

**PROTOTYPE DEVELOPMENT OF MOBILE APPLICATION
(PETTRACK) FOR EASIER PET HEALTH MANAGEMENT**

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CERTIFICATION

This is to certify that we have read this research paper entitled **‘Prototype Development of Mobile Application (PETTRACK) for Easier Pet Health Management’** by Muhammad Solehan bin Zakaria and in our opinion, it is satisfactory in terms of scope, quality and presentation as partial fulfilment of the requirement for the course DVT 5436 – Research Project.



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The Outsystems Community

Family

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And Mum

Thank You

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DEDICATIONS

I dedicate my dissertation work to my family and many friends. A special feeling of gratitude to my loving family, Zakaria Abu Bakar, Supiah Supian, Siti Salehah Zakaria, and Amin Marzuki, for their infinite support and encouragement throughout my journey in getting my degree.

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ABSTRACT

An abstract of the research paper presented to the Faculty of Veterinary Medicine, Universiti Malaysia Kelantan, in partial requirement for the course DVT 5436 – Research Project

Pets have become a common occurrence in most households, requiring medical attention, such as vaccination and deworming. Veterinary clinics would usually provide owners with medical records for each pet in a pamphlet or booklet. This is a pilot study to develop a mobile application (PETTRACK™) for easier pet health management. A survey questionnaire was distributed through social media to gather information on the user experience in taking care of the health of their pets. Then, a mobile application was built for the Android platform and distributed to 20 users to try out and feedback was collected from the users on their experiences in using the application. As for the results, 41.5% of the respondents often forget to bring their pet's medical records and 39.5% forget their pet's appointments. A large number of respondents rarely (30.3%) or never (37.7%) fail to bring their phones, with a more significant percentage (86.3%) of respondents using their phones to remind them of important dates and events. It was found from the tester's feedback that the application could replace the traditional pamphlet or booklet styled medical records and had the potential to play a part in making pet management easier for owners by having more features.

Keywords: *Pets, Mobile Application, Medical Records, Pet Management*

ABSTRAK

Abstrak daripada kertas penyelidikan dikemukakan kepada Fakulti Perubatan Veterinar, Universiti Malaysia Kelantan untuk memenuhi sebahagian daripada keperluan kursus DVT 5436 – Projek Penyelidikan.

Haiwan peliharaan telah menjadi perkara biasa dalam kebanyakan isi rumah pada masa kini, dengan mereka memerlukan rawatan perubatan seperti vaksinasi dan deworming. Klinik veterinar biasanya menyediakan rekod perubatan untuk setiap haiwan peliharaan dalam bentuk risalah atau buku kecil. Ini adalah kajian rintis untuk pembangunan aplikasi mudah alih (PETTRACK™) untuk pengurusan kesihatan haiwan peliharaan yang lebih mudah. Satu soal selidik telah diedarkan melalui media sosial untuk mengumpul maklumat tentang pengalaman pengguna dalam menjaga kesihatan haiwan peliharaan mereka. Kemudian, aplikasi mudah alih telah dibina untuk platform Android, dan diedarkan kepada 20 pengguna untuk mencuba dan maklum balas telah dikumpulkan daripada pengguna tentang pengalaman mereka menggunakan aplikasi tersebut. Hasilnya, 41.5% daripada responden sering terlupa untuk membawa rekod perubatan haiwan kesayangan mereka dan 39.5% daripada responden sering terlupa janji temu haiwan peliharaan mereka. Sebilangan besar responden jarang (30.3%) atau tidak pernah (37.7%) terlupa untuk membawa telefon mereka, dengan peratusan yang lebih besar (86.3%) responden menggunakan telefon mereka untuk mengingatkan mereka tentang tarikh dan acara penting. Ia didapati daripada maklum balas penguji bahawa aplikasi itu boleh menggantikan rekod perubatan tradisional dalam bentuk risalah atau buku kecil, dan berpotensi untuk memainkan peranan dalam memudahkan pemilik dalam pengurusan haiwan peliharaan dengan mempunyai lebih banyak ciri.

Kata kunci: Haiwan Peliharaan, Aplikasi Mudah Alih, Rekod Kesihatan, Pengurusan Haiwan Peliharaan

1.0 Introduction

Pets have become a common sight in households nowadays, most acting as a companion to someone. These pets are loved by their owners, with some even treated luxuriously and humanly, to the point that they are considered friends or even part of the family (Walsh, 2009). To ensure their pets are living their life to the fullest, pet health should be taken into consideration. With the diversity of animal options that can be taken as pets (Hart, 2003), different species require different nutrition, supplements, special care and attention. Pets can be brought to veterinary clinics for checkups, vaccination against diseases, and treatments for unwell or injured pets. These visits would require pets to have a medical record to keep track of the previous medication or treatments throughout their lives.

A common method of storing the pet's medical record would be in the form of a small book or a pamphlet. These mediums, which are usually given to the pet owners by the veterinary clinic, are made from paper or cardboard, making them relatively light. They are also small, allowing them to be carried around easily. However, these properties meant to make them mobile ended up making them easier to be misplaced or left behind. In addition to that, with papers and cardboard being water-absorbent materials (Geueke *et al.*, 2018), water may easily damage the medical records and be unreadable or even destroyed.

The use of mobile applications has become essential in today's society to stay connected (Mutchler *et al.*, 2011). Daily activities can be done quickly via mobile applications, such as online shopping, food delivery, documentation, classes, and even meetings through the different platforms available. Some mobile applications can also be used to store data and records, with some having the ability to send reminders to

the user in the form of push notifications. People increasingly treat their smartphones as data storage banks (Szyjewski & Fabisiak, 2018). Data recorded in applications can be stored safely as it is stored digitally in smartphones. In contrast, some applications can even store data in a cloud server to further secure the data and allow the data stored to be used on multiple personal devices (Nickerson & Mourato-Dussault, 2016).

