO criteria proposed by Kaiser (1974) to verify the validity of its scale. A KMO value over 0.9 indicates strong suitability; a value of 0.7–0.8 signifies moderate suitability; while 0.5–0.6 represents low suitability. The analysis results for the scale variables of this study returned a KMO and Bartlett’s sphericity value of 0.82 for the second part of the questionnaire (environment quality) and 0.84 for the third part (environment satisfaction). The KMO values were between 0.82 and 0.84, which is under 0.9 and hence very suitable. Therefore, the scale used in this study (displayed in Table I) is valid.

TABLE I. VALIDITY ANALYSIS OF QUESTION VARIABLES IN THE STUDY

Question variables	No. of questions	(Reliability)	(Validity)
		Cronbach’s α	KMO Bartlett’s sphericity test
Part 2:			
Please evaluate your actual impression of the quality of service and environment offered by the pet shop	1–10	0.78	0.82
Part 3:			
Please evaluate your overall feelings of satisfaction towards the environment and service of the pet shop.	1–10	0.90	0.84

Source: Figures from the current study

B. Environment Quality Analysis for the Consumer Questionnaire on Pet Grooming Salons in the Kaohsiung and Pingtung Region

To ascertain the characteristics of consumers at pet grooming salons in Kaohsiung and Pingtung, surveys were conducted involving customers of such stores, with 375 valid questionnaires completed. The second part of the questionnaire is displayed in Table II, and involves the question: "Please evaluate your actual impression of the quality of service and environment offered by the pet store." A 7-point scale was used to assess answers, with scores of 1 to 7 representing level of agreement (7 – strongly agree, 3–somewhat disagree, 1–strongly disagree).

Part 2: Please evaluate your actual impression of the quality of service and environment offered by the pet shop. A descriptive analysis of questions 1 to 10 is provided below:

1. The pet grooming shop provides good drinking water facilities; the mean satisfaction score for this question was 6.02, with a standard deviation of ± 0.04 . In all, "agree" (6 points) was the most common response, chosen by 251 or 66.9% of respondents, followed by "strongly agree" (7 points), chosen by 76 or 20.3% of respondents.

2. The pet grooming salon features a complete waste treatment system; the mean satisfaction score for this question was 5.86, with a standard deviation of ± 0.04 . In all, "agree" (6 points) was the most common response, chosen by 239 or 63.7% of respondents, followed by "strongly agree" (7 points), chosen by 57 or 15.2% of respondents.

3. The pet grooming shop's green (eco-friendly) design is satisfactory; the mean satisfaction score for this question was 5.85, with a standard deviation of ± 0.04 . In all, "agree" (6 points) was the most common response, chosen by 236 or 63.0% of respondents, followed by "strongly agree" (7 points), chosen by 58 or 15.5% of respondents.

4. The pet grooming shop personnel are neatly dressed and wear identification cards; the mean satisfaction score for this question was 5.81, with a standard deviation of ± 0.04 . In all, "agree" (6 points) was the most common

response, chosen by 241 or 64.4% of respondents, followed by "strongly agree" (7 points), chosen by 47 or 12.5% of respondents.

5. The pet grooming shop is equipped with a technologically advanced surveillance system; the mean satisfaction score for this question was 5.93, with a standard deviation of ± 0.04 . In all, "agree" (6 points) was the most common response, chosen by 237 or 63.2% of respondents, followed by "strongly agree" (7 points), chosen by 67 or 17.9% of respondents.

6. The pet grooming shop is equipped with technologically advanced door controls; the mean satisfaction score for this question was 5.73, with a standard deviation of ± 0.05 . In all, 180 respondents "agree" (6 points), accounting for 48.0%, followed by 106 respondents who "somewhat agree" (5 points), accounting for about 28.3%.

7. The overall environmental quality of the pet grooming shop is acceptable; the mean satisfaction score for this question was 5.81, with a standard deviation of ± 0.04 . In all, 192 respondents "agree" (6 points), accounting for 51.3%, followed by 83 respondents who "strongly agree" (7 points), and 83 who "somewhat agree" (5 points), accounting for about 22.1% each.

