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Journal of Computing Research and Innovation 10(2) 2025

Journal of Computing Research and Innovation

User Acceptance Testing of the 'Furwish' Location-Based Mobile Application: An Empirical Study on Pet Adoption and Surrender Services

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ARTICLE INFO

Article history:
Received 27 June 2025
Revised 3 August 2025
Accepted 6 August 2025
Published 1 September 2025

Keywords:
Pet Adoption
Pet Surrender
Animal Welfare
Location Aware
Mobile Application

DOI:
10.24191/jcrinn.v10i2.552

ABSTRACT

The increasing number of stray animals demands an effective way to connect pet owners who intend to surrender their pet with potential pet adopters. The manual approach to pet surrender and adoption often faced many challenges, such as limited outreach, communication, and options for the adopters. Unadopted pets may lead to an increasing number of stray animals and cause disturbance in residential areas. In this paper, we present a more detailed discussion on the development and evaluation of a location-aware mobile application named FurWish. The mobile application allows users to post information about their pet for listings, location-aware pet searches, setting up appointments for adoption, and notifications. The development adapted a three-phase methodology from Waterfall Model which includes requirement identification, design and development, and evaluation. Requirement identification involved reviews of literature and existing mobile apps. In the design phase the user interface design is drafted using diagrams and sketches, and the development phase involved implementation using Android Studio and Firebase with the integration of Google Location Services for displaying maps. In the evaluation phase, a user acceptance test (UAT) is conducted to test four key aspects, which are Attitude Towards Using (ATT), Behavioural Intention to Use (BI), Perceived Usefulness (PU) and Perceived Ease of Use (PEU). 33 respondents were given 12 questions after they had explored and used the functions and features of the mobile application. Results from UAT show FurWish has achieved high scores over four key aspects, with the highest score achieved under PU. This shows the user's acceptance of its effectiveness in supporting the pet adoption and surrender process while supporting animal welfare.

1. INTRODUCTION

Owning pet offers a few benefits on both pets and adopters which includes reducing stress level, companionship, and emotional support. A study shows that pet ownership can improve the levels of

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https://doi.org/10.24191/jcrinn.v10i2.552

human's physical activities (Martins et al., 2023). These positive effects encourage people adopting pets to be part of their life. Adopting pet usually comes with responsibility to make sure their nutritional needs are met and providing essential health care. Some pets require specialized diets and living environments to keep them physically and mentally healthy. It involved a continuous expense that the pet owners should consider on daily or monthly basis for maintaining their healthy pet. The costs incurred for maintaining pet may cause financial burden on certain pet owners. Therefore, owners who are unable to continue keep their pet should take responsibility on finding alternative such as surrendering the animal thru proper channels such as animal shelters and find adopters.

Pet owner who intends to surrender should not simply abandon and let it roams freely. The rising number of pets being abandoned contributes to the increasing number of stray animals. These abandoned animals may suffer from hunger, diseases and injuries. It also may cause disturbance in residential areas such as noise, spread of diseases, ransacked waste and safety issues among residents. The pet owner should be responsible to find the animal shelter or a new potential adopter to adopt the pet. Pet adoption is an important aspect of maintaining animal welfare and promotes responsible pet ownership within the communities. Traditional pet adoption methods faced challenges including limited outreach where many relies on physical visits and word of mouths. Problems in communication among pet owner and potential adopters also impairs the efforts in pet adoption. The other common challenge includes limited number of pets for selection to match their preferences and needs (Bhadane et al., 2023). These challenges may affect encouragement and number of participations in pet adoption.

To overcome the challenges, we developed a FurWish mobile application to support the process of adoption between current pet owners and potential pet adopters. The application developed implements the concept of location-aware which intended to improve the accessibility of available pets for adoption within the nearby locations. Users with the intention to surrender or adopt may view and post pet listings based on their geographical location. It also let users to set appointments and notification features to effectively facilitates the process of adoption. A brief introduction about FurWish mobile application was previously published as extended abstract that provide introductory aspects of the application and general overviews (Mazlan & Jamaluddin, 2025). In this paper we intend to present more detailed discussion and explanation about the design, development, features and results from the user's acceptance test.

The FurWish app is developed based on the adapted Waterfall Model, which considers suitable phases required for the goals of the mobile application development. Three phases involved are requirement identification, design and development and evaluation. Requirement identification includes identifying development feasibility of the pet adoption mobile application, review literatures and related works. Design phase considers drafting user interfaces and database design. Development phase involved development of the mobile application using Android Studio with integration of Firebase for data storage and Google Location Services for location-based features. The developed mobile application is evaluated on its usability and acceptance thru user acceptance test (UAT) in evaluation phase. Remaining sections of this paper presents detailed review of literatures, development process, features and findings from the evaluation.