Therefore, this research aims to develop a mobile application that can help pet owners manage and keep track of their pet's health records, which could replace the traditional methods of record books and pamphlets.



2.0 Research problem

One of the significant issues regarding pet health management would be that the owners tend to forget upcoming appointments, such as monthly and yearly vaccination shots and routine deworming. Hence, they need a reminder of those important events.

Veterinary clinics would usually provide the pet owners with medical records in books or cards. However, this method may be challenging to keep track of their pet's medical records as the pet owners may forget to bring the documents to the clinic during the visit. At the same time, some may even misplace and lose their pet records. They also have to check the records manually to remind themselves of the next veterinary appointment. The pet owners would have to go through the hassle of jotting down the important dates on their calendars or log a reminder after the veterinary clinic visit on their phone's calendar app.

Case referral to another veterinary clinic is an issue for the pet owners and the clinic's veterinarian. Most pet owners are not familiar with the medications or procedures done on their pets. Therefore, when their pets are brought to another veterinarian, it would be challenging for the pet owner to explain to the veterinarian about the previous medications. On the other hand, the new veterinarian would have difficulty guessing the last medicines based on the owner's explanation.

To eliminate these problems, a mobile application can be developed. Mobile phones are considered a must-have product to have on a person. Therefore, the owner's risk of forgetting to bring along their pet's medical records would be minimal if the record was in their phones. The application can also have a reminder feature built in to the application allowing it to remind the pet owner when it's time for the appointment of

their beloved pets. Medication details from the previous veterinary visit can also be logged into the application, allowing the veterinarian to understand the pet's previous medical records before their visit.

3.0 Research questions

What would be a good alternative to solve the existing problems caused by the traditional booklet-styled medical records currently used in veterinary clinics?

4.0 Research hypothesis

H₀: The use of the mobile application does not show any significant improvement for the owners to keep track of the health and wellbeing of their pets.

H₁: The use of the mobile application shows significant improvement for the owners to keep track of the health and wellbeing of their pets.

5.0 Objectives

To provide a solution for pet owners to keep track of the health and wellbeing of their pets in the form of a mobile application.

6.0 Literature review

6.1 Pets

Saunders Comprehensive Veterinary Dictionary defines a pet as a nonfood animal included in a human household as a companion and on a status almost equivalent to that of a human being. There is a wide variety of pets (Hart, 2003), ranging from mammals such as cats and dogs to arthropods such as the tarantula. Different species of pets are usually associated with the owner's interests.

Pets play multiple roles in why they are adopted into the household (Gates *et al.*, 2019). Most are adopted as companions for people who live alone or for children with busy parents, some act as a guarding and guard dog presence, some serve as psychological support for disturbed people and a means of entrance into a different social group (Blood *et al.*, 2007). Some assist in daily tasks such as guide dogs for the blind, and some are adopted just due to the interest of the pet owner themselves.

6.2 Smartphones

Smartphones are now considered a crucial element in well-developed societies as it is regarded as the "smart" part of a human's life (Szyjewski & Fabisiak, 2018). The incorporation of the internet into these mobile devices became a platform for humans to stay connected to their worlds (Mutchler *et al.*, 2011). Smartphones allow one to have constant communication with other people, a place to get news and updates on what is happening around them and worldwide, a platform to socialize on social media, and unwind and destress through mobile games (Islam & Mazumder, 2010).

Smartphones are equipped with multiple features such as cameras, sensors such as accelerometers and gyroscopes, also speakers and microphones for entertainment and communication purposes (Grossi, 2019). These features can be incorporated with software developed by the phone's manufacturer or downloaded from the phone's application distribution market to have more advanced features such as QR code scanners, facial recognition, artificial intelligence, and augmented and virtual reality.

6.3 Mobile Operating Systems

Operating systems are a set of data and programs that run on a computer or a mobile device (Subrahmanyam and Swathi, 2011). Currently, there are two main operating systems in the world: the iPhone Operating System (iOS) and Android.

iOS is a mobile operating system developed by Apple Inc. exclusively for hardware made by the company. It was first released on the 29th of June 2007 along with Apple Inc's first smartphone, named the iPhone (Talker, 2021). This operating system branched into iPadOS on the 24th of September 2019, which was developed specifically for Apple Inc's line of tablets (Talker, 2021). On the other hand, Android is an open-source operating system, first released in October 2003 (Callaham, 2021). Being an open-source operating system, several different companies, such as Sony and Samsung, were adapted to be incorporated into their line of smartphones (Callaham, 2021). Both operating systems are highly distinct, such in customizability, source model, software and features (GeeksforGeeks, 2021).

6.4 Applications and Animal Care

Applications, also known simply as apps, are software found in smartphones that serve different functions that can help make life easier for humans (Mutchler *et al.*, 2011). The apps vary from social media platforms to socialize and interact with others, such as Facebook, Instagram and Twitter (Walsh, 2021), online shopping platforms, like Shopee and Lazada (Ramli, 2021), to online meetings and classes, such as Zoom, Google Meet, and Webex (McLaughlin, 2021).

With the increasing number of mobile apps in the world, reaching up to 3.48 million apps in the Google Play Store and 2.22 million apps in the Apple App Store in the first quarter of 2021 (Statista, 2021), the opportunities to integrate apps into different sectors has increased, including improving in the pet healthcare industry (Kumar *et al.*, 2017). Currently, there are apps which allow livestock farmers to analyze the performance of their farms and increase farm productivity and profits by utilizing decision-making tools, easy data entry and reporting all within the app (MyFarm, 2019). For companion animals, there are apps which connect pet owners with pet sitters, boarders, walkers and even trainers (JomPaw, 2021). Research has been done to integrate healthcare, appointments and medical services has been done (Kumar *et al.*, 2017), however, the existence of such apps in the app distribution market remains to be nonexistent.