8. The pet grooming shop has a well-planned parking lot; the mean satisfaction score for this question was 5.25, with a standard deviation of ± 0.07 . In total, 145 respondents "agree" (6 points), accounting for 38.7%, followed by 108 who "somewhat agree" (5 points), accounting for about 28.8%.

9. The pet grooming shop has a pleasant temperature, humidity level and amount of sunlight; the mean satisfaction score for this question was 5.58, with a standard deviation of ± 0.06 . In total, 189 respondents "agree" (6 points), accounting for 50.4%, followed by 65 who "strongly agree" (7 points), accounting for about 17.3%.

10. The pet grooming shop has a poor ventilation and lighting design; the mean satisfaction score for this question was 3.82, with a standard deviation of ± 0.10 . In all, 70 respondents "strongly disagree" (1 point), accounting for 18.7%, followed by 68 who "agree" (6 points), accounting for about 18.1%.

TABLE II. PART 2: PLEASE EVALUATE YOUR ACTUAL IMPRESSION OF THE QUALITY OF SERVICE AND ENVIRONMENT OFFERED BY THE PET SHOP.

	Satisfaction Level	Respondents	Percentage	Average	SD
1. The pet grooming shop provides good drinking water facilities	Neutral	20	5.3	6.02	0.04
	Somewhat Agree	28	7.5		
	Agree	251	66.9		
	Strongly Agree	76	20.3		
	Total	375	100.0		
	Satisfaction Level	Respondents	Percentage	Average	SD
2. The pet grooming shop features a complete waste treatment system	Somewhat Disagree	5	1.3	5.86	0.04
	Neutral	22	5.9		
	Somewhat Agree	52	13.9		
	Agree	239	63.7		
	Strongly Agree	57	15.2		
	Total	375	100.0		

	Satisfaction Level	Respondents	Percentage	Average	SD
3. The pet grooming shop's green (eco-friendly) design is satisfactory	Somewhat Disagree	5	1.3	5.85	0.04
	Neutral	23	6.1		
	Somewhat Agree	53	14.1		
	Agree	236	63.0		
	Strongly Agree	58	15.5		
	Total	375	100.0		
	Satisfaction Level	Respondents	Percentage	Average	SD
4. The pet grooming shop personnel are neatly dressed and wear identification cards	Somewhat Disagree	5	1.3	5.81	0.04
	Neutral	23	6.1		
	Somewhat Agree	59	15.7		
	Agree	241	64.4		
	Strongly Agree	47	12.5		
	Total	375	100.0		
	Satisfaction Level	Respondents	Percentage	Average	SD
5. The pet grooming shop is equipped with a technologically advanced surveillance system	Somewhat Disagree	5	1.3	5.93	0.04
	Neutral	14	3.7		
	Somewhat Agree	52	13.9		
	Agree	237	63.2		
	Strongly Agree	67	17.9		
	Total	375	100.0		
	Satisfaction Level	Respondents	Percentage	Average	SD
6. The pet grooming shop is equipped with technologically advanced door controls	Disagree	5	1.3	5.73	0.05
	Neutral	20	5.3		
	Somewhat Agree	106	28.3		
	Agree	180	48.0		
	Strongly Agree	64	17.1		
	Total	375	100.0		
	Satisfaction Level	Respondents	Percentage	Average	SD
7. The overall environmental quality of the pet grooming shop is acceptable	Neutral	17	4.5	5.91	0.04
	Somewhat Agree	83	22.1		
	Agree	192	51.3		
	Strongly Agree	83	22.1		
	Total	375	100.0		
	Satisfaction Level	Respondents	Percentage	Average	SD
8. The pet grooming shop has a well-planned parking lot	Strongly Disagree	13	3.5	5.25	0.07
	Disagree	3	0.8		
	Somewhat Disagree	9	2.4		
	Neutral	55	14.7		
	Somewhat Agree	108	28.8		
	Agree	145	38.7		
	Strongly Agree	42	11.2		
	Total	375	100.0		
	Satisfaction Level	Respondents	Percentage	Average	SD
9. The pet grooming shop has pleasant temperature, humidity level and amount of sunlight	Disagree	6	1.6	5.58	0.06
	Somewhat Disagree	11	2.9		
	Neutral	47	12.5		
	Somewhat Agree	65	17.3		
	Agree	189	50.4		
	Strongly Agree	57	15.2		
	Total	375	100.0		

