

PAWSITIVE SHELTER MANAGEMENT SYSTEM

CHONG JIAXIN

**FACULTY OF COMPUTING AND INFORMATICS
UNIVERSITI MALAYSIA SABAH**

2023

DECLARATION

I hereby declare that the material in this dissertation is my own, except for quotations, equations, summaries and references, which have been duly acknowledged.

7 JULY 2023

Jiaxin

Chong Jiaixin

BI20110148

EXAMINER'S DECLARATION

NAME : **CHONG JIAXIN**

MATRICNO : **BI20110148**

TITLE : **PAWSITIVE SHELTER MANAGEMENT SYSTEM**

DEGREE : **BACHELOR OF INFORMATION TECHNOLOGY WITH
MULTIMEDIA TECHNOLOGY**

DATE : **7 JULY 2023**

CERTIFIED BY,

EXAMINER 1 **SIGNATURE**

DR JACKEL CHEW VUI LUNG

EXAMINER 2 **SIGNATURE**

DR GOH SAY LENG

ACKNOWLEDGEMENTS

I would like to express my heartfelt gratitude to my supervisor, Madam Hadzariah Binti Ismail, for their unwavering support, guidance, and encouragement throughout the development of the Pawsitive Shelter Management System. Their expertise, valuable insights, and continuous motivation have been instrumental in shaping the project's success.

I am also profoundly thankful to Dr Jackel Chew Vui Lung and Dr Goh Say Leng for their valuable input, suggestions, and guidance during the evaluation process. Their feedback has contributed significantly to the improvement of the system.

Additionally, I extend my sincere appreciation to my parents for their constant support, both emotionally and financially, throughout this endeavour. Their belief in me and encouragement have been a constant source of motivation.

Lastly, I acknowledge the support and encouragement provided by my friends, whose unwavering support and belief in my abilities have kept me motivated during challenging times. Their friendship and encouragement have been invaluable throughout this project.

Chong Jiaxin

1 July 2022

ABSTRACT

The motivation behind carrying out this project stems from the desire to leverage technology and innovation to address the challenges faced by pet shelters and contribute to the welfare of homeless pets. The project addresses the inefficiency and need for centralized management in pet shelters, which often leads to difficulties in pet adoption and overall operations. The primary objective of this project is to create a pets shelter management system that enhances the effectiveness, efficiency, and transparency of pet shelter operations, ultimately resulting in more pets being adopted and better welfare for stray animals. The recommended course of action entails developing and implementing a comprehensive web-based application incorporating crucial features like adoption function, volunteer registration, and donation channel, offering a centralized platform for effective pet shelter management. The new Pawsitive Shelter Management System is expected to bring several benefits, including streamlined operations, improved tracking of pet information, enhanced communication among shelter staff, volunteers, and potential adopters, increased visibility of available pets for adoption, and ultimately a higher rate of successful pet adoptions and improved care for homeless pets.

ABSTRAK

SISTEM PENGURUSAN PERLINDUNGAN PAWSITIF

Motivasi di sebalik melaksanakan projek ini berpunca daripada keinginan untuk memanfaatkan teknologi dan inovasi untuk menangani cabaran yang dihadapi oleh tempat perlindungan haiwan peliharaan dan menyumbang kepada kebajikan haiwan peliharaan gelandangan. Projek ini menangani ketidakcekapan dan keperluan untuk pengurusan berpusat di tempat perlindungan haiwan peliharaan, yang sering membawa kepada kesukaran dalam pengambilan haiwan peliharaan dan operasi keseluruhan. Objektif utama projek ini adalah untuk mencipta sistem pengurusan tempat perlindungan haiwan peliharaan yang meningkatkan keberkesanan, kecekapan dan ketelusan operasi tempat perlindungan haiwan peliharaan, akhirnya menyebabkan lebih banyak haiwan peliharaan diterima pakai dan kebajikan yang lebih baik untuk haiwan terbiar. Tindakan yang disyorkan memerlukan pembangunan dan pelaksanaan aplikasi berasaskan web yang komprehensif yang menggabungkan ciri penting seperti fungsi penerimaan, pendaftaran sukarelawan dan saluran derma, menawarkan platform terpusat untuk pengurusan tempat perlindungan haiwan peliharaan yang berkesan. Sistem Pengurusan Tempat Perlindungan Pawsitive baharu dijangka membawa beberapa faedah, termasuk operasi yang diperkemas, penjejakan maklumat haiwan peliharaan yang dipertingkatkan, komunikasi yang dipertingkatkan di kalangan kakitangan perlindungan, sukarelawan dan bakal penerima pakai, meningkatkan keterlihatan haiwan peliharaan yang tersedia untuk diterima pakai, dan akhirnya kadar kejayaan yang lebih tinggi. pengambilan haiwan peliharaan dan penjagaan yang lebih baik untuk haiwan peliharaan gelandangan.