7.0 Materials and methods

7.1 Equipment and Software

The equipment used in this study was a laptop and an Android smartphone. The software used in this study was GNU Image Manipulation Program (GIMP), OutSystems and Google Form.

7.2 Preparation of Google Forms

7.2.1 Preparation of Survey Questionnaire

A Google Form was created to gather data on the respondent's demographics, pet-related experiences, and mobile application expectations. The questionnaire was distributed to the public two weeks before the application itself. An example of the survey questionnaire can be found in Appendix A.

7.2.2 Preparation of Feedback Form

Another Google Form was created to gather feedback from the application users on their experience after using the application. The incidents range from the functionality and stability of the application to the user's pet-related experiences while using the application. This form was distributed after the end of the trial run of the application for one week. An example of the survey questionnaire can be found in Appendix B.

7.3 Development of the Mobile Application

Mobile application development begins on pencil and paper, where rough sketches of the application were drawn out to get a rough idea of how the application will look visually and the layout of each element of the application. The application icon was also drafted in this stage.

Next, the sketched-out designs were recreated digitally using GIMP. Here, the visual aspects of the application and logo were considered, such as the color, background, and fonts. Assets such as the application logo, custom buttons, and the thumbnail of the application on smartphones were also made here.

OutSystems was launched on a laptop and the application development began. Everything was made and programmed within the software, from how it visually looks function of the buttons to the interaction between the different pages of the application. After the programming was done, the app was run in the debugger to detect any errors in the coding before running the application on an emulator. Here, the application was tested to see whether it responds and acts as it is expected to. If errors and bugs are found when running or launching the application in the emulator, the application was rechecked to identify the issue.

When the application does not have any error and works as intended in the emulator, it is exported as an installer package that can be downloaded online to load into a smartphone to test whether it runs smoothly on an actual smartphone before it can be distributed to testers. Screenshots of the application can be found in Appendix C.

7.4 Distribution of Test Application

A total of 20 testers tried the application over two months. A collaboration with a private veterinary clinic was done to find potential testers. The participants were approached, and the application was introduced, along with the goal of the application.

After the testers had agreed to join the trial run, their information was collected, and the application was sent to the testers. Criteria set for the testers were someone who was between 18 to 40 years old, had a good experience with smartphones, and visits a veterinary clinic often for their pet's medical treatment.

8.0 Results

8.1 Survey Questionnaire

The survey questionnaire was distributed over social media such as Twitter, Whatsapp, Facebook, and Instagram. Across all platforms, the Google Form has gathered 175 responses across all platforms, with 74.9% of the respondents being female and 25.1% being male. A large number of the respondents are between the age of 21 to 25 years old (59.4%), followed by ages between 26 to 30 years old (20%) and between ages of 36 to 40 years old (4%).

The survey found that 38.5% of the respondents have more than four pets, 23.6% own one pet, 18.4% own two pets, while 14.4% and 5.2% of the respondents own three and four pets, respectively. Cats occupy most of the

percentage of the species of pets, at 94.9%. The remaining 5.1% were shared by dogs, fishes, reptiles, birds and large animals (Figure 8.1).

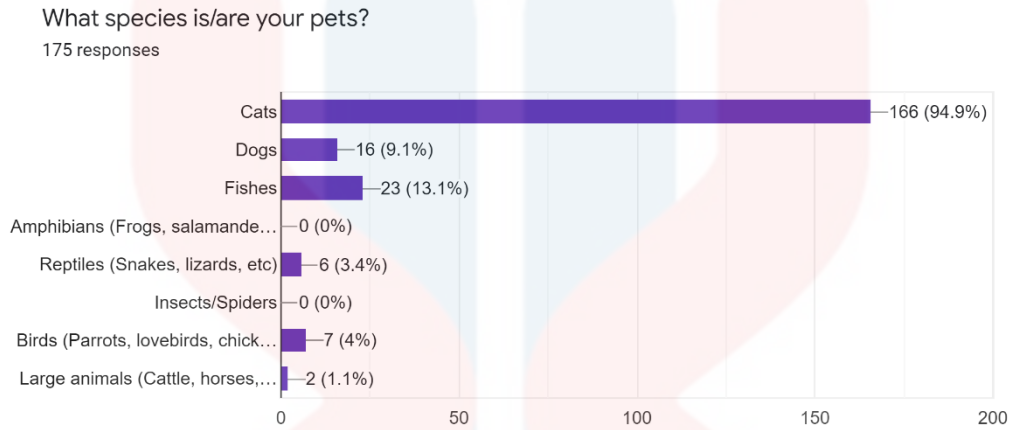


Figure 8. 1: Results for when asked about the species of the respondent's pet

66.1% of the respondents often bring their pets to visit the veterinarian, with the three main reasons being vaccination and/or deworming (70.3%), unhealthy or injured pets (61.1%), and treatments and procedures (57.7%). Almost half of the respondents often forget to bring their pet's medical records during their visit to the veterinarian (41.5%), and only 39.5% of the respondents often forget their pet's medical appointments. On pet medication and treatment, the respondents were required to choose between 1 (not familiar at all) and 5 (very familiar). Five was the most preferred option at 28.2%, followed by 4 at 25.9%, 3 at 25.3%, 2 at 10.9% and 1 at 9.8% (Figure 8.2).

How familiar are you with your pet's medication/treatments?

