Pets and Tech: A Quantitative Study on Utilization and Impact of Smart Technology in Modern Pet Parenting

ABSTRACT

Pet parenting comes with a plethora of responsibilities namely feeding, health monitoring, playtime management, and keeping a regular check on their well-being. A wide range of people, with varying occupations and lifestyles bring a pet home which directly affects their style of parenting. Over the years, there have been advancements in pet care through digital devices and technologies. This paper aims to discover parenting patterns, the extent of use of pet technology, and its impact on pet care routines. Through a survey designed to collect this quantitative data, we found that a substantial number of pet owners acknowledge the need for pet technology but do not utilize it. Understanding these dynamics is vital for improving pet care and enhancing the effectiveness of pet-related technologies.

INTRODUCTION

Humans and their pets share a special bond of comfort, love, and companionship. From dogs and cats to reptiles and rodents, pets are always treated like a part of the family. Individuals with full-time jobs and busy schedules often find it difficult to own pets due to the absence of feasible monitoring solutions. With the increased difficulty in pet care, as a result of lack of time and experience, the number of cases of surrendered pets has risen [2]. Fourteen percent of pet owners who have fewer animals now than three months ago said that they could not afford to keep their pet, while twelve percent said their pet was re-homed and nine percent said they could no longer take care of their pet for a variety of reasons [4]. This resulted in the need for additional methods to manage pet parenting.

People have used traditional methods such as hiring dog walkers, and pet sitters and using daycare and kennel services to aid their pet care. With IoT paving its way for a smarter world, pet technology is becoming a noteworthy achievement in this journey. A wide range of pet technology products in the market has made balancing work and pet parenting easier and stress-free. As we increasingly embrace pets as cherished members of our families, this evolution feels like a natural progression [5]. Automatic feeders with timers to feed the pets during lunch time, Wi-Fi cameras to monitor and talk to pets during any given time of day, smart toys to keep them busy and stimulated and many other products are available in the market to enhance the overall well-being of both pets and their owners.

'The pet gadgets market is projected to expand to an impressive valuation of US 2.3 billion dollars in 2023 and is projected to exhibit a CAGR (Compound annual growth rate) of 14.5 percent from 2023 to 2033 and reach US 10.4 billion dollars in 2033. These days, the vast bulk of pet owners are youngsters who frequently devote more to high-quality goods and services for their pet's health, which has increased pet-related expenditures.' Future market insights say [1].

To validate the true significance of smart pet technologies, we spoke to multiple people such as students, working individuals, and families about their pet care methods and routines along with the level of satisfaction with these approaches. Surprisingly, a majority of people did not mention the incorporation of smart technology, even though it seemed like there was a need for it. This prompted our minds with the first research question, **'To what extent do pet owners use smart technology for their pets?'** This question aims to give insight into the scale of using pet tech and provide information about the number of individuals currently using these innovations. We study users as well as non-users and aim to draw a comparison between their experiences. With every advancing piece of technology, some questions regarding usability, security, and other features arise [3]. To understand how these concerns are affecting people using pet tech, we arrived at our second research question **'How do these technologies impact their pet care routine?'** A quantitative data collection method targeted at pet parents using as well as not using these devices would help answer these questions.

METHODOLOGY

To answer the question of 'to what extent', a detailed report on numbers and statistics was required. This led us to use a quantitative type of data collection method.

Data Collection

Before drafting a survey questionnaire, secondary/desk research was conducted to learn about the different kinds of pets people own and the types of pet technologies in the market. The findings from this research drew an outline of the scope of our questions and helped structure it.

Dividing the survey into blocks was a conscious decision to help with the user-friendliness of it. The blocks were: demographics, about the pet, use of smart technologies for pets and experiences with it, and future expectations from it. Qualtrics, a web-based software that allows the user to create surveys and generate reports, was used owing to its improved readability, workflows, logic, and data visualization.