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LIST OF ABBREVIATIONS

DFD	-	Data Flow Diagram
ERD	-	Entity-Relationship Diagram
SDLC	-	System Development Life Cycle
UMSKAL	-	Univeristi Malaysia Sabah Campus Antarabangsa L

CHAPTER 1

INTRODUCTION

1.1 Introduction

Our pets give us companionship, affection, and assistance, making them a crucial part of our lives. A loving and permanent home is unfortunately not able to be found for every pet (Vier Pfoten International, 2023). Concern over the issue of abandoning and neglecting pets is growing on a global scale. The increasing number of abandoned pets due to fast-paced and stressful lifestyles has led to overcrowding in shelters, resulting in limited resources for their care. Pet shelters are associations that work to care for and house animals who have been abandoned or are homeless until they find a loving home. These organisations are essential to our communities and require assistance to fulfil their goals.

The Pawsitive Shelter Management System project is a website that aims to improve the adoption functionality of pet shelters. The project proposes a web-based platform that offers a range of tools to facilitate pet shelter management and public engagement. The platform includes features such as adoption applications, volunteer schedules, and donation records.

This project has the ability to improve the environment for pet shelters and improve the welfare of disadvantaged pets. It will give pet shelters a platform to run their businesses more successfully and efficiently while also interacting with the public and spreading awareness of pet adoption. This research is significant

because it has the potential to boost adoption rates, enhance resource management, and ultimately improve pet welfare.

This report outlines the background, problem statement, objectives, and proposed solution of the project. It also describes the project's scope, target users, and modules. The report concludes by highlighting the expected benefits of the project and its potential impact on the pet shelter community.

1.2 Project Background

In recent years, the fast-paced and increasingly stressful lives of individuals have contributed to a rise in the number of abandoned pets. This surge in displaced animals not only affects the natural balance but also impacts human society. Despite efforts made to rescue animals, there are several obstacles that hinder effective and widespread rescue operations, including limited rescue locations, remote rescue sites, high investment requirements, difficulties in accessing relevant news and updates, and challenges in publishing information (Liu, H., & Meng, X., 2019). Consequently, animal rescue facilities often face the predicament of having more animals in need of help than they can accommodate, causing significant financial and space-related constraints. These factors contribute to a situation where animal rescue facilities struggle to cope with the increasing number of animals in need.

Furthermore, the act of adopting animals holds significant meaning beyond the act itself. Adopting an animal increases people's awareness, promoting a sense of responsibility and compassion for animals. In turn, this aids in lessening animal abuse and cruelty, such as the barbaric eating of their meat. A vital part of teaching kids compassion and environmental awareness is through pet adoption. Today's children are growing up in urban environments dominated by concrete structures, and through animal adoption, they can reconnect with their innate love for nature.

Furthermore, adopting pets can help them rediscover the joys of childhood and nurture their innocence.