175 responses

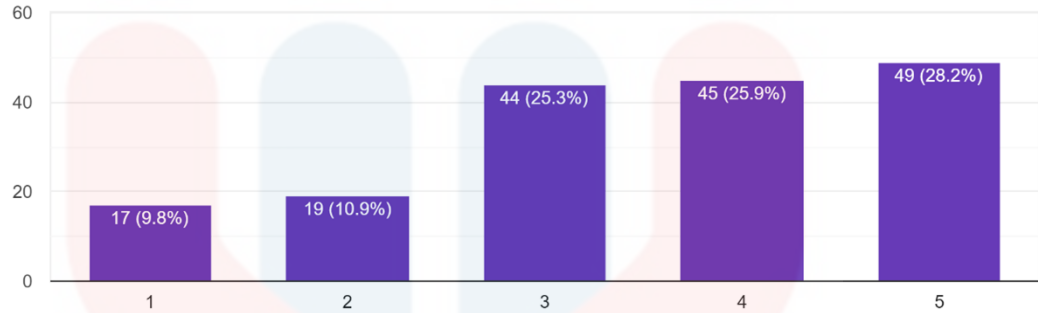


Figure 8. 2: Results for when asked about how familiar the respondents are with their pet's medication/treatment

The survey revealed that out of the 175 respondents, 60.6% of the respondents were using Android smartphones. 34.9% used iOS devices, and only 4.6% used Android and iOS smartphones. The respondents are also asked how often they forget to bring their phones. 37.7% of the respondents say they never forget, 30.3% say they rarely forget their phones, 21.1% say they sometimes forget, 10.3% mentioned they always forget their phone, and only 0.6% say that they often forget their phones (Figure 8.3).

How often do you forget to bring along your phone?

175 responses

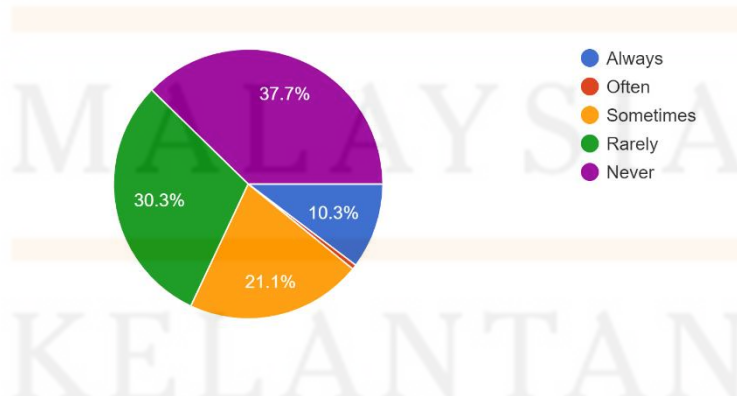


Figure 8. 3: Results for when asked about how often the respondents forget to bring along their phone

When asked how many hours they spend on their phone, 34.9% of the respondents say they spend between 4 to 6 hours. A quarter of the respondents say they spent more than 9 hours (24.6%), and another quarter (26.3%) spent between 7 to 9 hours on their phones. People who spend between 1 to 3 hours on their phones accommodate 14.3% of respondents. 86.3% of the respondents used their smartphones to keep track of important dates and remind them of events (Figure 8.4). A majority of the respondents (92.6%) think that mobile applications made to help in managing your pet's health and wellbeing are an excellent concept.

Do you use your smartphones to keep track of important dates/reminders to events?
175 responses

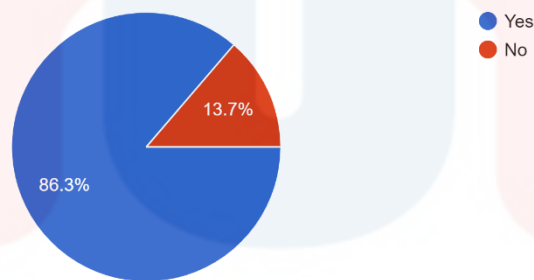


Figure 8. 4: Results for when asked about whether the respondents use their phones to keep track of important dates and reminders

When asked about what they expect from a mobile application made to help in managing your pet's health and wellbeing to be able to do, the top three answers were to provide reminders to important appointment dates such as vaccination, deworming, and treatment (89.7%), service finders such as finding nearby veterinary clinics and pet shops, pet boarding, and pet sitters (78.9%), and store medical records of their pets (78.3%) (Figure 8.5).

What do you expect a mobile application made to help in managing your pet's health and wellbeing to be able to do?

175 responses

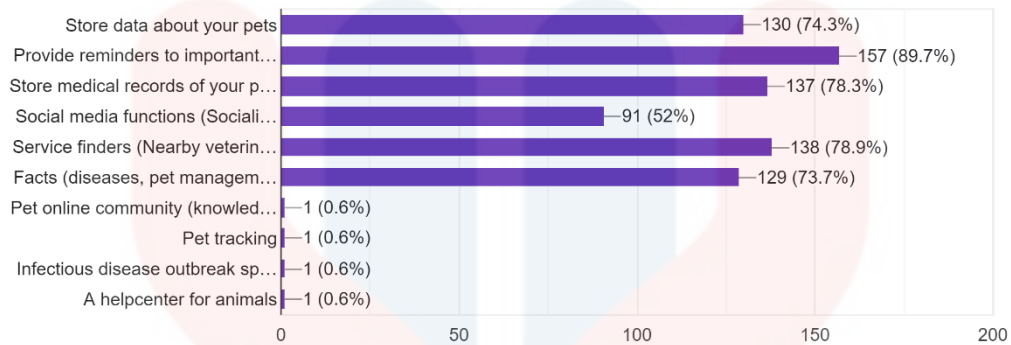
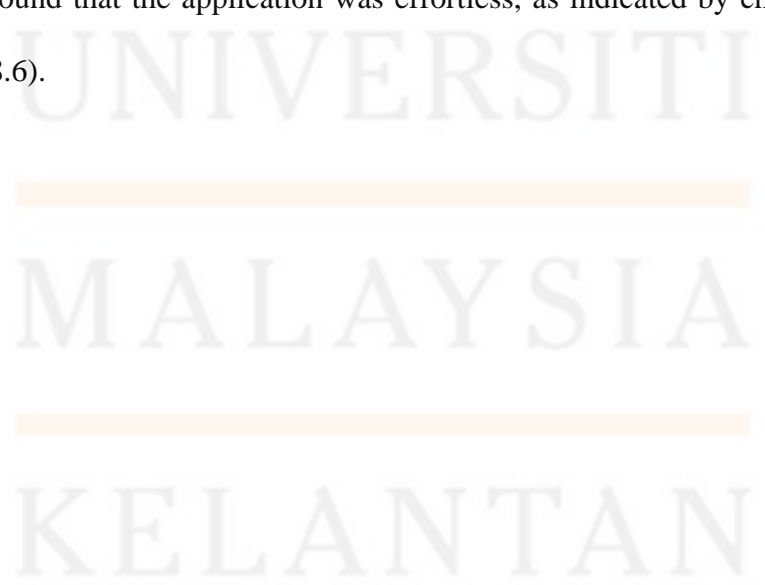