2. LITERATURE REVIEW

2.1 Pet adoption

Stray animals refer to pet animals which are roaming freely on the streets without home and left behind by the owner. Their increase in population cannot be controlled, for example cats and dogs. These stray animals are considered as major public health problems (Abdulkarim et al., 2021). Stray animals, often facing difficulties surviving independently and at risk of various dangers such as hunger, harsh weather conditions, illnesses and traffic incidents. Various organizations and shelters are dedicated to rescue and

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care of stray animals. Their main objective is to either reconnect the animals with previous owners or adopters.

Pet adoption plays an important role in reducing the rising number of stray animals and improving animals' welfare. It also may help in addressing overcrowding shelters and rescue organizations. There are also reports that small amount of unadopted pets in shelter would have to spend their entire life in shelter (Corsetti et al., 2025). Pet adoption is a process of a person to acquire a pet, whether to purchase or adopt the animal (Holland, 2019). Rather than purchasing pets from breeders or pet shops, adoption often involves rescuing animals that have been left, abandoned, surrendered or stray animals. The decision to adopt pet contributes to the efforts of animal welfare and supports the works of the shelters.

However, taking care of pet may incur some challenges among persons with physical ability limitations and financial problems (Meier & Maurer, 2022). Some pets require specific diets and living environments to keep them physically and mentally healthy. It involved a continuous expense that the pet owners should consider on a daily or monthly basis. The costs incurred for maintaining pets may cause financial burden on certain pet owners. Financial demands may arise especially during unexpected illness or accidents that requires treatments with veterinary (Chur-Hansen et al., 2008). These financial constraints faced by the pet owner often led them to surrender their pets. This also contributes to overcrowding shelters and stray animals. There is a need for a platform that can connect the pet owner who intends to surrender with the potential adopters.

2.2 Location-aware technology

Systems and applications which utilize global location data to enhance services, improve user experiences and activate functions based on a device or user's physical location are known as location-aware technologies (Schmidtke, 2020). These devices utilize various methods such as GPS, Wi-Fi positioning, cell tower triangulation, and Bluetooth for detecting and employing location data (Nord et al., 2002). These methods allow location-aware technologies to accurately pinpoint a device's position and provide relevant services. The functionality and user experience of mobile applications and services can greatly improve from this ability. Location awareness is an essential feature for the mobile applications nowadays (Akhigbe et al., 2022). Location-aware mobile applications collect, process and utilize geolocation data to provide context-aware information and services.

Various mobile applications across several industries successfully adopted location-based services to enhance user experience, services provided and decision making. In transportation industries, e-hailing platforms such as Grab and AirAsia MOVE (Md Isa et al., 2024) relies on location-based information in finding nearby passengers or drivers, determining routes and real-time location tracking (Yan et al., 2024). In food delivery applications like Foodpanda, GrabFood and ShopeeFood uses location-based information to connect nearby restaurants, delivery drivers and potentials customers (Zhao & Bacao, 2020). While in tourism and navigation, apps like Google Maps, Waze and FourSquare utilize geolocations information in providing location-based recommendations and suggestions on interesting nearby places, route guidance, traffic updates and trending places. These examples of location-aware integrations in mobile applications show that it is significant in improving functionality and efficiency by providing personalized and real-time information to the users.

2.3 Waterfall model

Waterfall Model is widely used and one of the oldest software development methodologies. It was introduced by Royce in 1970 and never proposed the term "Waterfall" in his paper (Royce, 1970). Diagram used to present the model actually seems like a waterfall and clearly shows each phase flows from one phase to other phases (Matković & Tumbas, 2010). The model introduced a systematic sequential phases where each phase must be completed before beginning the following phase (Khan et al., 2024). Due to its

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clarity and ease of management, the model is widely accepted and used in software development projects with well-defined requirements.

In this project, we use an adapted version of Waterfall Model to suit the scope, timeline and nature of mobile application development. The word "adapted" is referring to the selected phases from Waterfall Model which are implemented in this project, while omitting other phases due to the limits of this project timeline and scope. The selected phases include requirement gathering, system design, implementation and testing. This approach may improve flexibility and following systematic development steps. It also accepts feedback from the development after user acceptance testing (UAT) is carried out. Therefore, the customized development methodology approach is aligned with the best practices and at the same time suits the project's constraints and scope.

2.4 Related works

Mobile applications named “Pet Adopter: Adopt Pets” allows user to have direct connections with individuals seeking to adopt pets and list their pet for adoption such as dogs, cats, rabbits and other animals (In Sequence Software LLC, 2022). Key features for this app include browsing pet listings, view user profiles, chat functionality and locating adoptable pet in specific areas. However, the unlimited chat requests are only available withing the subscription. “Pet Adoption” mobile application allows user to browse pet of different breeds with information such as owner’s contact information or shelter (Friendsapp Listing, 2023). It also allows users to filter pet searches based on gender, size, age, breed, and location.