	Satisfaction Level	Respondents	Percentage	Average	SD
10. The pet grooming shop has poor ventilation and lighting designs	Strongly Disagree	70	18.7	3.82	0.10
	Disagree	47	12.5		
	Somewhat Disagree	51	13.6		
	Neutral	55	14.7		
	Somewhat Agree	50	13.3		
	Agree	68	18.1		
	Strongly Agree	34	9.1		
	Total	375	100.0		

Data source: Statistics from this study

C. Environmental Satisfaction Analysis on Questionnaire Survey of Pet Grooming Shop Customers in the Kaoping Area

Looking at the characteristics pet grooming shop customers the in Kaoping area, a questionnaire survey was conducted with a total of 375 valid respondents. After Part 3 (The customer is asked to please evaluate his/her overall feelings of satisfaction towards the environment and service of the pet salons) was conducted, the results came in as show in Table III based on a 7-point scale (7=Strongly Agree, 4=Neutral, and 1= Strongly Disagree).

The following is narrative analysis of questions 1 through 4 in Part 3, where the customer is asked to evaluate his/her overall feelings of satisfaction towards the environment and service of the pet salons:

1. When checking out, the bill provided by the store personnel is correct; the mean satisfaction score for this question was 6.11, with a standard deviation of ± 0.04 . In total, 240 respondents “agree” (6 points), accounting for 64.0%, followed by 97 who “strongly agree” (7 points), accounting for about 25.9%.

2. Most of the time before providing pet boarding/grooming services, the store personnel will clearly explain the details and charging methods; the mean satisfaction score for this question was 6.10, with a standard deviation of ± 0.04 . In all, 225 respondents “agree” (6 points), accounting for 60.0%, followed by 101 respondents who “strongly agree” (7 points), accounting for about 26.9%.

3. Considering service quality, the price I pay is reasonable; the mean satisfaction score for this question was 6.06, with a standard deviation of ± 0.04 . In total, 207 respondents “agree” (6 points), accounting for 55.2%, followed by 108 respondents who “strongly agree” (7 points), accounting for about 28.8%.

4. The prices set by most shops for pet grooming services and pet supplies are reasonable; the mean satisfaction score for this question was 5.94, with a standard deviation of ± 0.06 . In total, 201 respondents

“agree” (6 points), accounting for 53.6%, followed by 106 respondents who “strongly agree” (7 points), accounting for about 28.3%

5. Most pet shops can graciously accept customer feedback and make timely improvements; the mean satisfaction score for this question was 6.03, with a standard deviation of ± 0.05 . In total, 177 respondents “agree” (6 points), accounting for 47.2%, followed by 120 respondents who “strongly agree” (7 points), accounting for about 32.0%.

6. Each service item provided by the pet shop meets the expectations of the customer; the mean satisfaction score for this question was 6.09, with a standard deviation of ± 0.04 . In total, 195 respondents “agree” (6 points), accounting for 52.0%, followed by 116 respondents who “strongly agree” (7 points), accounting for about 30.9%.

7. Most pet shop personnel will help the customer select suitable products; the mean satisfaction score for this question was 5.86, with a standard deviation of ± 0.05 . In total, 188 respondents “agree” (6 points), accounting for 50.2%, followed by 92 respondents who “strongly agree” (7 points), accounting for about 24.5%.

8. Most pet shop personnel do not compel the customer to buy products; the mean satisfaction score for this question was 5.90, with a standard deviation of ± 0.06 . In total, 167 respondents “agree” (6 points), accounting for 44.5%, followed by 123 respondents who “strongly agree” (7 points), accounting for approximately 32.8%.

9. Service personnel will immediately respond to my complaints, requests or inquiries; the mean satisfaction score for this question was 5.99, with a standard deviation of ± 0.04 . In all, 182 respondents “agree” (6 points), accounting for 48.5%, followed by 102 who “strongly agree” (7 points), accounting for about 27.2%.

10. Most pet shop personnel have friendly and patient attitudes while providing services; the mean satisfaction score for this question was 6.15, with a standard deviation of ± 0.05 . In all, 158 respondents “strongly agree” (7 points), accounting for 42.1%, followed by 151 who “agree” (6 points), accounting for approximately 40.3%.