Figure 8. 5: Results for when asked about what the respondents expect from a mobile application made to help in managing their pet's health and wellbeing

8.2 Feedback Form

The feedback form was distributed to the application testers after the trial period. All testers agreed that the application served its function as a digital version of medical records. The testers were asked to rate the app's difficulty, with one being difficult and five being extremely easy. 12 out of the 20 testers found that the application was effortless, as indicated by choosing 5 (Figure 8.6).



Do you find the app easy to use?
20 responses

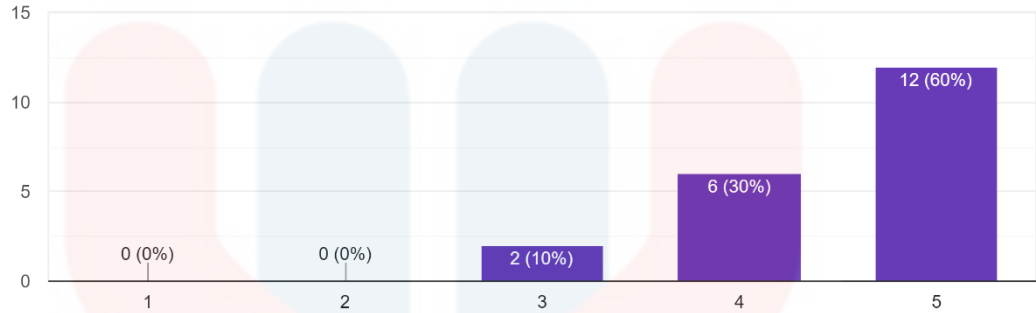


Figure 8. 6: Results for when asked about the application's difficulty to use

Six testers chose 4, and 2 testers preferred three on the scale. The testers were also asked to rate their general experience in using the application using a scale of 1 (Bad) to 5 (Excellent). 11 out of 20 testers rated their experience with a 4, 6 out of 20 rated 5, and 3 testers rated 3. When asked whether they encountered any mistakes or errors while using the application, they provided feedback from the overall design of the application being too simple to the confusing way to install the application (Table 8.1).

Table 8. 1: Answers from the testers, when asked about any mistakes or errors encountered while using the app

No (5 responses)
None (2 responses)
I accidentally swipe, and my record is deleted.
The pet's name should be included; people can mistake it for the owner's name.
No mistakes, but I wish it would be better
1. When I add the data, I cannot edit the data. I only can delete and redo it again. 2. For the 'Name', people may be confused about whether their pet's name or the owner's name.
Nope
Yes, I'm quite confused about installing this app
Does the deworming medication mean what kind of deworming medicine or does it means to fill in the deworm date?
Not yet for now.
No. But the data can be quickly deleted by just a few mistakes
Is 'Name' the name of the animal or my name, or the clinic name?
There is no edit choice after filling the data
No mistakes seen
The app is a bit lag to start up. App design is too simple and not attractive.

The testers were also asked to provide any feedback, suggestions, and features they'd like to see in the future (Table 8.2).

Table 8. 2: Feedback and suggestions given by the testers

All good can add GPS for a nearby clinic
It would be great if you could include a pop for the remainder of the appointment and make it more colourful, or can add the pet's image as an ID.
<ul style="list-style-type: none"> - no clear division between pets (maybe can do drop off the menu or different colour for different pet records) - Have an option to make profiles for each pet - Can choose the theme for the app - The data can be deleted easily, ask for confirmation before deletion - It'd be better if there were notifications for upcoming appointments - It'd be nice if can link directly to the clinic's system
Specify each "button" for ex: the name can be changed into pet's name. Maybe can use a drop-down button for both of the upcoming appointments (for more choices and ease the hassle of typing the reason) and the pet's name for owners with multiple pets
Else is good, I loved the app has a simple interface and clean look
<ul style="list-style-type: none"> - Change the name to 'Pet ID' - Add on choices like ' 1 month, 2 weeks, 2 months for the vaccine due date, and when we choose, it will automatically select the exact date from the first vaccine. - Add Edit feature - Can add features to convert the data into pdf to be downloaded and sent to people.
More helpful is it can crosslink with the krelolos or clinic system. Much easier to keep on track so that we don't miss updating the appointments.
Adding more features, but this app is great enough to use
The first icon that pops up when I click the icon is amazing. Like wow factor. The icon for the apps also is so cute. I like that. Another thing that I like because the app is so smooth, with no lag whatsoever. But the homepage/dashboard for me is too blank. Maybe we can put something that will make the dashboard more