The Pets Shelter Management System project is motivated by the common challenge faced by pet owners in locating their lost or missing pets. Traditionally, when pets go missing, owners resort to physically searching for them or posting about their disappearance on social media platforms (Surjandy, N., & Cassandra, C., 2022). However, these methods are often time-consuming and may not yield immediate results. Additionally, considering the increasing pet population and the growing trend of pet ownership, particularly in developing countries like India, the need for an effective and comprehensive management system for pet shelters becomes crucial (A. A. Lambert, G. Jk, P. R and H. Krishnan, 2023). The Pets Shelter Management System aims to address these challenges by providing a centralized platform for pet shelter management, adoption processes, volunteer coordination, donation tracking, and lost/found pet management. By leveraging technology, the system aims to enhance the overall experience of pet owners, improve the efficiency of pet shelter operations, and facilitate the reunification of lost pets with their owners.

It is obvious that creating a web-based pet adoption system is an urgent and required task given the growing reliance on e-commerce and the ease it provides. Such a system would enable people to finish the adoption process from the convenience of their homes by utilizing the Internet's power, keeping up with the changing trends in many online transactional elements. In order to effectively manage pet shelters, speed up the adoption procedure, and encourage responsible pet ownership, the Pets Shelter Management System aims to address these fundamental issues.

The Pawsitve Shelter Management System is a web-based programme that enables users to explore pets up for adoption care, participate in pet-related volunteer work, make donations to pet shelters, and conduct informational searches about pets. Additionally, the system enables pet shelters to track adoption applications, maintain volunteer and contribution records, manage their pet inventory, generate reports, and more. The system aims to provide pet shelters

with a comprehensive option for running their operations and communicating with the general public.

The goal of the proposed pawsitive shelter management system is to give pet shelters a user-friendly platform to help them with daily tasks like animal intake, adoption, and volunteer administration. In order to increase the effectiveness of pet shelters, the system will make use of contemporary technology like cloud computing, machine learning, and data analytics.

1.3 Problem Statements

The inefficiencies in the management of pet shelters pose significant challenges. One problem is the high intake of companion animals. This poses a problem as pet owners may struggle to decide between keeping their pets or relinquishing them to shelters (Ly, L. H., & Protopopova, A., 2023). Additionally, overcrowding in pet shelters is a pressing issue which resulting in limited resources and care for the animals. This overcrowding can be attributed to various factors, including the lack of effective processes for matching animals with potential adopters (Zadeh, A., Comb, K., Burkey, B., Dop, J., Duffy, K. J., & Nosoudi, N., 2022). To address these problems, an integrated and streamlined Pets Shelter Management System is required.

1.4 Project Objectives

The following were the objectives:

- i. To design the Pawsitive Shelter management system.
- ii. To develop the adoption of pets in the Pawsitive shelter management system.
- iii. To evaluate the adoption functionality in the Pawsitive shelter management system.

1.5 Project Scope

The development of an online website that acts as a centralised platform for pet shelters is part of the Pawsitive Shelter Management System project's scope. Shelters will be able to manage their operations more effectively and interact with possible adoptive parents, volunteers, and financial backers thanks to this platform. The system will make use of the proper technologies and frameworks, placing a strong emphasis on safety, scalability, and adaptability. It's vital to highlight that the initiative will exclude actual shelter management and pet care services, focusing entirely on the online aspects of public involvement and pet shelter management. Table 1.1 shows the project scope outlines.

Table 1.1 Project Scope Outlines

Scope	Boundary
Module	The Pets Shelter Management System includes several modules that work together to provide a centralized platform for pet shelters. The modules include User Management, Pet Management, Volunteer Management, Donation Management and News Management. These modules allow pet shelters to manage their operations effectively, including managing lost and found functions, adoption applications, volunteer schedules, donation records, and news.
Specification	The system will be developed using HTML, CSS, JavaScript, and PHP. The system will utilize a database management system such as MySQL to retrieve and store data.
Input	Users can input their account information, search criteria for pets, volunteer preferences, and donation details. Admins can input pet details and adoption applications.
Output	The system will output pet search results, adoption application status, volunteer and donation records.
Acceptance Criteria	The system should be able to handle simultaneous user requests without performance degradation. The system should be secure, scalable, and adaptable to future requirements. The user interface should be intuitive and user-friendly. The system should meet the required functionalities and specifications.
Constraint	The system should be developed within a specific time frame and budget. The system should be compatible with modern web browsers and accessible from multiple devices. Instead of managing a real pet shelter or offering pet care services, the project will concentrate on giving pet shelters a platform to run their businesses and interact with the public.