TABLE III. PART 3: PLEASE EVALUATE YOUR OVERALL FEELINGS OF SATISFACTION TOWARDS THE ENVIRONMENT AND SERVICE OF THE PET SHOP.

	Satisfaction Level	Respondents	Percentage	Average	SD
1. When checking out, the bill provided by the store personnel is correct	Neutral	16	4.2	6.11	0.04
	Somewhat Agree	22	5.9		
	Agree	240	64.0		
	Strongly Agree	97	25.9		
	Total	375	100.0		

2. Most of the time before providing pet boarding/grooming services, the store personnel will clearly explain the details and charging methods	Satisfaction Level	Respondents	Percentage	Average	SD
	Neutral	16	4.3		
	Somewhat Agree	33	8.8		
	Agree	225	60.0	6.10	0.04
	Strongly Agree	101	26.9		
	Total	375	100.0		
3. Considering service quality, the price I pay is reasonable	Satisfaction Level	Respondents	Percentage	Average	SD
	Neutral	24	6.4		
	Somewhat Agree	36	9.6		
	Agree	207	55.2	6.06	0.04
	Strongly Agree	108	28.8		
	Total	375	100.0		
4. The prices set by the most stores for the pet grooming services and pet supplies are reasonable	Satisfaction Level	Respondents	Percentage	Average	SD
	Strongly Disagree	7	1.8		
	Neutral	31	8.3		
	Somewhat Agree	30	8.0	5.94	0.06
	Agree	201	53.6		
	Strongly Agree	106	28.3		
5. Most pet shops can graciously accept customer feedback and make timely improvements	Satisfaction Level	Respondents	Percentage	Average	SD
	Neutral	29	7.7		
	Somewhat Agree	49	13.1		
	Agree	177	47.2	6.03	0.05
	Strongly Agree	120	32.0		
	Total	375	100.0		
6. Each service item provided by the pet store meets the expectations of the customer	Satisfaction Level	Respondents	Percentage	Average	SD
	Neutral	18	4.8		
	Somewhat Agree	46	12.3		
	Agree	195	52.0	6.09	0.04
	Strongly Agree	116	30.9		
	Total	375	100.0		
7. Most pet shop personnel will help the customer select suitable products	Satisfaction Level	Respondents	Percentage	Average	SD
	Strongly Disagree	7	1.9		
	Neutral	23	6.1		
	Somewhat Agree	65	17.3	5.86	0.05
	Agree	188	50.2		
	Strongly Agree	92	24.5		
8. Most pet shop personnel do not compel the customer to buy products	Satisfaction Level	Respondents	Percentage	Average	SD
	Strongly Disagree	7	1.9		
	Disagree	6	1.6		
	Neutral	30	8.0	5.90	0.06
	Somewhat Agree	42	11.2		
	Agree	167	44.5		
9. Service personnel will immediately respond to my complaints, requests or inquiries	Satisfaction Level	Respondents	Percentage	Average	SD
	Neutral	15	4.0		
	Somewhat Agree	76	20.3		
	Agree	182	48.5	5.99	0.04
	Strongly Agree	102	27.2		
	Total	375	100.0		

	Satisfaction Level	Respondents	Percentage	Average	SD
10. Most pet shop personnel have friendly and patient attitudes while providing service	Neutral	34	9.1	6.15	0.05
	Somewhat Agree	32	8.5		
	Agree	151	40.3		
	Strongly Agree	158	42.1		
	Total	375	100.0		

Data source: Statistics from this study

D. T-test Analysis of Consumer's Gender, Marital Status and Consumption Habits at Pet Grooming Shops in the Kaoping Area

In order to explore the consumer characteristics, a questionnaire survey was issued to pet grooming store customers in Kaohsiung City, and Pingtung City and County, with a total of 375 valid respondents. An independent sample T-test analysis was conducted using "gender", "marital status" and "consumption habits at pet grooming shops" as the variables (with the pet stores' service environment quality in Part 2 and the environment and service of the pet stores in Part 3). When the critical T value is greater than 1.96, $p < 0.05$; when greater than 2.58, $p < 0.01$; when greater than 3.29, $p < 0.001$, as shown in Tables IV and V.

