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Demographic and Perception Studies of a Mobile Application among Dog Breeders and Owners

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ABSTRACT

Information and Communication Technology is, today, an integral part of our daily world. However, despite the wide use of this technology elsewhere, it has only recently been adopted for engagement in veterinary services, especially in India. It was in this context that an application for dog breeders and owners was developed, and their perceptions about various aspects of the application were assessed, as well as the possible use and impact that veterinary applications could have in improving veterinarian client management. The present investigation was exploratory in nature and conducted with dog breeders and owners from four districts of Kerala. After due consultation with prominent veterinarians and scientists, prioritisation of the contents was followed. The contents were vetted, compiled, and the data was fed to a native mobile application. A sample (n = 40) of dog breeders/owners was chosen from the four districts. Along with telephonic follow-ups, APK (Android Package) and Google form questionnaires were mailed to the dog owners/ breeders. The breeders/owners were mostly young, educated males who had access to and were comfortable using a smartphone. The 'VetCan' mobile application was mainly reported to have an average engagement, was highly functional, possessed pleasant aesthetics, and contained highly informational content.

Keywords: *Dog breeder; Mobile phone; Android Package file; perception study; Kerala*

INTRODUCTION

Mobile communication technology has become an omnipresent feature in all sectors of our lives. This tool has been used for quite some time to enhance communication between people and, in recent times, for monitoring remote events as well as human health and performance. While the emphasis of research has been on communication between people, trials on the use of this technology to enhance interaction between veterinarians and animal owners have of late gained importance. With an increase from 14.5

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million pets in 2014 to 22.1 million in 2018, India's pet count has grown at a CAGR (Compound Annual Growth Rate) of 11.0 per cent. The pet population is projected to increase at a 9.6 per cent CAGR for the period 2019 to 2023. Pet dogs represented 88.0 per cent of the pet population in 2018, with a CAGR of 11.4 per cent between 2014 and 2018 and this is expected to grow at a CAGR of 10.0 per cent, attaining 31.4 million by 2023 (Government of Canada, 2019).

The pet industry in Kerala has also witnessed significant expansion over the last few decades, as evidenced by the report of the Twentieth Livestock Census that reported that there were 8,36,270 pet dogs in Kerala (The Hindu, 2021). However, there are comparatively few full-time professional dog breeders in the state, and most of the dog owners/breeders are not fully into the business of dog breeding. There has also been a concurrent growth in various pet accessories and many mobile applications have also been combined with wearables, e.g. WagTag. All these developments have improved the overall management and handling of our canine companions (Weiss et al., 2013). There is a demand from dog breeders to have access to correct and timely information. However, use of smartphone applications can help in assisting breeders and dog owners with scheduling appointments with veterinarians, making the owners aware of first aid to be adhered to in an emergency, as well as general guidelines for the upkeep of the animal. It is in this context that the development of mobile applications for canine management and health care assumes significance. Such mobile applications are important in that they can serve as a repository of information for breeders, thus saving time, money, and effort.

In light of the concerns mentioned, the present study was undertaken to design a mobile application,'VetCan'. The application was also tested among dog breeders, and this paper discusses their perceptions of the application as well.

METHODOLOGY

'VetCan' was prepared along the lines of the Mobile Application "Best Practices Model" (Flora et al. 2014) with slight modifications. Content development was initiated by identifying the potential broad domains for inclusion in the application. The broad areas to be included in the application were arrived at through discussions with veterinarians, dog breeders and scientists. The three broad areas identified were diseases, management and other important features of the application that the respondents would like to be included in the application. A list of commonly occurring canine diseases, areas of management of canines, and broad features that should be included in the

application were prepared and sent for vetting to five veterinarians and scientists. These domains were carefully vetted by five scientists and five veterinarians who rated the contents on a three point continuum *viz*., marginally important, moderately important, and extremely important with scores of 1, 2, and 3 respectively based on which the domains were prioritised based on their importance and relevance in day-to-day practises (Wentling, 1993). The mean of means for each category was calculated, and from among the categories, those items which had a higher score than the average were selected to be included in the mobile application. Content for the mobile application was developed after a thorough review of relevant literature and discussion with experts in the areas, after which the developed content was sent to five scientists and five veterinarians for assessment in order to ensure that the mobile application was valid (Bernard, 2017; Seidler, 1974). After redressing the issues, the application was developed with the help of software experts, incorporating the technical information. The app encompassed a user interface that was relatively user friendly.

