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Predicting Taiwanese adoption website members' intentions regarding on-line dog adoptions

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This study conducted an online survey of 292 Taiwanese who were members of animal adoption websites. About one-third of the respondents indicated they had adopted stray dogs while more than half expressed willingness to adopt dogs from public animal shelters. Results showed that respondents' general intention to adopt dogs was related to their attitude toward general adoption, gender and religion. The respondents' specific intention to adopt dogs online was influenced by attitude toward online adoption, subjective norm (that is, opinions from friends and relatives regarding online adoption), and perceived behavioral control (that is, perceived personal ability and resources to go through the online adoption process). Based on these findings, this study suggested that adoption websites should promote the idea that adoption is the best arrangement for abandoned dogs and will bring happiness to the adopter. Public shelters, on the other hand, should improve their websites, public relations, and marketing. They should also consider sorting their dogs into "health categories," so people can easily select the dogs they want.

Key words: Theory of planned behavior, animal adoption websites, adopt dogs.

INTRODUCTION

Estimates from the Council of Agriculture (COA, 2004) indicated around 670 thousand stray dogs in Taiwan in 1999, dropping to 179 thousand by 2004 (COA, 2004). Unfortunately, this change was not due to decrease in the incidence of dog abandonment. In fact, owing to the weak economy in Taiwan, many dog owners have abandoned their dogs in recent years (Love Animal Organization, 2008). The number of stray dogs declined mainly because the government has imposed capturing and euthanizing to lessen the number of stray dogs (Huang, 2007).

According to the COA (2008), an average of 73% of captured dogs in Taiwanese public shelters was euthanized between 2005 and 2008, with another 14% died naturally. However, this statistic on "natural death" may be misleading, because both Taiwanese and international human societies had discovered that some public shelters in Taiwan maltreated animals (Weng et al., 2006). The dogs' fate may improve if there is more adoption. Sadly, only a low percentage of dogs in public shelters are adopted (Hsu et al., 2003; Teng, 2004). For instance, only 1% of the stray dogs kept in a public shelter of Taipei, the capital of Taiwan, were adopted (Teng, 2003). A recent survey (Weng et al., 2006) of 387 Taiwanese residents indicates only 5% of Taiwanese were willing to adopt animals from shelters while 68% were not satisfied with the services shelters provide. The most common motives for adopting were to raise lovable puppies and dogs of popular breeds (Teng, 2004). In other words, few Taiwanese have adopted dogs from public shelters out of humane reasons.

To raise people's concern of animal welfare and to promote adoption, some Taiwanese animal organizations and dog lovers have built websites to discourage abandonment, offer more adoption opportunities, and teach people how to raise pets properly. Since these websites are very informative, user-friendly and allow people to share know-how instantly, they are attracting more and more people to visit them and adopt dogs (Chen, 2003; Huang, 2006; Wu, 2005). Today there are about 30 large-scale adoption websites in Taiwan, each of which attractting over 200 registered members. This kind of websites will probably be more influential in the future, because the prevalence of Taiwanese household Internet access is already above 71% (Institute for Information Industry, 2007).

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Although such websites could become a powerful means to promote "adoption instead of purchase" and lessen the number of stray dogs and euthanized dogs, no research on online adoption of dogs has been done in Taiwan. On the other hand, just as there are dozens of reasons deterring people to shop online (for example, products without photographs and the intrusion of privacy; see Ottaway et al., 2003), there must be many factors affecting people's intention to adopt dogs via the Internet. This study aims is to assess people' intention to do and find the factors affecting this intention. Also, this work has chosen members of adoption websites as the target population, assuming that they are more likely to be persuaded to adopt dogs online than other people would be.

To measure people's adoption intentions, this study conducted a survey with Ajzen's (1988, 1991) theory of planned behavior (TPB) as its basic framework. The TPB has been widely applied in studies of human action, including environmental and pet-keeping research in Taiwan (Chu and Chiu, 2003; Lam, 1999; Lam and Wu, 2008). Ajzen (1991) proposed that people's behavior is closely linked to their behavioral intention, which is determined by three variables. The variables are attitude towards the behavior, subjective norm, and perceived behavioral control. The more a person is favorable to the behavior, or wants to comply with others, who are favorable to it, the stronger the intention will be. If people think that they have enough capability or resources to enact a behavior, they will also be more likely to act. Thus, the TPB predicts that people would be more likely to adopt dogs online if either of the below is true: (a) they believe that adopting dogs online is good; (b) their friends or relatives think that they should adopt dogs online and they care about this opinion; or (c) they believe online adoption is easy and affordable.