The survey was targeted to reach out to pet owners and we did that through WhatsApp groups, and online platforms like Reddit, Quora, Discord, and Instagram. A QR code linked to the survey was printed out and pasted in certain prime locations in the university, as well as at pet stores like Petco and Petsmart. We also personally spoke to customers at these stores, discussed our purpose for the research, and had them fill up the survey. People walking their pets in housing communities around us were also approached for the same purpose.
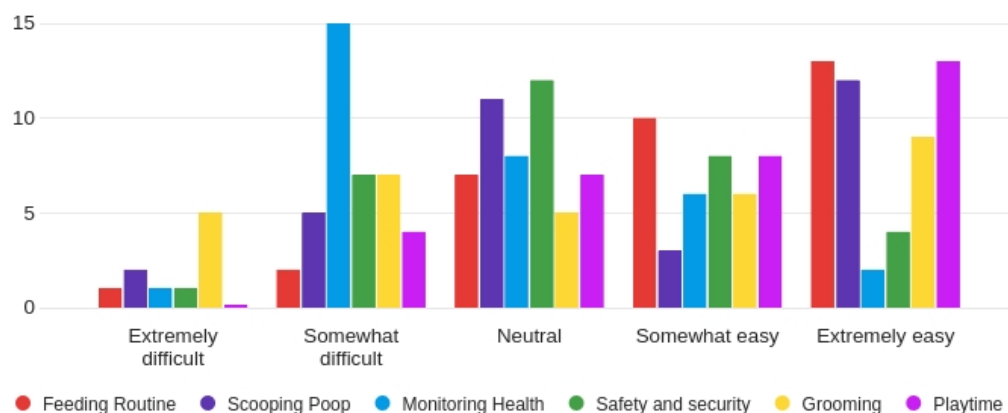
Figure 1. Convenience level for different factors of pet care routines without the use of smart tech

Data Analysis

Quantitative statistical analysis performed with Qualtrics has been cited in a number of professional and academic journals [reference]. With a wide range of data collection types of questions, it provided a better way to read and analyze our data. The data collected could be viewed in numbers and percentages, with access to individual responses as well as summarised ones. This data was exported in an Excel spreadsheet for better visualization.

RESULTS

After creating and circulating the survey, we waited for a period of 10 days to collect the responses. We received a total of **46 responses** from various regions of the world, largely from India (14) and the United States (24). One participant was from China while the remaining seven preferred staying anonymous about their location. As CAPTCHA verification was added at the beginning of the survey, there was just one spam response to be considered as an outlier. So moving forward, 45 responses will be considered. As the survey was broken down into 4 categories, we present the results categorically. A detailed description of the results for the most informative questions is provided below.

About the pet

We wanted to understand the demographic of pets in each household. For this, we added a question in our survey to collect information on the number of pets people have, and their kind. It was found that 80% of people own one single pet. These pets include a variety of species namely dogs (76%), cats (24%), fish (5%), reptiles (2%), and guinea pigs (2%). To follow this, we asked them how long their pets stayed at home alone for insight into the requirements of pet tech. We found that 78% of the pets stay home alone for less than 6 hours, 10% for 7 to 12 hours, and 12% for 12 to 18 hours.

About smart technology for pet care

The main focus of our research topic was to identify the extent of pet technology use. This is where we collected one of the most significant pieces of information for our study. Twenty-two percent of users used some sort of pet tech while the remaining 78% did not. From this 78%, 46% of users were not aware of any sort of pet technologies in the market, while 40% of them had safety and security concerns that stood as a barrier in their purchase. We also wanted to analyze the experience of pet care from people who did not use any kind of technology. We asked them to rate the convenience of tasks and Figure 1 summarizes the data we collected. You can see that the most convenient task for pet parents was maintaining a feeding routine and playtime, and the least convenient was monitoring health.

About usage of pet technology

Now we continue the study on those who use pet technologies in their daily lives. Our survey had questions related to the kind of technologies, how they got introduced to them, how much they spent, how often they use it, and how convenient it is for them.

Our results are shown in Figure 2. You can see that **'Health and Monitoring'** is a task that people do not use smart tech for. All these gadgets were introduced to their users in various ways including social media (44%), pet stores (22%), E-commerce websites (11%), from a friend (11%), and other avenues (22%). One person mentioned that they found out about smart tech through a vet's recommendation and one person found the gadget through Amazon's advertising. Most of these gadgets were bought at a price of 0$ to 500$ (78%) and the remaining 22% spent 500$ to 1000$ on their pet tech. Now that we know the kind of gadgets and how they were acquired, we wanted to find out how often they were used and for how long. 56% of the users have been using smart tech for less than 2 years and 44% have been using them for 2 to 5 years.

