

User Experience Survey on Veterinary Clinic Online Pet Adoption System

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Abstract

Stray animals are frequently found on the streets, and people will bring them to a veterinary clinic to get them treated. However, they will be returned to the wild as no one would adopt them. An interview has been conducted with Mawrose Animal Clinic, Pagoh, to identify need for a system to manage the adoption of treated stray animal in the clinic. The system was developed using the Waterfall Methodology. A user testing with the veterinarian in the clinic as well as an online user experience survey has been conducted with 102 respondents involving the clinic staff, customer as well as students in University Tun Hussein Onn Malaysia (Pagoh campus) who resident nearby and visit the clinic to treat stray animals. The survey indicates high satisfaction in experiencing the system particularly in terms of its efficiency. However, the Veterinary Clinic Online Pet Adoption System still needs to add more improvements, such as having a list for users to see which pet they have adopted and when their appointments would be held on before it is a proper solution for veterinary clinics to help stray animals to find a new home.

1. Introduction

Around 7.6 million stray pets are abandoned yearly, with cats accounting for 3.4 million [1]. Animal professionals consider pet overpopulation a people problem rather than an animal problem [2]. Therefore, adoption is one way to help minimize the number of abandoned animals, and veterinarian clinics are essential in distributing animal health records to prospective adopters. The third SDG goal, "Good Health and Well-being," strives to ensure healthy human and animal lives [3]. Veterinarians play a crucial role in safeguarding pets' health, educating them about diseases affecting them, and advising on animal health care, proper nutrition, and care. Veterinary clinics store data about the treatment of each animal for their respective problem and provide tailored care that focuses not only on the physical health of the animals but also on their natural inclinations. Veterinarians also play an essential role in stray animals, unowned domestic animals that live autonomously, breed uncontrollably, and overpopulate the environment [4][F5].

The current information management system used in several veterinary clinics is an online system called Kreloses, which has been digitalized to streamline operations. Kreloses allows for systematically storing and retrieving crucial information about each pet's medical history, appointments, immunizations, and medications. However, the system has faced challenges, such as being unreachable due to the lack of internet or the main server is damaged, forcing clinic staff to use manual record-keeping, and potentially leading to data loss or inaccuracies during downtime.

To address these problems, the study aims to develop a comprehensive veterinary information system with an integrated pet adoption module. The system will include intuitive user interfaces for tracking adoption procedures, medical histories, and animal profiles, allowing clinicians to enter and update comprehensive information on animal treatments, medications, and immunization health records. The adoption module will provide potential adopters with a platform to pursue available animals, contact veterinary clinics, and start adoption. The project scope includes future growth and scalability, collaboration with stakeholders to address the changing demands of the veterinary community and encourage safe pet adoption practices.

2. Related works

Table 1 compares the features provided by Mawrose Pet Clinic, Pagoh, with the existing online systems Kreloses, Petfinder, and SPCA Penang. The features are animal adoption feature, animal profile, an online website, and animal healthcare.

Table 1 Comparison between existing systems

Features	Kreloses [6]	Petfinder [7]	SPCA Penang [8]	Mawrose
Animal adoption feature	✗	✓	✓	✓
Animal profile	✓	✓	✓	✓
Online website	✓	✓	✓	✓
Animal healthcare	✓	✗	✓	✓

With the rapid development of new technologies, the veterinary industry followed suit. Kreloses is a veterinary information software created by an all-rounded Malaysian veterinary surgeon named Dr. Calvin Cheah. He is the co-founder and director of Vets for Pets Animal Clinic and has over ten years of experience in the industry. Kreloses was invented to digitize the vet industry in Asia to improve animal welfare [6]. Kreloses helps businesses convert their physical documents and data, such as customer records and invoices, and turn them into digital formats. This allows businesses to find this information easily whenever they need it. Since Kreloses is an online website, it is accessible on both computers and mobile, making it more accessible anywhere. It has a friendly user interface that allows users to use the system efficiently and quickly. Many clients are satisfied with the ease of use and the affordable price that Kreloses offers. However, there was an instance where the system was not functioning due to system failure. During that time, the clients were forced to use traditional data-collecting methods, such as files and papers, to store said data.