The quality of the application, also referred to as 'App quality", was assessed across four domains, *viz*., engagement, functionality, aesthetics, and information using the Mobile App Rating Scale (Stoyanov et al. 2015). Once the mobile application was rolled out as an Android Package (APK) file, it was sent to a non-sample group comprising ten veterinarians for pre-testing the scale. The final questionnaire that included demographic details of the respondents and the scale to assess the quality of the application, was then sent to an accidental sample of ten dog breeders each from four districts of Kerala *viz*., Thrissur, Kollam, Ernakulam, and Thiruvananthapuram, that had the highest canine population (Source: Department of Animal Husbandry, Kerala).

FINDINGS AND DISCUSSION

Demographic profile of dog breeders and owners

A notable male dominant presence in the dog breeding / dog owners scene was evident from the fact that eight out of ten breeders studied were male and just two out of ten were women. This finding was in stark contrast to the figure recorded in China, that 65 per cent of dog owners were women (Huang and Chueh, 2020). Similarly, it was also reported that dog owners in the studied areas of Italy were most likely to be women (Carvelli et al. 2020). Also, 40 per cent of the dog owners surveyed were males, in New Zealand (Flint et al. 2010).

It was realised that 65 per cent of the breeders fell into the category designated as young, while just over one-fifth (22.5 per cent) were middle-aged, and older breeders comprised 5 per cent of the studied sample. These findings were consistent with those

found among Brazilian dog owners, where the age category of 20 years or more was significantly associated with the number of dogs owned (Martins et al., 2013).The conclusions of the present study were further endorsed by reports that pet owners in New Zealand were most likely to be younger (Fraser et al., 2020) and studies from China reported that over 57 per cent of pet owners were in the age groups of 11 to 20, 21 to 30, and 31 to 40 years of age (Huang and Chueh, 2020).

It was also clear from the results of this study that 50 per cent of the breeders were married and 50 per cent were unmarried. Findings comparable to those observed in this study were seen in New Zealand where dog owners were most likely to be parents (Fraser et al., 2020) and also in the findings from Italy, where dog breeders were most likely to be married or in long term committed relationships (Carvelli et al., 2020). Similar findings of dogs being more likely to be associated with family settings were endorsed by the report from the United States, where it was observed that family households remained more likely to own dogs than non-families and this tendency was higher in larger families as well (A.V.M.A, 2018). Regarding the educational qualifications of dog breeders in this study, it was observed that forty-five per cent of dog breeders had completed graduation while, 22.5 per cent had a qualification of plus two or its equivalent and 22.5 per cent had an educational status of just clearing the School Leaving Certificate Examination. None of the respondents had educational qualifications lower than a pass at the School Leaving Certificate level. These conclusions were fairly similar to dog owners in America, where it was observed that 38 per cent of pet owners had a college education that comprised four-year programmes and 18 per cent were graduates (Logan & Vet2Pet, 2018). The findings of the study were like those observed among Chinese pet owners, among whom 44 per cent had college education and 21.72 percent had senior high school education, while 28.29 per cent were graduates (Huang and Chueh, 2020).

The results of this study also implied that 70 per cent of the dog breeders studied had an experience of less than ten years in rearing dogs, while 25 per cent had an experience of between 11 to 20 years, and a mere five per cent had been engaged in this activity for over 20 years. This data is similar to that reported among dog breeders in Nigeria, where most dog breeders surveyed had less than 6 years of experience in dog breeding (Abiola et al., 2018).

Regarding the variable training experience related to computers, the results of this study revealed that a significant number (72.5 per cent) of dog breeders/owners reported that they had attended no trainings related to computer whereas 27.5 per cent reported having

attended up to five trainings. None of the dog breeders had attended more than five trainings.