When conducting the t-test analysis based on consumer gender, in Part 2, which addressed the quality of the service environment, all of the consumers answered that

they "somewhat agree" (5 points) or "agree" (6 points), meaning that $p > 0.05$ and there is no significant difference depending on gender. With respect to satisfaction towards the environment and service of the pet store in Part 3, all of the consumers answered that they "somewhat agree" (5 points) or "agree" (6 points), meaning that $p > 0.05$ and there is significant difference depending on gender.

In the analysis of the consumers based on marital status, in Part 2, which addressed the quality of the service environment, all of the consumers answered that they "somewhat agree" (5 points) or "agree" (6 points), thus $p > 0.05$ and there is no significant difference between married and unmarried. With respect to satisfaction towards the environment and service of the pet store in Part 3, all of the consumers answered that they "somewhat agree" (5 points) or "agree" (6 points), thus $p > 0.05$ and there is no significant difference between married and unmarried.

TABLE IV. T-TEST ANALYSIS OF "GENDER" AND CONSUMPTION HABITS

	Gender	Respondents	Average	SD	T	p
Part 2	Male	115	5.57	0.60	-.034	0.973
	Female	260	5.58	0.62		
Part 3	Male	115	5.92	0.71	-1.90	0.058
	Female	260	6.07	0.63		

Note: ** $p < 0.05$.

Data source: Statistics from this study

TABLE V. T-TEST ANALYSIS OF "MARITAL STATUS" AND CONSUMPTION HABITS

	Marital Status	Respondents	Average	SD	t	p
Part 2	Married	197	5.54	0.69	-1.27	0.206
	Unmarried	178	5.62	0.52		
Part 3	Married	197	6.09	0.72	2.12	0.035**
	Unmarried	178	5.95	0.57		

Note: ** $p < 0.05$.

Data source: Statistics from this study

E. One Way Anova on Questionnaire for Pet Grooming Store Consumers in the Kaoping Area

In order to explore the characteristics of pet grooming store consumers in the Kaoping area, a questionnaire survey was conducted on a total of 375 valid respondents. A one way ANOVA test was applied to test the independent variables of "age" and "residence" in relation to the pet store's service environment quality in Part 2 and the environment and service of the pet stores in Part 3 in order to determine whether there was significant differences in the mean of the data sets. When significant differences occurred, a post-hoc comparison was used to

analyze the relationship between the levels and dependent variables, as shown in Tables VI and VII.

According to the one way ANOVA on "age" and satisfaction towards the pet store's service environment quality for Part 2 and the environment and service of the pet stores for Part 3, the F test showed a significant difference ($p < 0.05$). In the range that included "neutral" (4 points), "somewhat agree" (5 points), and "agree" (6 points), the youth (19-30 years old), young adults (31-44 years old), and middle-aged (45-64 years old) clientele were mostly in the upper level of the range, answering that they "somewhat agree" (5 points), and "agree" (6 points). A difference occurred with the elderly (over 65 years old)

group, who tended to answer between “neutral” (4 points), “somewhat agree” (5 points).

When using the one way ANOVA to look at “residence” and satisfaction towards the pet store’s service environment quality (Part 2), the F test indicated no significant difference ($p>0.05$). Consumers who are residents of northern Taiwan, central Taiwan, southern Taiwan, eastern Taiwan, foreign residents, and residents of the offshore islands tended to answer that they “somewhat agree” (5 points), and “agree” (6 points).

When using one way ANOVA to look at “residence” and satisfaction towards the environment and service of the pet stores (Part 3), the F test indicated a significant difference ($p<0.05$). Consumers who are residents of northern Taiwan, central Taiwan, southern Taiwan, eastern Taiwan, foreign residents, and residents mostly were found to answer somewhat “somewhat agree” (5 points), and “agree” (6 points), which was different from residents of the offshore islands who tended to answer between “neutral” (4 points) or “somewhat agree” (5 points).

TABLE VI. ANALYSIS OF “AGE” AND CONSUMPTION HABITS

	Age	Respondents	Average	SD	F	p
Part 2	Youth (19~30 yrs.)	171	5.60a	0.49	4.16	0.006**
	Young Adults (31-44 yrs.)	113	5.53a	0.59		
	Middle Aged (45-64 yrs.)	82	5.65a	0.80		
	Elderly (65 yrs. and up)	9	4.93b	0.74		
Part 3	Youth (19~30 yrs.)	171	6.15a	0.46	13.69	0.000**
	Young Adults (31-44 yrs.)	113	5.97a	0.67		
	Middle Aged (45-64 yrs.)	82	5.98a	0.79		
	Elderly (65 yrs. and up)	9	4.82b	0.99		

Note: ** $p<0.05$.