1.6 Target User

The target users for the Pets Shelter Management System project are pet shelters and their staff, volunteers, potential adopters, and donors. Pet shelters will use the system to manage their operations and connect with the public. Staff members will use the system to manage pet inventory, adoption applications, volunteer schedules, and donation records. Volunteers will use the system to sign up for available tasks and track their volunteer hours. Potential adopters will use the system to search for available pets and submit adoption applications. Donors will use the system to make donations and view donation records.

1.7 Project Framework

The project framework for this FYP report is organized into five main chapters that provide a comprehensive approach to understanding the development and implementation of the Pets Shelter Management System.

Chapter 1 serves as the introduction to the project, providing background information about the problem statement that the project aims to address, project objectives, project scope, and target users. This chapter also highlights the project framework, timeline, and key conclusions.

Chapter 2 focuses on literature review related to the project, exploring existing research and studies related to the topic of the Pets Shelter Management System. It has subsections that examine the body of literature pertinent to the project's particular areas of concentration.

In Chapter 3, the various development techniques used in the pre-production, production, and post-production stages are described, along with an overview of the project's planning phase. There are subheadings in this chapter that describe each developmental stage's details.

Chapter 4 is dedicated to design and framework, providing an introduction to the design process and the different design elements that make up the Pets Shelter Management System. Additionally, it has preliminary findings and subheadings for several design aspects, including the creation of multimedia applications, user interfaces, and content.

Finally, chapter 5 wraps up the FYP report by summarising the research's findings and conclusions and offering critical lessons learned and insights that can be applied to the creation and execution of similar initiatives in the future.