The PAWS Animal Welfare Society (PAWS) website provides detailed pet listings, information on adoption procedures, tools for donors and volunteers (PAWS Malaysia, 2025). There is also a section about recent news and updates about the community. With PetRehomer website, user can explore available pets and list pets for adoption that promotes direct pet adoption and rehoming (PetRehomer, 2025). Important features include comprehensive pet profiles, breed and regional search criteria. The platform focuses on decreasing number of animals in shelters while providing adoption and rehomer guidelines and advices. St. Hubert's Animal Welfare Center webpage is another pet shelters that pet rehoming services, short-term crisis care, comprehensive pet listings and resources on adoption procedures (St. Hubert’s Animal Welfare Center, 2025).

The following Table 1 shows a comparison of features offered by different platforms. The user experience can be improved by using mobile apps with extra features like favourites lists and geolocation, such "Pet Adopter" and "Pets Adoption". While they offer greater accessibility, websites like "Paws," "Pet Rehomer," and "St Hubert's Animal Welfare Center" lack some of the more advanced features available in mobile apps. Each platform offers basic features like pet profiles and contact choices, which are crucial for communication and adoption process.

Table 1. Comparison of features among pet adoption and surrender applications

	Pet Adopters: adopt pets	**Pets Adoption**	**Paws: Paws Animals Welfare Society**	**Pet Rehomer**	**St Hubert’s Animal Welfare Center**
Platform	Mobile App	Mobile App	Website	Website	Website
Search Filter	✓	✓	✓	✓	✓
Pet Profiles	✓	✓	✓	✓	✓
Contact Options	✓	✓	✓	✓	✓
Geolocation	✓	✓	✓		
Favourites List	✓	✓			
Community Program					✓

Source: Author’s review of literature

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3. METHODOLOGY

The development of FurWish mobile application involved three phases adapted from Waterfall Model which are requirement identification, design and development and evaluation. It also consists of activities planned for each phase to achieve the development objectives, refer Fig. 1. Requirement identification is the first phase, which includes identifying development feasibility of the pet adoption mobile application, review literatures and related works. Second phase includes the user interface, database design and actual development of the mobile application. The developed mobile application is then evaluated on its usability and acceptance thru user acceptance test (UAT) in last phase.

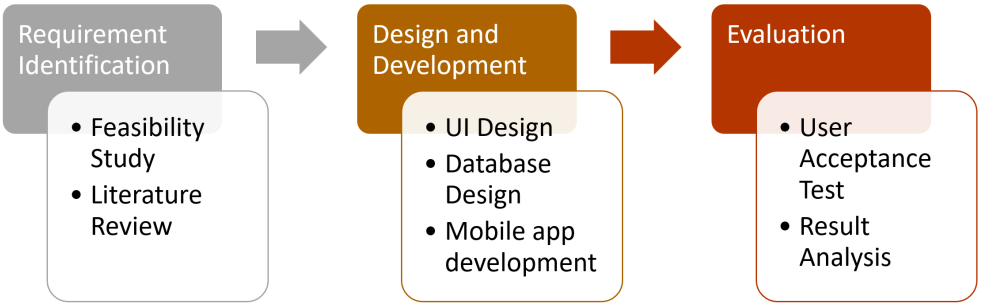

Fig. 1: Phases involving in development of FurWish mobile application

Source: Author's research methodology

3.1 Phase 1: Requirement identification

System requirements identification is the first step before starting project development. This phase is about figuring out what the project needs to achieve. A key part of this phase is the feasibility study, which reviews existing problems and solutions from previous works to find approaches that can be adopted in the mobile application. We collect information from various sources like websites, online libraries, journals, and expert opinions. This information includes details about the technologies and applications that can be used in the project. The feasibility study also defines the project's focus area, problems to be solved, objectives, scope and importance. By doing this, it ensures a clear understanding of what is needed to meet the project's goals. The subject matters reviewed include pet and animal adoptions, location-aware mobile applications, GPS, pet shelter and surrender.

3.2 Phase 2: Design and development

This phase is divided into two main activities that serve as crucial activities to achieve development goals of the FurWish mobile application. A few tools are utilized in preparing the design and development. Design activity includes creating drafts of user interfaces (UI) using Canva's wireframe tool based on functional requirements identified from requirement identification phase. The UI design also helps in visualizing layout and navigation flows of the mobile application. Database design involved preparing hierarchical data structure diagram using draw.io. It is used to model Firebase which is a NoSQL database model. The data structure includes five objects that include users, pets, adoptions, booking, notification and surrender. These objects are required to supports the applications user's authentication, database interactions and pet listings. Functional requirements identified are also modelled using use-case diagram to define interactions between users and the application. This also includes a flow chart to demonstrate the sequence of steps involved in surrendering and adopting pets.