Other than that, another famous website known as Petfinder is usually where people would go through to adopt animals [7]. Its website boasts an extensive database of adoptable pets, boasting over 315000. It also has search filters that allow users to filter their search for adoptable pets based on various criteria to suit their preferences. Each pet would have a profile that displays its photo, description, any special needs they may have, and requirements before adopting the animal. It ensures the new adopters would be eligible to adopt the animal. On each animal's profile, there is shelter or rescue contact information. It will be easier for potential adopters to reach out and inquire about the adoption process. The website encourages users to post updates regarding the adopted animal for preventive purposes. Like Kreloses, Petfinder also has a mobile app that makes it easier for users to browse for adoptable pets and shelters on the go [6-7]. The website also features heartwarming stories regarding successful pet adoption, which can motivate others who consider adopting a pet. Educational resources are also displayed on the website. It is to guide owners on various pet care topics, from training tips to pet health information.

There is another existing animal adoption system in Malaysia. It is called the Society for Prevention of Cruelty to Animals Penang or SPCA Penang. It is a non-profit organization dedicated to protecting and caring for animals [8]. There, they run an animal shelter to house abandoned, stray, and surrendered animals like any other animal shelter. They also have veterinary care, which provides the animals with healthcare such as vaccinations, spaying, and treatment for illness. Adoption services are also available, and they ensure that both the pet and the adopter fit well. However, if the user wants to support an animal without adopting them, they can become a foster parent. This is where the user will provide funding for their desired animal while the staff cares for it. The organization accepts donations to help them care for the residents there more efficiently. Users can also purchase the organization's merchandise, which will help fund them directly.

3. Material and method

The Waterfall Model was used to develop the Veterinar Clinic Online Pet Adoption System. The methodology of this project is divided into six phases: Requirement Gathering phase, Analysis phase, Design phase, Coding phase, Testing phase, and Operation phase [9]. These phases of the waterfall model are shown in Fig. 1.

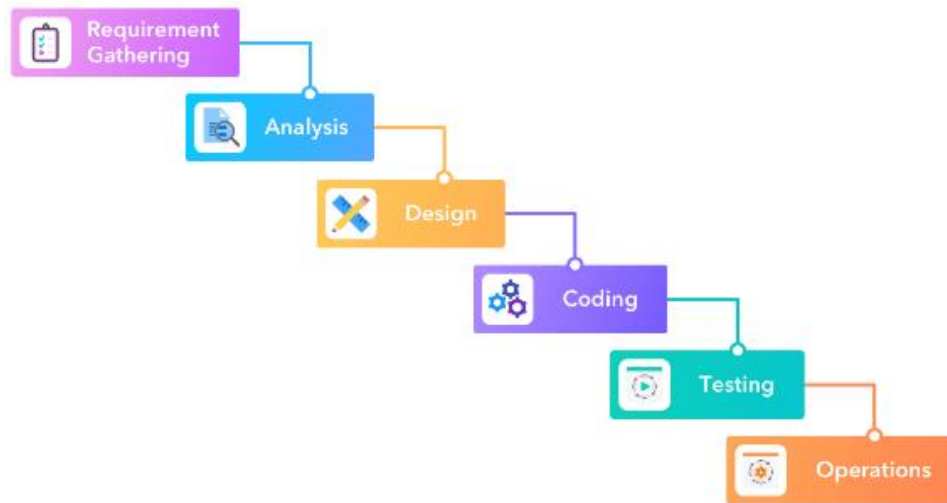


Fig. 1 The waterfall model

3.1 Requirement Gathering

An interview was conducted with the staff of Mawrose Animal Clinic to gather information on the existing functionalities of the current system, the features desired in the new system, and the system's processes. Table 2 list the interview questions.

Table 2 Interview Questions

Organization	Existing System
<ol style="list-style-type: none"> 1. How many people work in this clinic 2. What is the responsibility of every worker who works in this clinic 	<ol style="list-style-type: none"> 1. Does this clinic record information use written files? (if yes, what has been documented in a written profile?) 2. Can we look at the existing systems in this clinic as a reference for the project development 3. Does this existing system have an animal adoption feature? (if yes, how the process is managed)
Procedure	Adoption
<ol style="list-style-type: none"> 1. How is the information on treated animals recorded? 2. Is every record of animal information sorted by category? 3. How are animal information records categorized? 4. How are animal treatments conducted? 5. Is the animal's information updated after treatment? (If so, how is it done?) 6. Is the animal information stored after the treatment session is completed? 7. What information is recorded if an animal is treated? 8. What information is recorded if an animal is given medication? 	<ol style="list-style-type: none"> 1. Has a client ever brought an abandoned animal for treatment in this clinic? (If accepted, how is the process?) 2. Do you manage an animal adoption program for pets? 3. What information about abandoned animals is placed in the advertisement for adoption as a pet? 4. What is the procedure for picking up an abandoned animal as a pet? 5. Is pet information stored? (If so, how is the storage process? If not, what is the reason?) 6.