1.8 Project Timeline

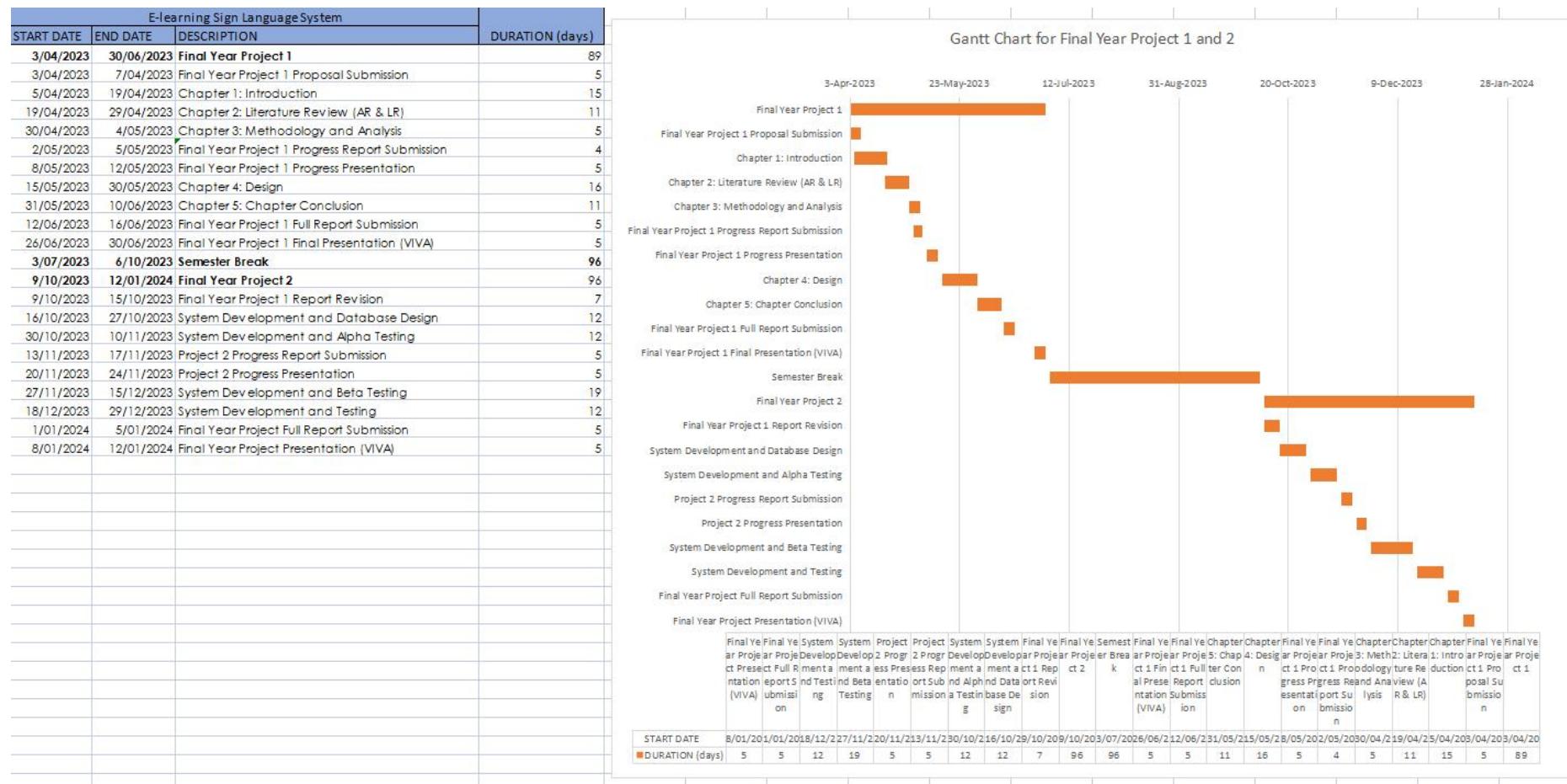


Figure 1.1: Gantt Chart

1.9 Chapter Conclusion

The Pawsitive Shelter Management System, a web-based tool, aims to address the issues of pet overpopulation and improper management in shelters. Users will have access to a quick and effective manner to adopt, volunteer, contribute, and search for pets through this system. Additionally, it will give administrators a comprehensive tool to manage donations, volunteers, adoptions, and lost pets. Thus, this initiative attempts to improve pet management, and adoption by offering a platform for these activities. The Pawsitive Shelter Management System is anticipated to increase pet adoption rates, encourage responsible pet ownership, and ultimately decrease the number of pets in shelters with the successful completion of this project.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter launches a thorough investigation of pet shelter management systems research and applications. The main goals of this chapter are to provide a thorough overview of the body of knowledge on the topic, identify any gaps in the literature and lay a strong foundation for the proposed system architecture.

The literature review will be divided into two primary sections: an evaluation of e-commerce applications and a review of pet shelter management systems. The detailed investigation of pet shelter management systems will be covered in the first paragraph, with an emphasis on animal sheltering and adoption. This chapter has offered a thorough analysis of the research and applications related to pet shelter management systems. While assessing the advantages and constraints of putting such systems in place, it has looked at the crucial elements for successful adoption of care. A description of the current e-commerce software's features has also been provided.

This study provides the groundwork for the creation of a cutting-edge pawsitive shelter management system that aims to better animal care, streamline the adoption process, and speed up the search for permanent homes. It conducts a literature review to pinpoint the core components and abilities of e-commerce systems and investigate their applicability to the proposed system. This in-depth

investigation aims to increase our comprehension of the fundamental elements of pawsitive shelter management systems and investigate potential changes for a better user experience in pet adoption, volunteering, and contributions.

This study intends to synthesise the available knowledge on e-commerce apps, identify research gaps, and lay the groundwork for the creation of a novel, user-friendly system that speeds the adoption, volunteerism, and fundraising processes. It attempts to present an effective and efficient solution that tackles the difficulties and opportunities in the field of managing pet shelters by utilising insights from the literature.

2.2 Literature Review on Pets Adoption

Adopting a pet gives abused, abandoned, or lost animals an opportunity to find loving homes, making it an essential part of animal care. Animal shelters are essential to this process because they provide interim housing for animals while they are prepared for adoption. To maintain successful operations and high adoption rates, managing a shelter requires proper administration, employee development, fundraising, and community involvement. Animal shelters now place a greater emphasis on the use of analytics and machine learning algorithms because it enables them to forecast the rate of pet adoptions based on data from the Internet. To balance data-driven initiatives with compassion and respect for all animals, it is essential to approach these tools cautiously and raise ethical concerns when using private information for animal adoption.