MATERIALS AND METHODS

Respondents

From October to November 2008, this study posted invitation for survey participation on the ten largest adoption websites in Taiwan. Three hundred and twenty-six people signed up and 292 completed the questionnaire. All these 292 people had kept dogs within the last two years, but most of them had not adopted dogs. The present study considered these 292 people as valid respondents.

The questionnaire

The questionnaire consisted of three parts: adoption experience and motives, psychological variables regarding dog adoption, and demographic characteristics. For the first part, this study asked respondents if they ever adopted any animal (not necessary dogs) and why they did so. For those who had adopted, the questionnaire further asked if they had adopted dogs via the internet. This study then asked all respondents if they thought about adopting cats or dogs in public shelters and why, or why not.

In the second part, this study assessed the respondents' attitude toward two types of behavior, namely, general adoption (through shelter or any other channels, including websites) and online adoption. Regarding attitude toward general adoption, this study asked respondents the possibilities of eight outcomes of adopting dogs. The outcomes were: reducing the suffering of abandoned dogs; making proper arrangements for dogs; bringing happiness to oneself; saving money; reducing the number of stray dogs; reducing the social cost of stray dogs; lowering the possibility of stray dogs harming other wild animals; and reducing the chance of stray dogs disrupting the ecology. The study also asked respondents how important these outcomes were to them. About attitude toward online adoption, this study consulted Ottaway et al. (2003), Monsuwe et al. (2004) studies and composed six questions about the possibilities of outcomes of trying to adopt dogs online. The outcomes were: leak of personal data; difficulty of finding a preferred dog; no chance to interact with the dogs face-to-face; troubles due to complicated adoption procedures; time saved on transportation (compared with other adoption or purchase methods), and the difficulty of returning the dog after adoption. Similar questions were repeated to inquire about the importance of these outcomes.

On the subjective norm, the questionnaire asked respondents whether their relatives and friends (including e-pals) would approve of their adopting dogs via the Internet. A further question asked if respondents would yield to the opinions of these people. As for perceived behavioral control, the questionnaire used five questions to measure how difficult or convenient respondents expected adoption to be. For instance: "Is there any technical difficulty while adopting dogs online?" "Do you know where to find online information about adoption?" All the above psychological variables were assessed by 7-point scales, such as from unlikely (1) to very likely (7) or from not important at all (1) to very important (7).

About behavioral intention, this study asked: "Would you like to buy a dog within a year?" "Would you like to adopt a dog within a year?" and "Would you like to adopt a dog through the internet within a year?" Respondents answered these questions on 7-point scales ranging from "Not at all" to "Very much." Finally, this study asked respondents whether they would put their dogs up for online adoption if they did not want to keep them.

In the last part of the questionnaire, this study posed questions on gender, age, educational background, religious belief, monthly disposable income, and participation in animal protection groups. Past studies (Camilla et al., 2007; Herzog, 2007; Hsu et al., 2003; Karayanni, 2003; Poss and Bader, 2007; Preylo and Arikawa, 2008; Weng et al., 2006) suggest that these demographic variables might affect attitudes and behaviors regarding animal protection or online shopping. For instance, Herzog's review study found that women show friendlier attitudes and behaviors to animals than men do (for example, attitudes toward the use of animals and involvement in animal protection).

Transformation of variables

To simplify the prediction model of adoption intentions, this study created five psychological variables by summarizing their corresponding items. For the variable attitude toward general adoption, the possibility of each outcome was multiplied by the importance of that consequence, and the products were then averaged to yield the variable. The variable attitude toward online adoption was formed similarly. For subjective norm, the beliefs about social approval were multiplied by the motivation to comply with relatives or friends, and the products were then averaged. For perceived behavioral control, scores on the five items about convenience of online adoption were averaged. Finally, behavioral intention was formed by averaging the three intention items. The transformation procedures are common in studies that apply the theory of planned behavior. However, for ease of comparison and discussion, the two attitude variables and subjective norm were further transformed into

scores ranging from 1 to 7. In this way, all psychological variables were on the same scale.

RESULTS

Demographic characteristics of respondents

Among the 292 respondents, females (61%) outnumbered males (39%) and the age range for the majority (80%) was 21 to 30, while 12% ranged from 31 to 40. Respondents were mostly college or university graduates (64%) while some had master or doctoral degrees (28%). The income for 50% of respondents was below NTD 5,000 while 29% had NTD 5,000 to 10,000 (10,000 New Taiwan Dollar is about USD 300). 49% of respondents were irreligious and 22% were Buddhists, and 23% of respondents had been members of animal protection organizations.