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The second activity in this phase is the development of the proposed mobile application. It involved actual implementation and development based on the design activities. The mobile application is developed using Android Studio IDE that focuses on implementing both application's front-end and back-end. The development also includes an integration of location-aware features by utilizing global positioning system (GPS) technology to track and utilize the real-time location of adopters. The location of the potential pet adopter is identified so that the application can display the list of nearby pet's owners who intended to surrender their pet. Using smartphone sensors, the application will query based on the current location of the potential adopters.

3.3 Phase 3: Evaluation

The last phase in methodology focused on evaluating the usability and overall acceptance of FurWish mobile application. User Acceptance Test (UAT) is conducted with a group of 33 selected respondents. Respondents include pet owners and non-pet owners with random genders and age ranges. UAT allows real users to interact with the application in practical scenarios, validating its usability and effectiveness in solving user problems. The respondents are listed with features to be tested that includes location-aware pet search, surrender pet via listings, setting appointments for adoption and notifications. Feedback from UAT is collected through questionnaire after respondents have used and tested the mobile application without any assistance and guidance by the developer. The questionnaire consists of 12 questions to evaluate four components of UAT which include Attitude Towards Using (ATT), Behavioral Intention to Use (BI), Perceived Usefulness (PU) and Perceived Ease of Use (PEU). The results obtained from the test are analyzed and discussed in this paper.

3.4 User interfaces and mobile application features

This section presents various user interfaces developed to suit various features offered by FurWish mobile application. Screenshot of the interfaces illustrate the overall user experience from registering as an authorized user towards adopting the pet. Upon launching the mobile application, user is displayed with "Login" screen, refer Fig. 2 (left) that asks for their registered email address and password. New users are provided with a link with "Signup Now" link that will direct users to "Sign Up" screen which can be depicted in Fig. 2 (centre). This screen allows new user to create an account by providing information including username, address, email and password. The creation of user's account is important to personalise user's experience and enable location-based pet searches. Upon successful registration, user will return back to "Login" screen.

Successful login will direct user to home screen of FurWish app as in Fig. 2 (right). The home screen features FurWish app's logo, access to notification and user's profile located at the top of the screen. There is an image banner about pet adoption to help users to better understand about the main purpose of the application. Right under the banner, there are four icons to access main features of the mobile application including "Adopt Pet", "Rehome Pet", "Appointment History" and "About". In this mobile application, users can act as adopter and owner, who intend to surrender their pet.

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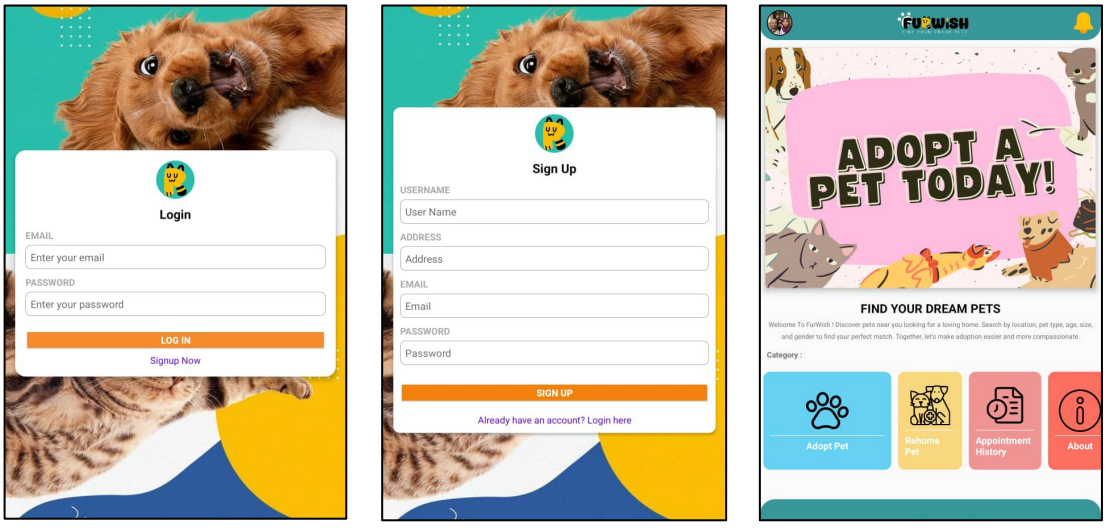

Fig. 2: (left) Sign up screen, (centre) login screen, (right) home screen

Source: FurWish mobile application screen shots

To begin with finding suitable pet for adoption, tapping on the button “Adopt Pet” will direct user to Adoption page as shown in Fig. 3 (left). This screen will first display list of all available pets to be adopted. User also has option to display list of available pets near to the user’s location by tapping on “Near You” button. This screen as in Fig. 3 (centre) features a map view with markers indicating the locations of the pets available for adoption, allowing user to click the markers to see the pet details. Below the map, detailed information about each pet is presented in a scrollable list including pet’s name, gender, age, photo, location and distance from user’s current position. Results displayed to user includes pets which are within five kilometers radius. Additionally, the screen includes a filter button at the top-right corner, which users can use to refine their search further based on user’s preference, such as type, gender or age, refer Fig. 3 (right).