<p>interesting. And then for the pet data, some feature like not clear. Like name. What name? The owner name or the pet name? And then maybe we can add on also other features such as ID no of the clinic for the cat. Usually, the owner can trace back their pet med record in the clinic if they remember the ID. Then another one that is not clear is deworming medication. Because when you click at the site, we can type on it. So what do we have to put on it? The date or what? Because if the date, then the automatic calendar should pop outright. But not in this case.</p> <p>Another thing that I want to suggest is if the developer can allow us to add our pet picture to the data. So each cat has their data with their pic. I think that's all. Thank you for the experience</p>
<p>Maybe you can put cute pictures or emoticons when filling in different cats to make the app more fun and attractive.</p>
<p>Maybe add upside notes for the pet owner to jot down some important advice or facts about animal care.</p>
<p>Maybe you can add some interesting background and features that can capture the users' attention. Also, maybe a different category of animals can be created for a more organized schedule</p>
<ul style="list-style-type: none"> - Display a calendar highlighting related dates on the topmost - Display only the name, dob, etc for each pet on the home page - Once the user clicks the pet tile, display a page containing info e.g. proof of vaccination, medication, etc
<p>Add more features to make the app more interesting</p>
<ul style="list-style-type: none"> - The app name is PetTrack, but I thought it has a tracking pet function (if they have microchips). - Try to 'bold' each parameter instead, such as 'Name', 'Date of Visit', etc. - Try to add 'Edit' and 'Delete' buttons to each patient's record. - Even if you want to continue, allow the slide to the left for delete, and mention the sliding instruction in Home or something. - Also, better to separate each patient record with a line or box. I suggest that each patient's info be separated into boxes that can be 'extended' and 'collapsed' or small boxes that can be dragged like in note-taking apps (can refer to UI of Google Keep app). - Overall simple but friendly design.

I would suggest that the app have a folder for each pet since it would be hard to scroll down to search pets' record for the owner with many pets.
As an OCD patient, I don't really like the home page where everything is cluttered on it, I would like to have a cleaner home, maybe with a list of the name of the cat, and the details are only shown after clicking on it
No
Change the name to pet ID and add on the edit choice
Maybe add on disease name or drug name
Not available for Apple users. Make it more attractive.

9.0 Discussion

The results showed that the number of respondents who often forget to bring their pet's medical records accommodates almost half of the total respondents, at 41.5%. However, only 39.5% of the respondents often forget their pet's medical appointments. Many respondents were also quite familiar with their pet's medication or treatments, with 49 out of 175 respondents choosing 5, and 45 out of 175 respondents choosing 4. These may be due to a large number of the participants being veterinary medicine students, who are more conscious of the importance of obliging to the appointments and understand the drugs and treatments given to their pets, which caused selection bias to occur in the data gathered.

Secondly, the research found that many participants never or rarely forget to bring along their phones, at 37.7% and 30.3%, respectively. This is important to tackle the issue of pet owners forgetting to bring along their pet's medical records during their veterinary visits, as people are less likely to forget to bring along their phones. Most of the respondents also used their phones to keep track of important dates and as reminders to events, at 86.3%. This aligns with one of the application's goals, which is to help remind pet owners of any upcoming appointments. The use of the built-in calendar application or even third-party applications may help provide reminders. However, those applications would be only able to remind of the dates but not save any details regarding the appointments.

From the results, it was evident that the application developed was easy to use, with 60% of the testers choosing five on the scale, 30% of them choosing 4, and the

remaining 10% choosing 3, despite not being given any instructions on how to use the application at the start of the trial period. This was also supported by the tester's feedback when asked about their general experiences in trying out the application. 55% of the testers rated their experience as a four on the scale, 30% ranked the experience as a 5, and the remaining 15% rated the experience as a 3. These results were as the application must be easy to use so that users from different backgrounds would have no problem utilizing the application in the future.

The tester's responses when asked about whether they encountered any mistakes or errors while using the application were read through. It was found that most complaints were regarding how the data displayed in the application could not be edited. Another complaint would be about installing the application. The application was not available in the Google Play Store yet. Therefore, it had to be downloaded from the Outsystems website. The testers' feedbacks were also read through thoroughly. Most of the input and suggestions were on improving the overall design, adding more features to the application, and some Quality-of-Life (QoL) improvements such as adding an edit button to the menu and sorting the data to avoid clutter on the home screen.

10.0 Conclusion

In conclusion, a mobile application has the potential to be a good alternative that can solve the existing problems caused by the traditional booklet-styled medical records currently used in veterinary clinics.

11.0 Recommendations and future work

Several limitations were noted in this study. For future studies, it is wise to distribute the survey questionnaire to a broader range of audiences to eliminate selection bias in the results. The complaints received from the testers will be analyzed further and the appropriate QoL improvements will be applied to a future version of the application. Feedback and suggestions given by the testers will be considered and suggestions given by the testers will be considered and implemented into the application in the future.

Appendix A

Pet-Related App Survey

Hi everyone!

My name is Muhammad Solehan bin Zakaria (D17A0022) and I am a final year student in Degree of Veterinary Medicine, Universiti Malaysia Kelantan (UMK). For my final year project (FYP), I'm working on a mobile application that could help in pet management, and the purpose of this questionnaire is to gather information on your experiences in managing your pets.

Please answer all questions to the best of your knowledge. All responses will be kept private and confidential.

I really appreciate it if I could get a few minutes of your time to help me fill up this questionnaire. Your responses will help me greatly in completing my final year project.

If you have any questions regarding this questionnaire, feel free to contact me on the following platforms:
Whatsapp: 013-6965432
Twitter: @Solehanc
Email: solehanc@gmail.com

* Required

Demographics

This part of the questionnaire aims to know a bit more about the respondents

Gender *

Appendix A: A screenshot of the front page of the survey questionnaire

Appendix B

PETTRACK Trial Feedback Form

*** Required**

Do you think the app serves its function as a digital version of medical records? *