Compared with surveys of public opinions about stray dogs with large random samples of Taiwanese (CIA, 2002; Fei, 1999; Hsu et al., 2003), the current sample had a higher proportion of females, young adults (age between 21 and 40), college or university graduates, and irreligious. The majority of respondents in other surveys were followers of Taiwanese folk beliefs, which is a mixture of Confucianism, Buddhism and Taoism.

Proportion of and motives for adoption

Eighty-seven respondents (30%) revealed that they had adopted dogs with the following motives: adoption instead of purchasing (48%), money saving and avoid buying over-bred dogs from pet shops (13%). Two hundred and five (70%) respondents have kept cats or dogs but not through adoption. Among these later respondents, 30% said that they got these pets from friends. Some respondents also mentioned pet shops and aquarium shops as sources of their pets.

Incentives and disincentives to adopt dogs via the internet

All respondents who had adopted dogs had also adopted via the internet. Among the adopters, 31% said the convenience of online adoption was the biggest incentive for them. Other adopters mentioned the following incentives: the internet offers rich information (22%), there are plenty of dogs to adopt online (22%), and adoption websites have credibility (18%). A few (7%) mentioned that adoption online saves money. The non adopters said that what deterred them were: not knowing where to find adoption websites (52% non adopters said so), plenty of stray dogs were available on the street (15%) (the source of dog acquisition among them), adopting dogs online was inconvenient (14%), no chance to interact with the

dog before adoption (9%), and the internet was not secure enough (8%). The finding about the availability of stray dogs echoes one finding of Hsu et al. (2003) study, which revealed that 23% of dogs raised by Taiwanese were picked up from the street.

Willingness to consider adopting cats or dogs from public shelters

Of all respondents, 56% said they would consider adopting cats or dogs from public shelters. Among these respondents, 60% got information about public shelters from the internet. Other channels included word-of-mouth (13%), the news media (9%), and related animal organizations (8%). Only 4% of respondents got information direct from shelters.

As for those who would not think about adopting from public shelters, the most mentioned deterrents were: beliefs that cats and dogs from animal shelters are unhealthy (24%), unfamiliarity with adoption procedures (16%), and not knowing where the shelters are (16%). A few respondents (8%) also answered that they did not know public shelters offer adoption services.

Attitude toward general adoption

According to the ratings of respondents, the most possible outcome of adoption was that dogs could receive proper arrangements (M = 6.33), and the most unlikely outcome was keeping stray dogs from harming wild animals (M = 5.75). Other outcomes, in descending order of possibilities, were: lessening the suffering of abandoned dogs (M = 6.32); saving more money than buying a dog (M = 6.29); bringing happiness to oneself (M = 6.27); reducing the number of stray dogs (M = 6.08); reducing the social cost of stray dogs (M = 6.06); and keeping stray dogs from disrupting the ecology (M = 5.76). The mean ratings on all outcomes ranged between 5.75 and 6.33, showing that the respondents regarded all outcomes as possible or very possible.

This study further investigated the importance of these outcomes in respondents' decision to adopt dogs. Results show that making proper arrangements for dogs (M = 6.20) and bringing happiness to oneself (M = 6.05) were the most considered outcomes, whereas saving money (M = 5.48) and avoid harming other wild animals (M = 5.45) were the least considered

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Attitude toward online adoption

When they were asked about possible outcomes of trying to adopt dogs online, respondents felt that online adoption saves more transportation time than other adoption methods (M = 4.61). Most respondents also regarded

negative outcomes as unlikely. For instance, they disagreed that online interaction with dogs is restricted to photographs or videos (M = 2.69); dogs cannot be returned or exchanged (M = 2.84); it would be difficult to find a dog one likes (M = 3.22); online adoption procedures are complex (M = 3.26); and adoption websites may disclose private information (M = 3.39).

This work further examined the importance of these outcomes in respondents' decision to adopt dogs online. Results showed that the most considered outcomes were interaction with the dog (M = 5.91) and whether one could find a likable dog (M = 5.74); whereas the least considered were the saving of transportation time (M = 5.11) and whether the adopted dog could be returned or exchanged (M = 4.99).

Subjective norm and perceived behavioral control

Respondents felt that their friends would be more delighted to see them adopt dogs online (M = 5.04) than family members (M = 4.19). But respondents were more concerned about their family members' attitude (M = 4.49) than about their friends' (M = 3.05).

As for perceived behavioral control (PBC), most respondents believed they had enough money for adoption, enough time to search online, and knowledge about finding informative websites. Computer skill (M = 3.58) was the only PBC item with an average score below four, showing that respondents were somewhat concerned about this. Otherwise, respondents felt self-confident about online adoption.