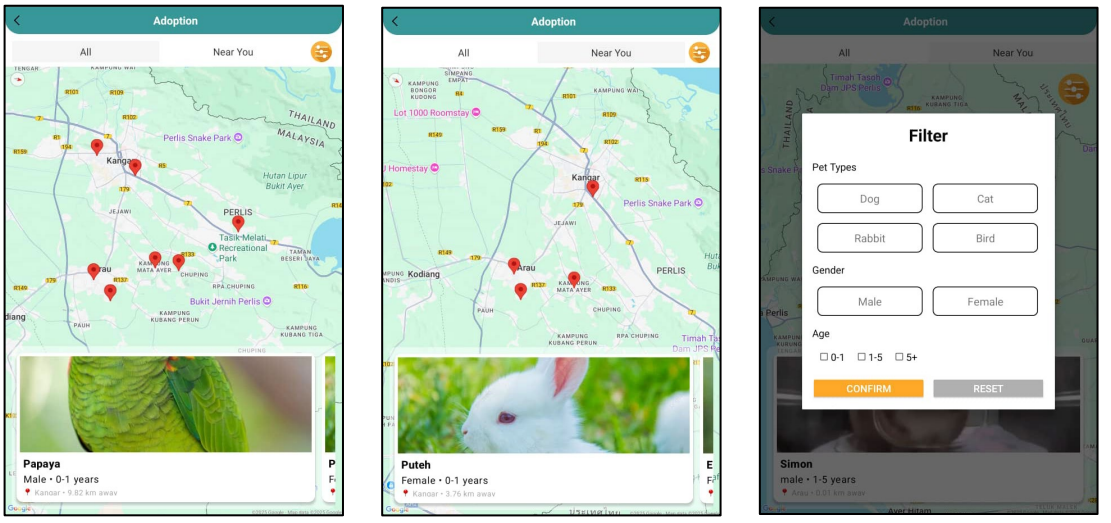

Fig. 3: (left) Listing all pets, (centre) listing of nearby pets, (right) pet filtering

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Source: FurWish mobile application screen shots

Tapping on specific pet from the scrollable list will open the following screen as in Fig. 4 (left) where the mobile application will display the owners name and profile picture at the top section, followed by pet's image, name, gender, type, age, with its availability status. At the bottom, after the description, there is a map to display an approximate location of the pet and its owner's location together with an "ADOPT NOW" button which can be seen in Fig. 4 (centre). Tapping on the button will direct user to set an appointment for meeting with the pet owner. As can be seen in Fig. 4 (right), the mobile app requests user with appointment date and time with a message. Upon submission of the appointment date and time, the owner will be notified and asked for confirmation of the appointment.

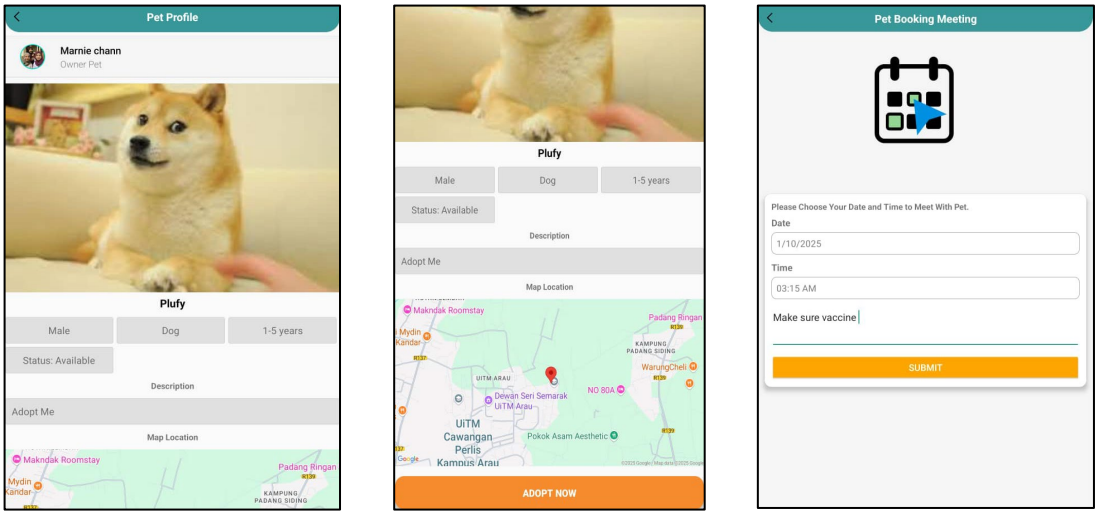

Fig. 4: (left) Pet information, (centre) pet location, (right) appointment submission form

Source: FurWish mobile application screen shots

The pet owner who intends to surrender or give away their pet can tap on "Rehome Pet" in the home screen of the FurWish mobile application. This will allow the owner to advertise their pet to potential adopter. The "Rehome Pet" button will direct user to the "Pet Details" screen as depicted in Fig. 5 (left). User is asked to upload an image of the pet to surrender, including its name, type such as Dog, Cat, Rabbit or Bird and information about gender and age. Additionally, users should write a brief description about the pet, highlighting any special traits or needs that potential adopter should know about. Once the form is completed and submitted using "POST" button, pet listing will be uploaded and visible to other users and potential adopters.