3.2 Analysis phase

The flow of the system functionality are analysed using flowchart diagram. Additionally, Entity Relationship Diagram (ERD) was also constructed to describe the relationships of entity sets stored in a database [10]. Finally, a Data Flow Diagram (DFD) was designed to visualizes data flow in the system process [11].

3.3 Design phase

The outcome of the analysis phase fed the system design which are visualised using Adobe XD to create a mock-up of the user interface as the system prototype.

3.4 Coding phase

The system was coded using HTML, CSS, PHP, and other programming languages, according to the mock-up produced during the design phase. Fig. 2 illustrates the system interfaces.

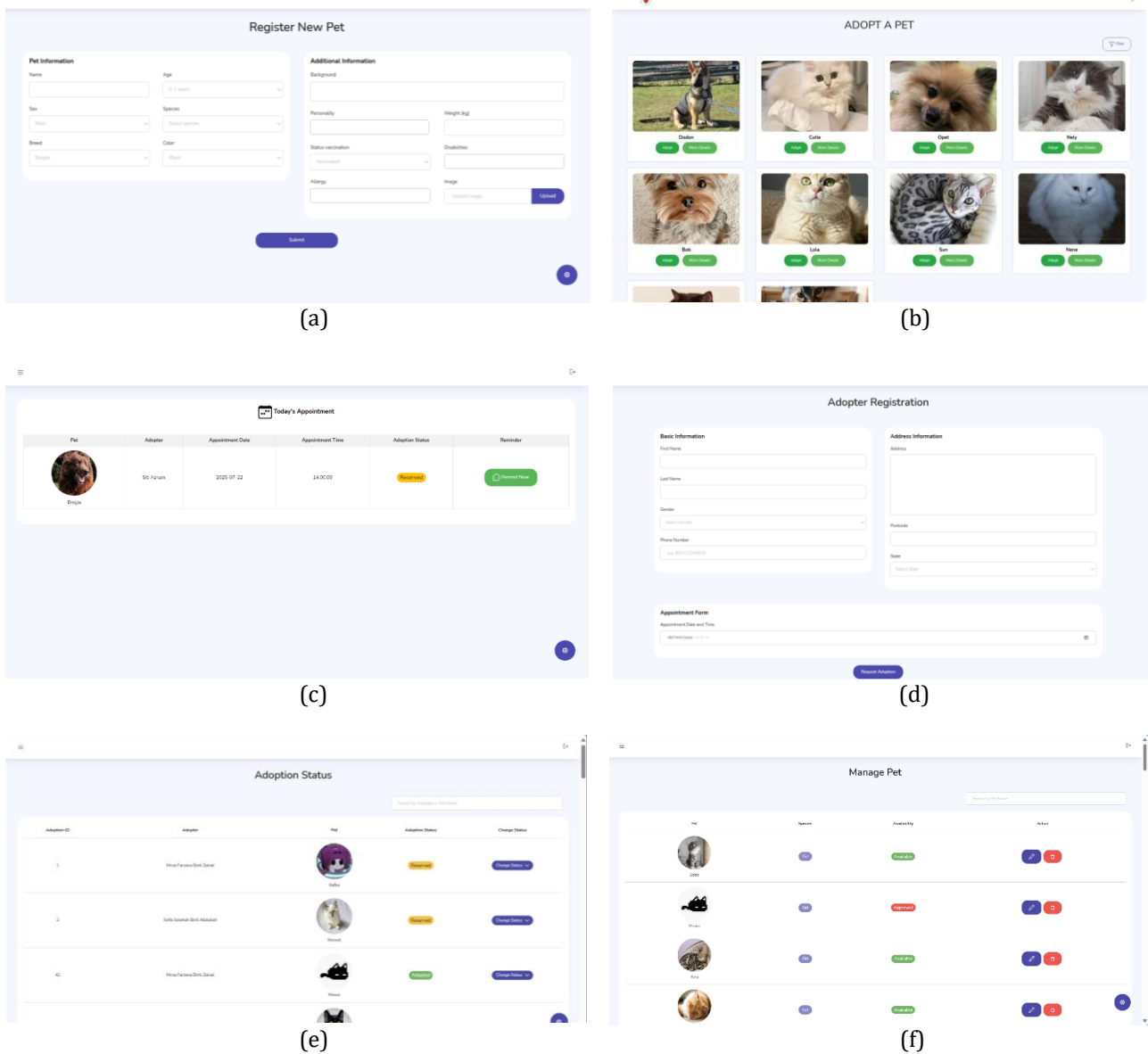


Fig. 2 System's Interfaces (a) Admin Registering New Pet; (b) Adopter's User Interface; (c) Admin Appointment List for the Day; (d) Adopter Registration; (e) Admin Adoption Status List; (f) Admin Managing Pet List