Intention to adopt

Respondents revealed that within a year, they would want to adopt a dog online (M=5.49) rather than from shelters (M=5.01) or buying (M=3.13). Besides, 56% of them said that if they were unable to raise their dogs in the future, they would let people adopt their dogs online. They would like to do so because they thought it is easy to find an adopter or reliable person, and the Internet is a convenient and fast means to do so.

Intention to give away unwanted dogs

One hundred and sixty-two respondents (55%) said they would put their dogs up for online adoption if they did not want to keep them. They would do so because they thought the websites were convenient and efficient, and they could easily find a trustworthy adopter via the Internet.

Ninety-seven respondents (33%) answered that they would not give away their dogs via the internet. This was because they supposed it would be hard to find trustworthy adopters online, or that they were unfamiliar with online adoption procedures. Ten respondents did not explain why they would not give away their dogs via the internet. Only 23 respondents (18%) asserted that they would never abandon or give away their dogs.

Prediction of adoption intentions

This study applied a 2-step linear hierarchical regression analysis to predict intentions toward general adoption and online adoption. For each intention, the first step included psychological variables as predictors and the second step further included all demographical variables as predictors. This was to see if demographical variables could improve the prediction of intention beyond that afforded by the psychological variables.

For general adoption the demographical variables as a whole made significant improvement to the prediction. As Table 1 shows, attitude toward general adoption, gender, and religious belief were all significant ($|\beta|s \geq .13$, $ps < .05$). That means the more positive the attitude, the higher the intention. In addition, females were more willing to adopt than males and respondents with folk beliefs were less willing than irreligious respondents. In predicting online-adoption intention, attitude toward general adoption and subjective norm were significant ($\beta s \geq 0.16$, $ps < 0.01$; Table 2).

Perceived behavioral control was related to the intention with marginal significance ($\beta = 0.12$, $p = 0.06$).

This showed that respondents who believed it was easy and convenient to adopt dogs online, as well as those who had positive attitude toward adoptions in general, were more willing to adopt dogs via the internet. Respondents would also be more likely to adopt dogs online if they believed that their family or friends would approve it. When the analysis further included all the demographic variables as predictors, the variance explained (R^2) rose from 0.11 - 0.15. This improvement in prediction, however, was insignificant ($p = 0.17$). For parsimony of the prediction model, Table 2 omitted the results of this second step regression.

DISCUSSION

As mentioned previously, this study has a higher proportion of females, young adults (the age range was 21 - 30), college or university graduates, and irreligious people than studies with large random samples. Such characteristics in gender, age and education are congruent with the observation about the adoption websites. This demographical composition is probably because of that young adults use the internet more often than other ages, and females are—as suggested by the present results—more willing to adopt dogs. Also, young adults in Taiwan are more educated and likely to be irreligious than their earlier generations. The sample composition here thus may be a genuine representation of adoption website members in

Table 1. Prediction of intention to adopt dogs (N = 282).

Variable	B	SE$_B$	β
Constant	2.93	0.84	--
Attitude to adopt	0.58	0.11	0.31***
Male vs. female	-0.42	0.19	-0.13*
Age	-0.02	0.02	-0.07
High school or college vs. graduate school	-0.22	0.22	-0.06
Membership in animal group	0.13	0.22	0.03
Folk reliefs vs. irreligious	-1.33	0.34	-0.23***
Buddhist vs. irreligious	0.24	0.23	0.06
Taoist vs. irreligious	-0.26	0.34	-0.05
Protestantism vs. irreligious	0.08	0.33	0.02
5,000-10,000 vs. below 5,000	0.24	0.22	0.07
Above 10,000 vs. below 5,000	0.003	0.27	0.001

*p <0.05. *** p <0.001.

Table 2. Prediction of intention to adopt dogs via the Internet (N = 282).

Variable	B	SE$_B$	β
Constant	2.60	0.85	--
Attitude to adopt	0.39	0.11	0.22***
Attitude to adopt via Internet	-0.25	0.16	-0.09
Subjective norm	0.23	0.08	0.16**
Perceived behavior control	0.15	0.08	0.12†

†p =0.06. ** p <0.01. *** p <0.001.

Taiwan, rather than a bias. Nevertheless, such composition also sets a limitation to the present study. Namely, the inferences drawn from this study may only be generalizable to adoption website members and young adults, but not to the general public. So may some of the discussion and suggestions.