Another important question we asked was for them to prioritize how factors like convenience, safety and security, monitoring health, social interaction, and improving relationships with the pet are significantly affected by the use of pet tech. The findings were as follows: for 50% of the respondents, pet
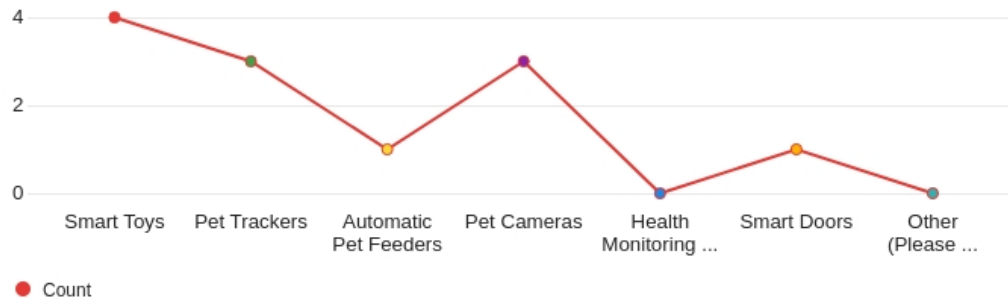
Figure 2. Types of Pet Care technologies/devices used by pet parents

tech was highly significant for safety and security, monitoring health and social interaction was of average significance for 40% of them, and improving relationship with a pet was of least significance of all.

About experiences with pet technology

We asked the smart tech users to rate their level of satisfaction on a scale of one to five. Fifty-six percent of the users rated their satisfaction a 0 out of 5, i.e. least satisfaction. While 33% of them rated 2 out of 5 and the rest 11% rated 3 out of 5. This clearly indicates a need for improvement in pet tech products. 'How has the use of pet tech impacted your relationship with your pet?' was the next question to which the responses received were: "Has not improved", "no change", etc. Participants were further prompted to mention their specific concerns to which one of them cited "usability issues" while another stated "loss of tracking during internet down times". Only 22% of the respondents were willing to consider buying additional pet tech in the future, while the remaining 78% did not express their need to do so.

DISCUSSION

Availability vs. Usage

The article 'Pet Gadget Market Snapshot' published on Future Market Insights in 2022 [1] predicts the high expansion of the valuation of the pet tech market. This explains the rising availability and scope of the devices. However, from the analysis of our study, an astonishing 78% of pet parents do not use any tech gadgets, thereby highlighting a gap between availability and usage patterns. The market gap is a result of poor or lack of advertising done by the pet tech businesses. This crucial insight highlights the need for better communication and education regarding the advantages of smart pet tech and how it can positively impact the well-being of both pets and their owners.

Security and privacy concerns

Our study suggested that the majority of pet parents avoid purchasing pet tech due to concerns for security and privacy. This was also a major factor investigated in 'Security and Privacy Concerns of Pet Tech Users 2022' [5]. "What if my location data is not secured?" one respondent expressed. Similarly, most of these pet parents stay away from risky IoT devices as they are not informed on how they work and what

happens to their data. Some final feedback also mentioned the fear of location tracking and easy hacking that the pet parents have as these gadgets are not reliable all the time [3]. Cyber security should be the leading criterion while designing and manufacturing these products to comfort and assure the masses to encourage purchasing.

CONCLUSION

Our study explored the dynamics of pet parenting and the impact of technological advancements in the pet care domain. The finding of a substantial amount of pet owners acknowledging the existence and usefulness of pet technology but not fully utilizing them in their pet care routines, explains a gap in the market. The low levels of satisfaction and usage of those parents having pet tech answers our second research question on its impact on pet care routines and throws light on the need for improved user experience.

LIMITATIONS AND FUTURE WORK

Our research methodology spanned multiple platforms like Reddit, pet-focused Discord groups, Quora, and online pet communities. However, we received responses from 46 participants. This limited participant pool may have affected the depth of our insights. Having a larger and more varied sample size with more participation from pet tech users would have enriched our dataset, enabling an analysis that could differ from the present. We should have also asked a few more questions for people who do not use smart tech for better insights.

The current findings open doors for future research work like investigating the gap between the advertising of smart tech for pets and its consumption especially in the context of the Internet of Things (IoT) growth. The lack of knowledge and proper marketing can be explored with the aim of bridging the gap between pets and tech. This could eventually benefit the tech industry and improve pet care. Additionally, Ethnographic research and follow-up interviews would provide substantial qualitative data about user experiences, their motivations, and the potential long-term adoption of these technologies.

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