The system offers registered user an opportunity to adopt stay animals from the clinic through the online system. Each application will be screen by the clinic to ensure applicant has no record of animal abuse. Additionally, the clinic could manage stray animal medical details such as profile and vaccination status for adoption.

3.5 Testing phase

Once the coding is fully operating, the system was tested by the veterinarian in the clinic followed by a survey with the staff and customers from Mawrose Animal Clinic to address any issues or defects, if available, using a UX questionnaire [12]. The questionnaire measures six areas of user experience; attractiveness, perspicuity, efficiency, dependability, stimulation and novelty of the system. Fig. 3 shows the use testing session with the veterinarian.

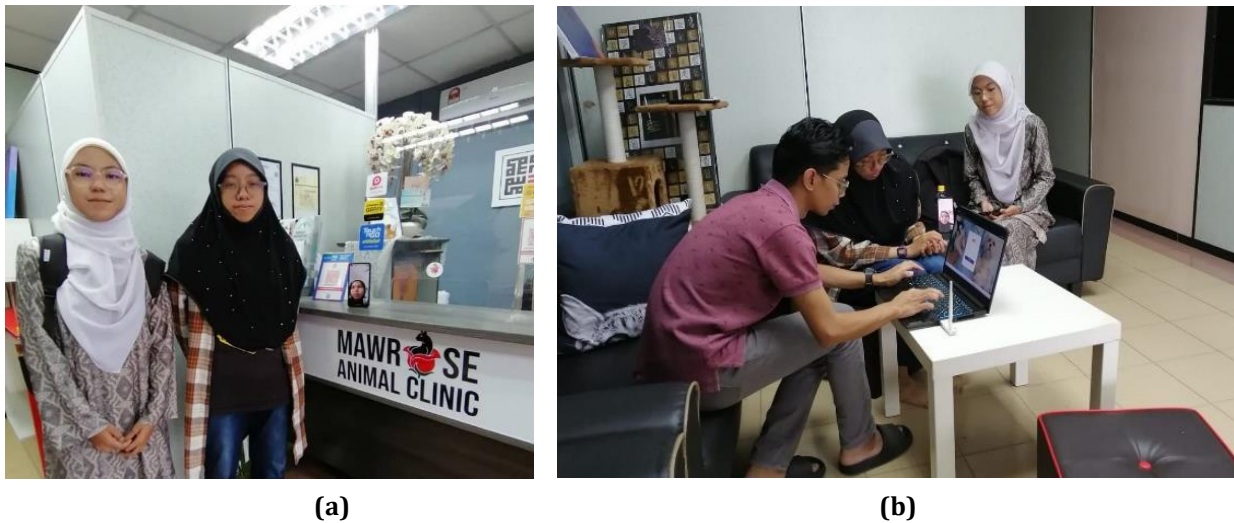


Fig. 3 Testing phase activities (a) Mawrose Clinic; (b) Test the system with Mawrose’s doctor