Willingness to consider adopting dogs from public shelters

As reported in the previous section, 56% of respondents (all were dog owners) in the present study would consider adopting dogs from public shelters. This proportion is much higher than those "suggested" by Hsu et al. (2003) and Weng et al. (2006). Hsu et al. (2003) surveyed a random sample of 459 dog owners in Taiwan and found that around 9% of them had adopted dogs from shelters. Weng et al. (2006) surveyed a convenience sample of 43 dog owners in Taipei and revealed 8% of them had adopted dogs from shelters. Part of the inconsistency between these two studies and the present one may be due to sample differences.

The main reason of the inconsistency, however, is probably "saying is easier than doing." Whereas Hsu et al. (2003) and Weng et al. (2006) asked people where did

they get their dogs, this study asked people who had not adopted before whether they would consider adopting cats or dogs from public shelters. Many of these latter respondents may not end up adopting dogs from shelter. Some of them may even not adopt any dogs. One interesting question is how to market sheltered dogs for these potential adopters and provide the necessary facilitators. The findings below may provide some cues to the answer.

What makes people willing to adopt and adopt online

The present results showed that attitude toward general adoption had a positive effect on the intention to adopt. Within the attitude components, the most important motives were to make proper arrangements for dogs and make oneself happy. Interestingly, attitude toward online adoption had no significant effect on the intention to adopt online. This suggests that when considering whether to adopt a dog online, people care more about the general considerations regarding adoption than about the specific concerns regarding online adoption, such as leak of personal data and whether the dog can be returned.

The opinions of family members and friends may also have an influence, because the results suggest that

people would be more likely to adopt dogs online if they expect their family or friends will approve it. Perceived behavioral control (PBC), on the other hand, had only a marginally significant effect. This was partly because the respondents' PBC scores were mainly high. In fact, many respondents believed they had enough internet ability, time, money to process adoption online. Presumably, this is because the respondents were frequent web users and 30% of them had adopted via the internet before. The effect of PBC on people in general remains a question for future research. As for the demographical predictors, gender and religion had significant impacts on the intention to adopt. Females were more willing to adopt dogs than males do, and this is consistent with past findings that indicate females are friendlier to animals (Fielding et al., 2002; Herzog, 2007; Signal and Taylor, 2005; Pagani et al., 2007).

Regarding religion, this study found that people without religion were more willing to adopt than those who held folk beliefs. A closer look at the data reveals that among all respondents, people with folk beliefs were least willing to adopt—either online or in general. Whether this is because of the contents of Taiwanese folk beliefs or is a result of the particular sample (which had only 24 people with folk beliefs) remains to be studied. Given that most studies of the relationship between religion and attitude toward animals have focused on Western religions (Serpell, 2004), research in the effect of Eastern religions is not only interesting but also in demand.

RECOMMENDATIONS FOR ADOPTION WEBSITES

Years ago, Hsu et al. (2003) argued that providing dog owners with greater access to proper information could help reduce dog abandonment in Taiwan. Nowadays, most adoption websites in Taiwan are already providing updated information on animal protection and dog-raising skills. This study found that many young and well-educated people feel confident about online adoption and recognize the websites' service and function. Adoption websites should continue to keep these people interested in adoption and issues related to animal welfares.

For strategies, the websites should stress that adoption is the best arrangement for abandoned dogs and will bring happiness to the adopter. The websites should also encourage their members to persuade their friends to adopt dogs, or visit the websites at least. These members will be very helpful if they could attest that adoption online is easy, convenient, and safe.

Apart from persuading people to adopt dogs, the websites should also help people to give away their unwanted dogs. As the present results suggest, many people are willing to give away their dogs online when they do not want to keep them anymore. The websites should thus be more proactive in marketing themselves as a platform for adoption. For instance, they can ask

their members to encourage their acquaintances who have unwanted dogs to use the websites.

RECOMMENDATIONS FOR RELEVANT AUTHORITIES

The present results suggest that many people have not thought about adopting dogs from public animal shelters. One probable account for this is that many functions (for example online discussion) of public shelter websites are obsolescent, unattractive and inferior to those in the websites of animal protection groups. Another possible reason is poor marketing, because people are ignorant of the shelters' locations, the adoption procedures, and the services available at the shelters. However, the most mentioned concern was that dogs in the shelters were sick.

Public shelters should thus improve their websites, public relations, and marketing. They should also consider sorting their dogs into several "health categories," so people can easily select the type of dogs they want. For people who are willing to adopt unhealthy dogs, the government should provide follow-up aid, such as free vaccines or medical subsidy for the dogs.

Finally, the government should transfer some dogs from shelters to animal organizations and subsidize these NGOs. This will not only unburden crowded shelters and reduce euthanasia, but also improve the dogs' living conditions and increase the chance of adoption.

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