All the dog owners had access to smart phones, 50 per cent of them reported they could use a smartphone confidently while 45 per cent could operate a smartphone but they were not confident about using it. Very few dog owners(5 per cent) needed assistance to operate a smartphone. In Tamil Nadu, mobile phones were being used by livestock owners to contact service providers (Tamizhkumaran and Natchimuthu, 2016). Mobile phones were being used by pastoralists of Tanzania to support livestock production; the authors further reported that just 7.2 per cent of livestock owners owned smart phones (Karimuribo et al., 2016). Apart from understanding the context in smart phone,the availability of mobile phone service could also be a major impediment for farmers. Nevertheless, in many low-resource nations, the recent surge in mobile phone usage, greater signal penetration, and development of cheap handsets has opened prospects for growth in the fledgling mobile healthcare sector (Bhatnagar, 2015).The results of the present study on usage of the smartphone to access information related to animal health and managment suggested that 22.5 per cent of the dog breeders/owners never used their smartphone for this purpose while another 22.5 per cent used their smart phones once a week, 27.5 per cent of breeders/owners reported a lesser frequency of usage of once in two weeks while 27.5 per cent reported a smartphone usage frequency of once a month to access applications related to health and management. According to other research findings, 91 per cent of dairy farmers in Germany own a smartphone, and 61 per cent have already downloaded a herd management app. Furthermore, 38 per cent of early adopters use such an application daily, which was converse from our observations (Michels et al., 2019).

Table 1. Perception of Dog Breeders and Owners towards the Various Dimensions of the Quality of the Application

Quality of the mobile application	**Scores**	**Frequency (f)**	**Percentage**
Engagement	Less engaging (1 - 2.33)	1	2.50
	Average engagement (2.33 - 3.66)	37	92.50
	Highly engaging (3.66 - 5)	2	5.00
	Total	**40**	**100.00**
Functionality	Nonfunctional / Less functional (1 - 2.33)	0	0.00

Quality of the mobile application	Scores	Frequency (f)	Percentage
Functionality	Substantially functional (2.33 - 3.66)	16	40.00
	Highly functional (3.66 - 5)	24	60.00
	Total	**40**	**100.00**
Aesthetics	Inadequate aesthetics (1 - 2.33)	0	0.00
	Medium aesthetics (2.33 - 3.66)	12	30.00
	Pleasant aesthetics (3.66 - 5)	28	70.00
	Total	**40**	**100.00**
Information	Little/No information (3.66 - 5)	0	0.00
	Adequate information (2.33 - 3.66)	10	25.00
	Highly informational (1 - 2.33)	30	75.00
	Total	**40**	**100.00**

It is noticeable from the data in the table that very few (2.5 per cent) of the breeders studied perceived the application to be less engaging, while most of them (92.5 per cent) realised that the application had an average level of engagement. It was also clear that 60 per cent of the breeders found the mobile application to be highly functional, whereas 40 per cent reported the app to be substantially functional and none found it to be non/less functional. A significant majority of the breeders/dog owners reported that the mobile app has pleasant aesthetics, whereas for 30 per cent of the owners, the application had a medium aesthetic level. Data on the information content of the application revealed that 75 per cent of the breeders/dog owners felt that the mobile app was highly informational, whereas 25 per cent felt that the information content of the application was satisfactory.

The outcomes of the present study shed light on the fact that nearly all the respondents perceived the information contained in the application to be on a continuum, from adequate to highly informational, which could be important in increasing their satisfaction with using the application, since it has also been reported that increased levels of perceived accuracy of information could increase satisfaction of the user, which would translate into a greater perceived behavioural intention to use the application (Huang and Chueh, 2020). In the smart phone app market, a developer may help identify his or her mobile app's quality and enhance it by creating a good publicity campaign for the application, considering user feedback, giving bug/crash reporting methods, and reviewing the app's usefulness (Zahra et al. 2013). Thus, we can imply that, despite differences in demographic parameters and in the ability to use a smartphone, the 'VetCan' app was well approved by the sample population of dog breeders and owners. It also underlines the need to develop such ICT tools and other expert

systems to provide authentic information to enhance knowledge and aptitude with regard to canine management and health care.

CONCLUSION

We can conclude that the dog breeders/owners investigated in Kerala were predominantly young married males who had acquired varying levels of educational qualifications with no formal training in computers. The dog breeders had less than ten years of experience. Despite this, a substantial number of dog breeders possessed a smartphone, though many were not confident in using it. Among the dog breeders and owners, the frequency of smartphone use varied.The 'VetCan' mobile application was mostly reported to have an average engagement, was highly functional, possessed pleasant aesthetics, and contained highly informational content.

In the coming years, policy makers can also help enforce laws with regard to canine welfare by enlisting guidelines and rules, in such application, to regulate dog breeding ethically. Thus, new applications that cater to dog breeders and dog owners will support canine healthcare and management by enhancing access and availability of crucial information.

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