2.2.1 Animal sheltering and adoption

Animal welfare is significantly impacted by animal sheltering and adoption. The final resort for lost, mistreated, or abandoned animals, shelters offer them temporary housing until a caring family adopts them. However, managing an animal refuge is a complex undertaking. To guarantee successful operations and high adoption rates, proper management, staff development, fundraising, and community involvement are required. Laura A. Reese offers a thorough overview of animal shelter administration in her 2019 book *Successful Animal Shelter Strategies*, which addresses a range of subjects including shelter design, animal care, volunteer programmes, and community engagement. (Laura A. Reese, 2019) In order to raise adoption rates, Reese emphasises the value of collaboration between shelters and communities, relationships with neighbourhood businesses, and involvement in public education and outreach.

Kay et al. (2018) investigate the variables affecting the time between dog adoptions in the Canadian provincial shelter system. The British Columbia Society for the Prevention of Cruelty to Animals used data from 31 shelters to determine canine characteristics that affect adoption times (Kay et al., 2018). The findings offer shelters insightful guidance for resource allocation and actions that can increase adoption rates. By facilitating the creation of measures to hasten the adoption process and enhancing the effectiveness of shelter operations, this research helps both the shelters and the dogs find their ideal homes.

Sazara and Gao suggest a machine learning model to forecast animal shelter pet adoption periods in their latest paper, "Predicting Animal Shelter Pet Adoption Times and Feature Importance Analysis Using CatBoost" (Sazara and Gao, 2022). The model considers a number of variables, including shelter location and season, animal breed, age, sex, and health status. According to the authors, the model accurately forecasts adoption times and identifies the most relevant aspects of adoption rates. With better resource allocation, prioritisation of animals for adoption, and increased adoption rates, shelters can benefit.

In general, animal shelters and adoption are significant aspects of animal welfare, and studies in these fields can offer insightful information to advance animal welfare.

2.2.2 Pet adoption and analytics

Analytics and pet adoption have grown in importance in recent years for animal protection organisations. In 2019, Amir Zadeha and colleagues explored the application of machine learning algorithms to predict the speed of pet adoption based on internet profiles and released a paper titled "Pet analytics: Predicting adoption speed of pets from their online profile" (Zadeh, A., Combs, K., Burkey, B., Dopa, J., Duffy, K., & Nosoudi, N., 2020). The scientists created a prediction model that can anticipate how long it will take for a pet to be adopted by looking at many aspects such as the pet's breed, age, colour, and behavioural traits.

However, pet analytics also brings up moral questions regarding the use of private information for animal adoption. Some detractors contend that the use of internet profiles to forecast adoption speed may result in unfair treatment of particular pet breeds or species (Zadeh, A., Combs, K., Burkey, B., Dopa, J., Duffy, K., & Nosoudi, N., 2020). Additionally, there's a chance that information will be interpreted incorrectly, and based on an animal's internet profile, wrong conclusions could be drawn about its behaviour or personality.

In conclusion, adopting pets and studying their behaviour may help them live better lives and make animal welfare organisations more effective. However, it is crucial to approach these methods cautiously and to take into account any possible hazards and ethical ramifications. It is crucial to strike a balance between data-driven strategies and compassion and respect for all animals as the area develops.

2.3 Literature Review on Fundraising

The landscape of fundraising has considerably changed as a result of the emergence of internet platforms and crowdfunding, which are essential for supporting numerous initiatives and projects. This section delves into the realm of fundraising with an emphasis on social fundraising techniques and how social influence affects the success of crowdfunding campaigns. The section opens by looking at the tactics used in social fundraising, illuminating the many elements and factors that influence the outcome of fundraising endeavours. We investigate the different strategies that make use of social networks and participation for effective fundraising, from the impact of virtual goods and storytelling approaches to the effects of social media on crowdfunding campaigns.