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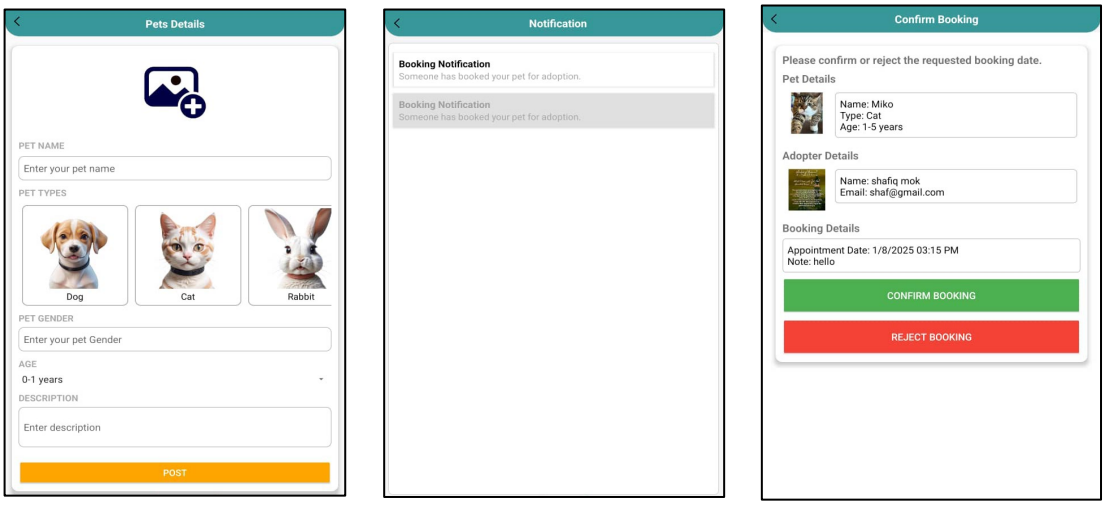

Fig. 5: (left) Rehome pet, (centre) app's notification, (right) booking confirmation

Source: FurWish mobile application screen shots

Notification screen of the FurWish mobile application can be accessed by tapping on the bell-shaped icon from the main screen. The notifications screen as can be seen on Fig. 5 (centre) provide users with important notifications about pet adoption activities, appointment requests, confirmation and interest from potential adopters. For example, it notifies when someone has booked their pet for adoption or express interest and ensures the user is promptly informed about any required actions to be taken. Unread notification appears in bold text while read notifications are displayed in regular and faded colour. Supposed user received a "Booking Notification", by tapping on the notification, the FurWish mobile app will display "Confirm Booking" screen (refer Fig. 5 (right)) asking the pet owner to accept or reject the adoption request for their pet. The screen also displays information about the pet, such as its name, type and age, together with adopter details which are name and email address. The booking details as requested by the potential adopter is also displayed which include appointment date, time and note from the adopter.

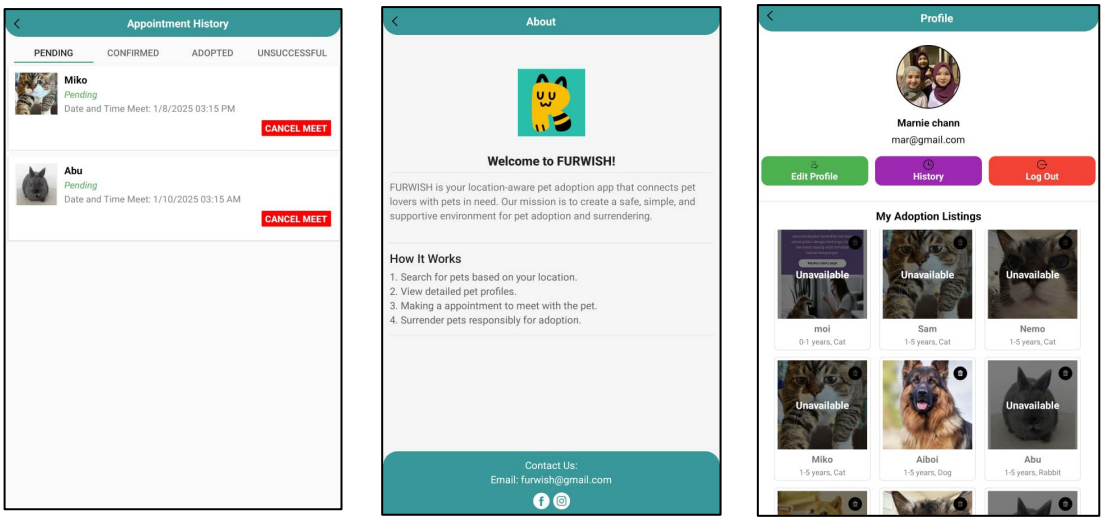

Fig. 6: (left) Appointment history, (centre) about, (right) history

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Source: FurWish mobile application screen shots.