3.6 Operation phase

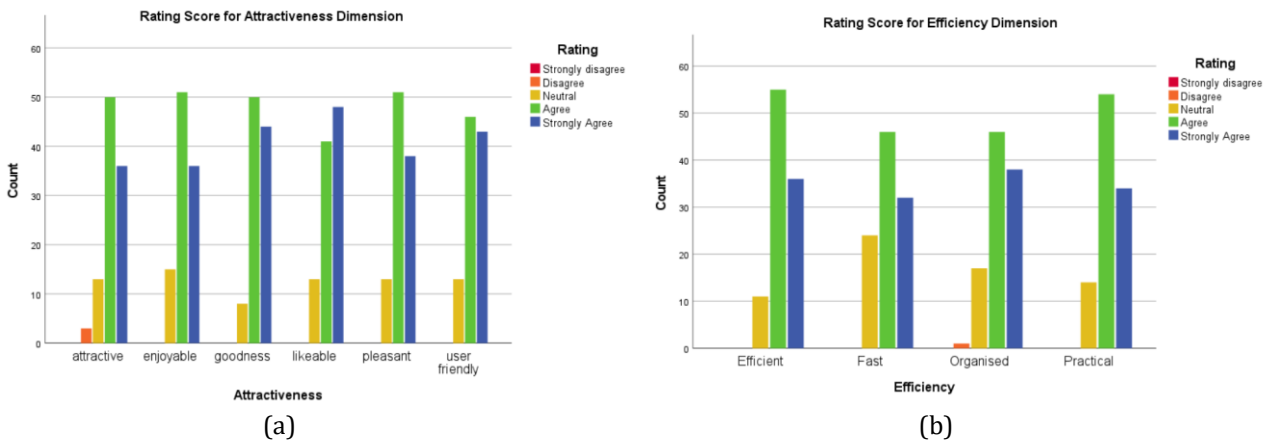
The system was implemented using client-server architecture operating from a free web hosting.

4. Result and Discussion

This section presents and discusses the user experience survey response on the system attractiveness, efficiency, perspicuity, dependability, stimulation and novelty.

4.1 Result

A total of 102 respondents involving the clinic staff and customers including UTHM students participated in the survey. At least 95% of the respondent rate excellent user experience in using the system in terms of its attractiveness, efficiency, dependability, stimulation (excitement, interest, motivation and value), and novelty. However, the response also suggest that the system needs further improvement on areas attractiveness, learnability, understandability, expectation, predictability, security, support, innovation and leading edge, particularly on clarity and simplicity. Fig. 4 displays the rating score distribution of the UX questionnaire.