2.3.1 Social Fundraising Mechanisms

Online fundraising efforts and crowdfunding both have a growing emphasis on social fundraising strategies. Numerous researches have shown the numerous facets and variables that affect how well these ads operate. One study examined the effects of social media on crowdfunding efforts, highlighting the favourable correlation between the founder's online reputation and the spread of the initiative (Liu, Y., Chen, Y., & Fan, Z., 2021). The study also found a quadratic relationship between the volume of social network posts and an ideal threshold for a beneficial effect. The usefulness of virtual products over monetary donations in tempting contributions, as mediated by mental images and impacted by project appeals, was highlighted in another experiment that looked at several donation choices (Zheng, C., Cao, Y., Wu, Y., & Yu, J., 2023). In a different study, the "attracting the crowd" framework demonstrated the beneficial correlation between the number of backers and campaign attributes including text, videos, and a positive tone, which in turn affected funding levels and success (Geiger, M., & Moore, K. R., 2022). The identity work done by charities in online crowdfunding appeals for donations was also

examined, revealing the impact of institutional and sociocultural factors on the exploitation of various identities (Liu, H., & Chen, X., 2021). The use of narrative tactics to engage customers and encourage charity was also highlighted in a report that particularly examined social fundraising as a tool (Robiady, N. D., Windasari, N. A., & Nita, A., 2021). In order to increase the success rate of philanthropic fundraising, another study presented a suggestion process that examines donor preferences, relationships, and fundraising dynamics (Li, Y., Wu, J., Hsieh, C., & Liou, J., 2020). Entrepreneurs' social duties and connections as well as early funds received from private and social media networks were revealed to be significant social linkages that positively influenced crowdfunding performance (Wang, W., Guo, L., & Wu, Y. J., 2022). These studies together shed light on how social fundraising mechanisms, including social networks, donation options, identity work, storytelling, recommendation systems, and social ties, influence the results of crowdfunding and online fundraising initiatives.

2.3.2 Effects of Social Influence on Crowdfunding Performance

Numerous studies have shown interest in the effect that social influence has on the success of crowdfunding campaigns. The consequences of social influence were investigated in a study that focused on a crowdfunding platform in China. According to the study, project-sharing cascades and the founder's online reputation, including their fan base and identity status, were positively correlated with crowdfunding success. Additionally, the study found a quadratic relationship between the volume of social network posts and the performance of crowdfunding up to a certain point but beyond that point (Liu, Y., Chen, Y., & Fan, Z., 2021). Another study focused on the impact of social ties on crowdfunding performance, emphasising the benefits of social obligations and connections for entrepreneurs as well as the importance of early funds raised through private and social media networks in influencing future investment intentions (Wang, W., Guo, L., & Wu, Y. J., 2022). Even though it didn't address social impact directly, another paper suggested that, in order to improve charity fundraising recommendations, it's

crucial to examine the interactions between fundraisers and contributors as well as any potential social influence from friends (Liu, H., & Chen, X., 2021). Collectively, these studies show how social influence, as seen in digital reputation, project-sharing cascades, social ties, and relationships, can have a significant impact on how well crowdfunding campaigns perform. This evidence highlights the power of social network integration and connections for online fundraising campaigns.

2.4 Literature Review on Impact of COVID-19 pandemic on pets

Every element of life has been significantly impacted by the COVID-19 pandemic, including our relationship with our pets. Due to people spending more time at home and looking for companionship to help them cope with stress and loneliness, the COVID-19 epidemic has raised demand for dogs. Dogs' health and behaviour, as well as how people view them, have all been impacted by the pandemic. The impact of the COVID-19 pandemic on pets will be examined in this section of the essay, with a focus on how these perceptions have changed through time, as well as how changes in pets' health and behaviour. The necessity of education and awareness campaigns to encourage responsible pet ownership and enhance animal welfare will also be covered.