Data source: Statistics from this study

TABLE VII. ANALYSIS OF “RESIDENCE” AND CONSUMPTION HABITS

	Residence	Respondents	Average	SD	F	p
Part 2	Northern Taiwan	61	5.63a	0.68	1.76	0.121
	Central Taiwan	76	5.61a	0.54		
	Southern Taiwan	209	5.55a	0.62		
	Eastern Taiwan	11	5.41a	0.41		
	Foreigners	14	5.81a	0.65		
	Offshore Islands	4	4.90b	0.00		
Part 3	Northern Taiwan	61	6.05b	0.63	4.28	0.001**
	Central Taiwan	76	6.02b	0.66		
	Southern Taiwan	209	6.00b	0.65		
	Eastern Taiwan	11	6.59a	0.52		
	Foreigners	14	6.11ab	0.71		
	Offshore Islands	4	4.90c	0.00		

Note: ** $p<0.05$.

Data source: Statistics from this study

F. Pearson Correlation Analysis on Questionnaire for Pet Grooming Shop Consumers in the Kaoping Area

In this study, Pearson’s r was used to analyze the correlation between the variables of each item. The scope of variation ranged from -1 to 1. When the r coefficient is 1, it means that X and Y can be described well using straight line equations. In the test, all data points fell on a straight line, and Y increased together with X , indicating that the relationship between the two variables is positive.

The study explored the linear correlation between each item’s dimensional topic in order to understand whether

there is significant relationships between the variables, as shown in Table VIII. In the results of the analysis, the customers’ actual feelings towards the service environment quality of the pet stores (Part 2) were evaluated, as were their overall feelings towards the environment and service of the pet stores (Part 3). The coefficient of correlation between the variables of the two major dimensions was 0.51, a very moderate relationship and indicative of a significant positive correlation ($p<0.001$).

TABLE VIII. CORRELATION ANALYSIS OF THE DIMENSIONAL TOPIC VARIABLES

Dimensional Topic	Part 2: The customer is asked to please evaluate his/her actual feelings towards the quality of the pet store's service environments	Part 3: The customer is asked to please evaluate this/her overall feeling of satisfaction towards the environments and services of the pet stores.
Part 2: The customer is asked to please evaluate his/her actual feelings towards the quality of the pet stores' service environments.	1.00	-
Part 3: The customer is asked to please evaluate his/her overall feeling of satisfaction towards the environments and services of the pet stores.	0.51***	1.00

Note:***p<0.001.

Data source: Statistics from this study

G. Regression Analysis on Questionnaire for Pet Grooming Store Consumers in the Kaoping Area

This study applied regression analysis to explore Part 2 on the customer's actual feelings towards the quality of the pet stores' service environments and Part 3 on the customer's overall feelings of satisfaction towards the environments and services of the pet stores. The analysis was used to determine whether there is a significant effect on relationship between the independent and dependent

variables, and if so, whether there is a causal relationship, as shown in Table IX.

Hypothesis 1 of this study: In the regression analysis, the overall feelings of satisfaction towards pet store environment and service will have a positive influence on the actual feelings towards service environment quality of pet stores. In the β test analysis ($F=128.84$, $R^2=0.26$), indicating a positive influence ($p<0.001$), thus hypothesis 1 holds.

TABLE IX. REGRESSION ANALYSIS OF THE DIMENSIONAL TOPIC VARIABLES

Hyp1 IV\DV	Actual feeling towards service environment quality of pet stores
Overall feelings of satisfaction towards pet store environments and services	0.51***
R ²	0.26
F	128.84***
	Hyp 1 Established

Note:***p<0.001.