Yes

No

Do you find the app easy to use? *

1 2 3 4 5

Difficult Extremely easy

On a scale of 1 to 10, how was your general experience in using PETTRACK? *

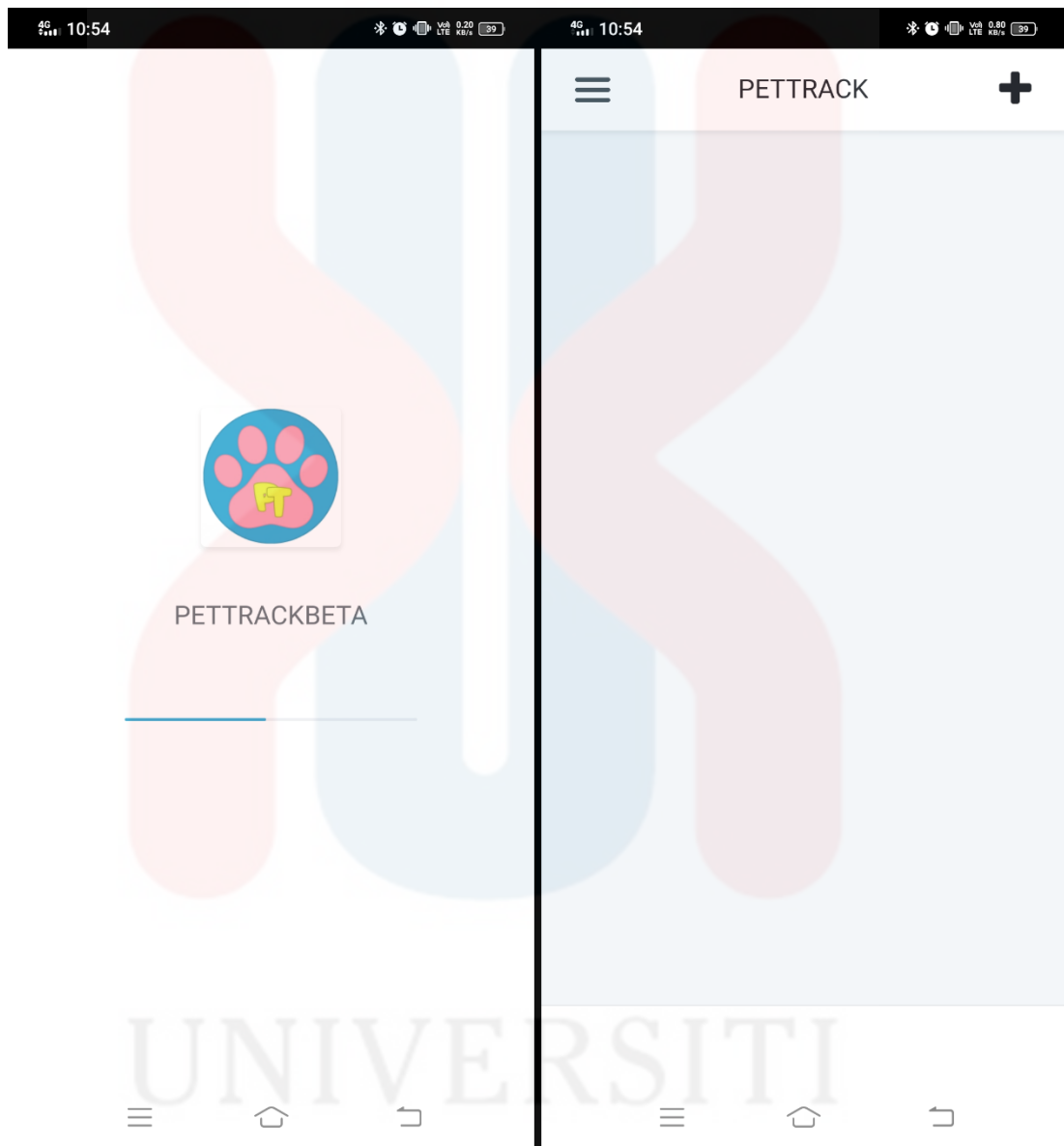
1 2 3 4 5

Bad Excellent

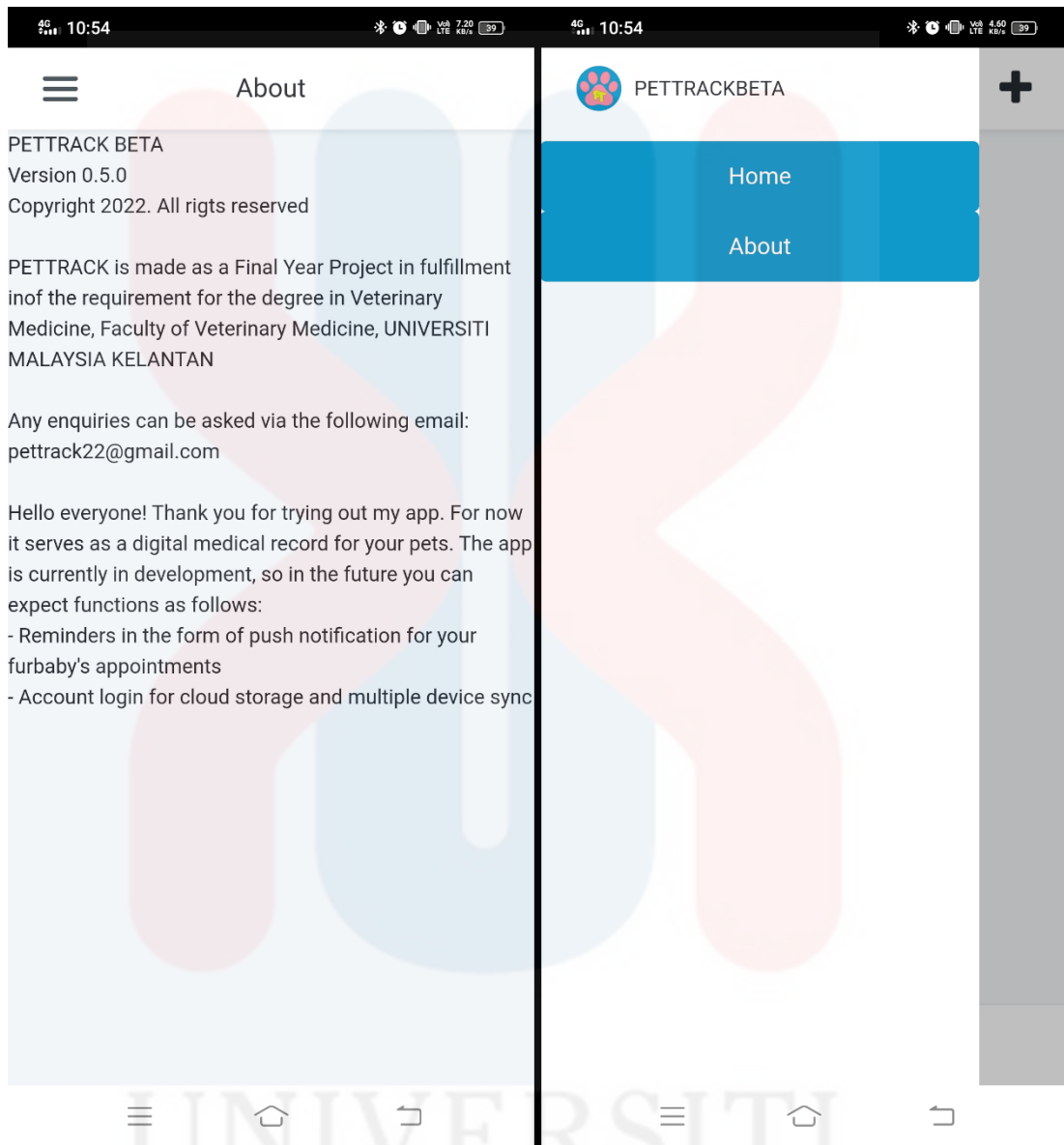
Appendix B: A screenshot of the front page of the feedback form