At the home screen of FurWish mobile application, user can tap on "Appointment History" button to view list of adoption appointments as illustrated in Fig. 6 (left). The screen presents four tabs: "Pending", "Confirmed", "Adopted" and "Unsuccessful". "Pending" tab lists appointment requests initiated by potential adopter which are waiting for the owner's approval. The appointment request will remain in the tab until the owner accepts or rejects the request. It also will automatically cancel if no action is taken by the pet owner right after the meeting date and time. The potential adopter also has the ability to reject request by tapping on the "Cancel Meet" button. If pet owner accepts the appointment request, it will be moved to the "Confirmed" tab. After the meeting between pet owner and adopter, the adopter can tap on the "Adopt" button to confirm the adoption and the pet owner should confirm the adoption thru mobile application. The confirmed pet for adoption will then move to "Adopted" tab that lists all pets that have been successfully adopted. "Unsuccessful" tab lists cancelled or rejected appointments, in can be either owner rejects the appointment request or user cancels before the meeting date and time. Another icon accessible from main screen is "About" button which displays screen with welcoming message, introduction about the app and brief explanation on how it works, as shown in Fig. 6 (centre).

User's profile screen can be accessed thru the main screen by tapping on the user's icon at the top left corner. User's profile screen as can be seen on Fig. 6 (right) displays user's profile picture, name, email address at the top of the screen. Below the user's information, there are three buttons to let user update user's profile, view historical adoptions and log out of the application. Bottom section displays adoption listings made by user where the "Unavailable" marks indicate that it is in adoption process or have been adopted. Fig. 7 (left) displays an "Edit Profile" screen that allows users to update their username, address and email, while in Fig. 7 (right) shows two sections: "Pet Adoption History" and "Pet Surrender History". First section lists all the adoption attempts made by the user, showing details like the pet's name, type, age, gender, description, booking status, appointment date and notes. Second section shows pets that user has surrendered or offered for adoption through the app. It includes details like the pet's name, type, age and the surrender status.

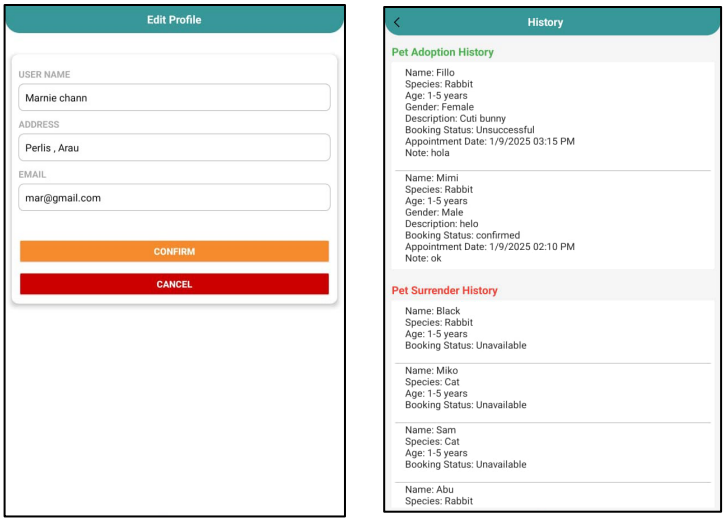

Fig. 7: (left) User's profile, (right) edit profile

Source: FurWish mobile application screen shots

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4. RESULTS AND DISCUSSIONS

This section presents results from the evaluation phase of FurWish development by focusing on the user's feedback and acceptance towards the mobile application. The results are based on collection of data from questionnaires through User Acceptance Test (UAT). The focus is on four key aspects of UAT which includes Attitude Towards Using (ATT), Behavioural Intention to Use (BI), Perceived Usefulness (PU), and Perceived Ease of Use (PEU) that make up 12 questions for evaluation. These questions are distributed over 33 randomly selected respondents. They are given time to explore and encouraged to use all features and functionality implemented in the mobile app. At the end of the session, respondents are requested to give their feedback via Google Form. The questionnaire utilized a five-point Likert scale to assess user perceptions and acceptance, where 1 indicated "Strongly Disagree" while 5 indicated "Strongly Agree".