Data source: Statistics from this study

H. Monitoring and Analysis of Indoor Noise in Pet Grooming Shops in Kaoping Area

In March of 2022, noise levels in pet grooming shops in the Kaoping area were analyzed over a five working day period (Monday to Friday), as shown in Fig. 1 Over this period, in the mornings the noise levels were monitored to be between 70 and 80 dB, with the majority registering at 77 dB. The overall average value for mornings was 75.32 ± 2.85 dB. In the afternoons, the noise levels were monitored to be 80 and 98 dB. with the majority registering at 90 dB. The overall average value for afternoons was 88.73 ± 3.76 dB.

In March of 2022, noise levels in pet grooming shops in the Kaoping Area were analyzed over the weekend (Saturday and Sunday), as shown in Fig. 2 Over this period, in the mornings the noise levels were monitored to be between 73 and 79 dB, with the majority registering at 73 dB. The overall average value for mornings was

75.25 ± 2.05 dB. In the afternoons, the noise levels were monitored to be 85 and 98 dB, with the majority registering at 87 dB. The overall average value for afternoons was 90.13 ± 4.32 dB.

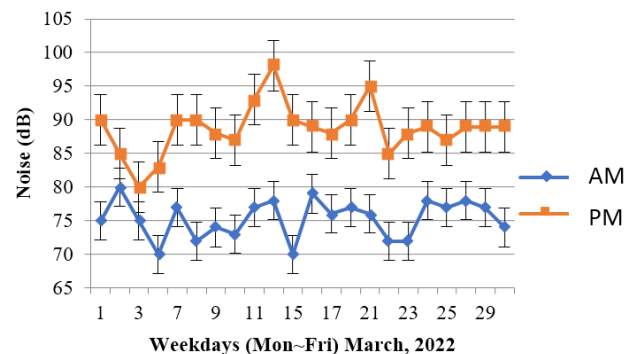


Figure 1. Monitoring noise levels at pet grooming shops in the Kaoping Area on workdays in March, 2022

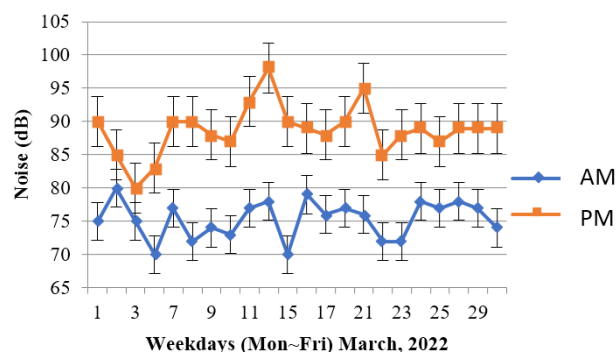


Figure 2. Monitoring noise levels at pet grooming shops in the Kaoping Area on weekends in March, 2022

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

In Part 1, a questionnaire survey was conducted on customers of pet grooming shops in the Kaoping area, in order to (1) understand the environmental quality and (2) discuss factors which influence the customer's level of satisfaction towards the environmental quality of pet grooming shops.

Cronbach's alpha coefficient for the questionnaire in this study was measured at 0.78~0.95, indicating a high reliability. Twenty questions were used to analyze the environmental quality of pet grooming shops and satisfaction towards the environmental quality. Satisfaction levels were situated between somewhat "somewhat agree" (5 points) and "agree" (6 points), demonstrating that the surveyed understand the environmental quality of pet grooming shops in Kaoping area and are satisfied with the environmental quality of the shops. Also, the correlation between the dimensional topic variables for (1) the customers' actual feelings towards the quality of the service environment and (2) their overall feelings towards the environment and service of the pet stores were measured at 0.51, indicating a significant correlation ($p < 0.001$).

The second part monitored and analyzed indoor noise levels at the pet grooming shops in the Kaoping area during workdays (Mon to Fri) and weekends (Sat/Sun.). Noise levels on workday registered between 70-80 dB in the mornings and 80-98 dB in the afternoons. On Saturdays and Sundays, levels registered between 73-79 dB in the mornings and 85-98 dB in the afternoons. The results show no significant difference between the workday and weekend noise levels.

B. Recommendations

It is hoped that the results of this study can make a contribution to pet grooming businesses or related government agriculture administrations.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Pei-Ling Chung set the framework for the entire article ; Chin-Yuan Hsiao designed and conducted the survey and writing; Yu-Ru Lee is involved in project administration and reviewing; all authors had approved the final version.

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