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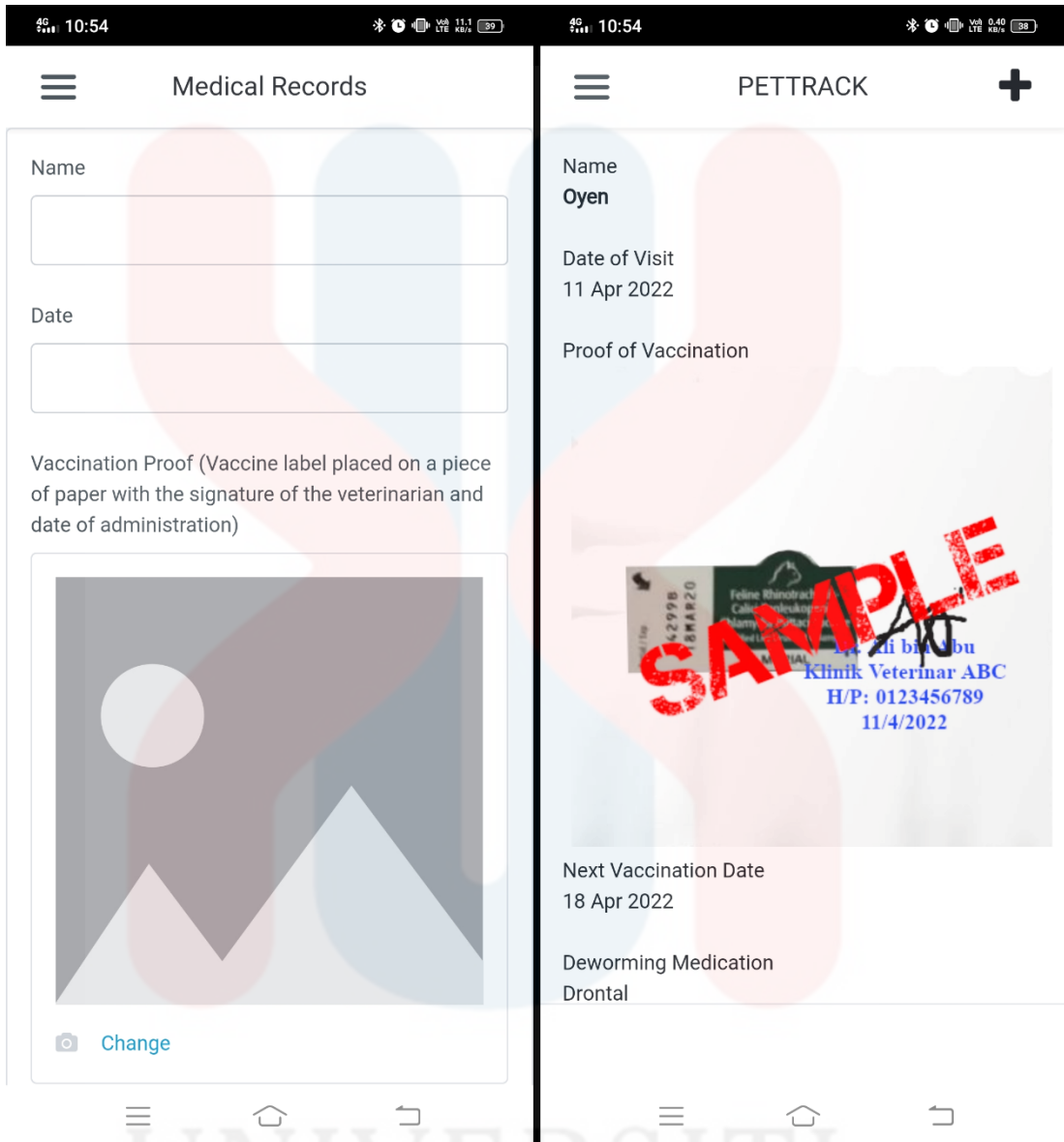
Appendix C



Appendix C 1: A screenshot of the splash screen (left) and home screen (right) of PETTRACK



Appendix C 2: A screenshot of the About screen (left) and sidebar menu (right) of PETTRACK



Appendix C 3: A screenshot of the medical record form screen (left) and the home screen after records were added (right)

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