Four key aspects that were evaluated in UAT is summarized in Table 2. PEU consists of four questions that related to how easy users could navigate and interact with the application. Two of the questions about easy of navigation and the process of surrendering pet had achieved 4.4 mean score. The remaining two questions about finding pet in the application and overall ease of use achieved slightly higher with 4.5 mean score. This resulted the overall mean score for PEU is 4.45, where in general most users found the mobile application is easy to use. Second item evaluated is PU that consisted of three questions which focused on how effective and helpful of the mobile application towards user in facilitating pet adoption process. Two questions about efficiency of adoption process and ability to discover potential adopters or pet owners achieved 4.5 average score, while one question related to the main goal of this mobile application which is location-aware feature achieved higher score with 4.6. The score 4.6 was also the highest score achieved among 12 questions distributed to respondents, this also leads to the overall best score for PU with 4.53 mean score.

Table 2. Summary of mean score from questionnaire.

Reaction of the Perceived Ease of Use (PEU)	**Mean Score**
I find the FurWish application easy to navigate.	4.4
I believe it is easy to find pets available for adoption on this application.	4.5
The process of surrendering a pet on the FurWish app is simple and straightforward.	4.4
Overall, I think FurWish is user-friendly.	4.5
Total Mean (PEU)	**4.45**
Reaction of Perceived Usefulness (PU)	**Mean Score**
FurWish helps make the pet adoption process more efficient.	4.5
Using the location-aware feature helps me find pets near my area.	4.6
The platform improves my ability to connect with potential adopters or pet owners.	4.5
Total Mean (PU)	**4.53**
Reaction of Attitude Towards Using (ATT)	**Mean Score**
I enjoy the idea of using FurWish for pet adoption or surrendering.	4.5
I have a positive attitude towards FurWish as a pet adoption platform.	4.5
Total Mean (ATT)	**4.5**

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Reaction of Behavioural Intention (BI)	Mean Score
I would recommend FurWish to others who are interested in adopting or surrendering pets.	4.5
I plan to use FurWish again in the future if I need to adopt or surrender a pet.	4.5
Total Mean (BI)	**4.5**

The following is ATT, intended to assess user's feeling and attitude toward using the FurWish mobile application. The first questions evaluate the user's perception of adopting and surrendering pets thru a mobile application, while the second evaluate their overall positive attitude toward using the FurWish app. Both questions received an average score of 4.5, indicating strong user's acceptance and perception against the idea and features of the mobile application. The final aspect evaluated is BI, which measure the user's willingness to continue using the mobile application and recommending it to others. Both questions under this section also achieve an average score of 4.5. The result indicate that FurWish app developed is a practical tool for pet adoption and has intention to recommend to other users.

5. CONCLUSION

In conclusion, the FurWish mobile application is a successful location-aware mobile application that connects pet owners and potential adopters. It helps in preventing increasing number of stray animals while promoting animal welfare. The mobile application features location-aware pet search, surrender pet via listings, setting appointments for adoption and notifications. It also manages information for pet adoption and surrendering in facilitating user to achieve their expected goals. Results from User Acceptance Test (UAT) shows high level of acceptance over four different key aspects such as attitude towards using, behavioural intention to use, perceived usefulness and perceived ease of use. Highest total mean score obtained by PU indicates that user's acceptance on its effectiveness in supporting pet adoption and surrendering process. On the other hand, the lowest mean score obtained by PEU based on two questions obtained slightly lower value with 4.4 maybe due to the difficulty in interacting with the mobile application before they can get more familiar with it.

Future potential improvements may consider refining the flow of app's navigations and enhancing interface by addressing feedback from UAT. Other than that, the application also can integrate the connections with additional partnerships such as local pet shelters, rescue organizations and pet care providers. Additionally, real-time chat functionality can be added for enhanced communication between pet owners and adopters. Lastly, the integration with intelligence data processing such as machine learning and collaborative filtering algorithms for matching pet with user's preferences may enhances the overall user's experience.

6. ACKNOWLEDGEMENTS

The authors would like to acknowledge the support of Universiti Teknologi Mara (UiTM), Perlis Branch and Faculty of Computer and Mathematical Sciences, UiTM Perlis Branch for providing the facilities for this research.

7. CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

https://doi.org/10.24191/jcrinn.v10i2.552

8. AUTHORS' CONTRIBUTONS

Marnie Umirah Mazlan: Conceptualisation, methodology, software development, formal analysis, investigation and writing-original draft; **Muhammad Nabil Fikri Jamaluddin**: Conceptualisation, methodology, formal analysis, validation, supervision, writing-review and editing; **Iman Hazwam Abd Halim**: Conceptualisation, methodology, formal analysis, writing-review and editing; **Alif Faisal Ibrahim**: Investigation, methodology and editing; **Mohd Faris Mohd Fuzi**: Methodology, writing-review and validation.

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