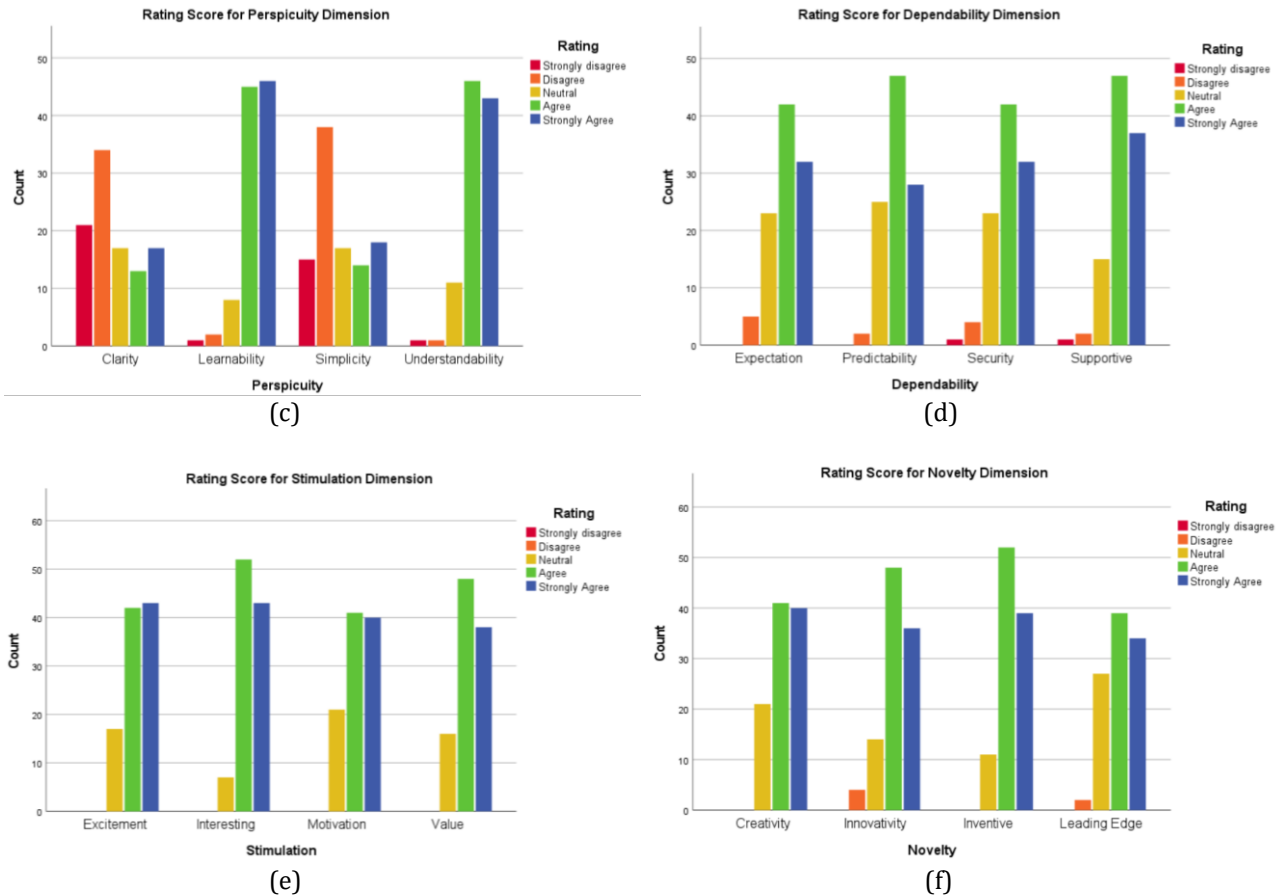


Fig. 4 Results of the UX questionnaire (a) Attractiveness; (b) Efficiency; (c) Perspicuity; (d) Dependability; (e) Stimulation; (f) Novelty

4.2 Discussion

The results show a primarily positive reception of the system across various aspects. While negative feedback draws attention to areas that require work, such as complexity or technical concerns, positive feedback highlights the strengths, such as efficiency increases and user-friendliness. Fig. 4(a) shows that most respondents agree or strongly agree that the product is beautiful, user-friendly, likable, engaging, and attractive. However, Fig. 4(b) shows mixed feedback regarding familiarity, with some users expressing neutral or negative attitudes regarding the ease of getting used to the system. Fig. 4(c) highlights concern about task effectiveness, as many respondents disagreed or strongly disagreed that the system performed tasks efficiently. In contrast, Fig. 4(d) demonstrates high levels of trust and confidence, with only a few respondents expressing doubts about a sense of control during the interaction. Fig. 4(e) shows that all respondents agreed that the system was interesting and motivated. Finally, Fig. 4(f) highlights the perceived creativity and innovation of the system, with the majority recognizing its innovative qualities, although a minority holds a different view. Overall, while the system received positive feedback, addressing concerns related to familiarity and efficiency could further improve user satisfaction and ease of use.

Given the conflicting comments on familiarity, it appears that improved onboarding and more user-friendly design are necessary to facilitate quick user adaptation. Task effectiveness issues suggest that performance must be enhanced, and workflows optimized. The system can improve overall usability and user happiness by solving these issues.

5. Conclusion

Veterinar Clinic Online Pet Adoption System is designed as an online pet adoption system to help stray animals find a suitable home and owners. The system offers an efficient and easy process to adopt a pet based on their preferences for adopters, and the veterinary clinic's staff can keep track of the list of appointments registered with new animals in the system. An online questionnaire was conducted after the product was made to evaluate the system's features and user experiences. Despite the Veterinar Clinic Online Pet Adoption System being well received by the users, it could be improved in terms of user's expectations. Even so, the system demonstrates that

it has the potential to become an effective platform for adopters to find a new furry companion quickly and efficiently.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Hazwani Rahmat, Mirza Farzana Zainal, Siti Nurhaliza Ahmad Aznam; **data collection:** Mirza Farzana Zainal, Nurul Aina Shamimi Mohd Shamsul Sharim, Siti Nurhaliza Ahmad Aznam; **analysis and interpretation of results:** Hazwani Rahmat, Nurul Aina Shamimi Mohd Shamsul Sharim; **draft manuscript preparation:** Hazwani Rahmat, Mirza Farzana Zainal, Nurul Aina Shamimi Mohd Shamsul Sharim. All authors reviewed the results and approved the final version of the manuscript.

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