2.4.1 Public perception of pets

The COVID-19 epidemic has resulted in different and variable public perceptions of pets. The majority of responders, according to the survey, did not observe any significant changes in their dogs' behaviour, but those who did said that most of these changes were for the better. 47% of respondents listed being able to walk the dog outside as a perk, and 65% said that having a dog made them feel less worried (Jezierski, T., Camerlink, I., Peden, R. S. E., Chou, & Marchewka,

2021). This favourable perception emphasises the solace and assistance pets offer their owners at a trying moment. However, another study discovered that the pandemic's fear and terror had a negative impact on pet welfare. Some pets were abandoned or destroyed because it was believed they could spread the infection. Major health organisations, such as the CDC and WHO, have released comments to allay these concerns and stress how crucial it is to protect companion animals' welfare (Parry, N., 2020). The risk of companion animal-to-human transmission dominated public opinion of pets in China, which reflected the expanding prominence of pets and related societal issues in Chinese cities (Yin, D., Gao, Q., Zhu, H., & Li, J., 2020). Policymakers have chosen more ethically acceptable approaches for urban public health emergency management as a result of this focus on animal ethics. In general, the public's attitude toward pets throughout the pandemic has been mixed, including both positive perceptions of pets as providers of support and unfavourable perceptions fueled by misinformation and fear.

2.4.2 Pet health and behavior

Researchers have been interested in the effects of the COVID-19 epidemic on pet health and behaviour. A study found that the pandemic had an impact on companion dogs' behaviour and health, especially for owners who were subject to lockdown or quarantine. With a higher proportion of unfavourable behavioural changes than would be predicted by chance, these respondents were 1.8 times more likely to report behavioural changes in their pets. It is important to note that behavioural changes in general were more frequently favourable than unfavourable. However, the amount of health changes was relatively low, with only 7.3% of respondents reporting a change, while those in lockdown were 2.6 times more likely to report changes in their dogs' health (Jezierski, T., Camerlink, I., Peden, R. S. E., Chou, J., & Marchewka, J., 2021). Dogs' health changes were mostly connected to digestive problems including hunger and excretion, which may have been brought on by alterations in diet and exercise during the epidemic. This might be explained by hoarding making a variety of supermarket items inaccessible.

Additionally, a case in Belgium where a cat tested positive for SARS-CoV-2 after its owner was given a COVID-19 diagnosis was briefly reported in another publication (Parry, N., 2020). The cat showed symptoms of disease, such as vomiting, diarrhoea, and respiratory problems, but happily, it recovered after 9 days. While testing is only carried out when there is a possible connection between a pet and a confirmed COVID-19 carrier, routine SARS-CoV-2 testing of animals is currently not advised. Overall, these studies indicate that the COVID-19 pandemic can affect a pet's health and behaviour. These changes may be ascribed to a number of variables, including changing daily routines and owners' increased concern for their pets' welfare in stressful and unpredictable situations.

2.5 Application Review

The report's application review section aims to give a thorough overview of the numerous apps connected to pawsitive shelter management systems. The report's objective is to evaluate the potential for each application to be integrated into the proposed pawsitive shelter management system by reviewing and analyzing the most recent applications and technologies in these categories. This includes highlighting each application's unique features and functionality. The applications in each category are briefly described in the sections that follow, highlighting their salient characteristics and functionalities.

2.5.1 Summary of Educational Resource Application

A website with instructional materials regarding animal welfare, adoption, and volunteer opportunities is offered by the Second Chance Animal Society, an animal sanctuary in Malaysia. The website of the Second Chance Animal Charity contains a sizable education component with essays, infographics, and films

addressing various aspects of animal welfare. This section addresses issues including animal cruelty and neglect, the value of pet neutering and spaying, and proper pet ownership. Visitors may easily learn about topics relating to animal welfare thanks to the articles, infographics, and films that are educational and accessible. The site's volunteer and adoption programmes are elementary to use and give users the chance to support the mission of the shelter.

Although the website of the Second Chance Animal Society is a useful instructional tool, it might not be accessible to many people. The site's outreach initiatives might be modest, and not all Malaysians are aware of the website for the shelter or its offerings. Furthermore, the site might not be accessible to those without an Internet connection, which could restrict its appeal.

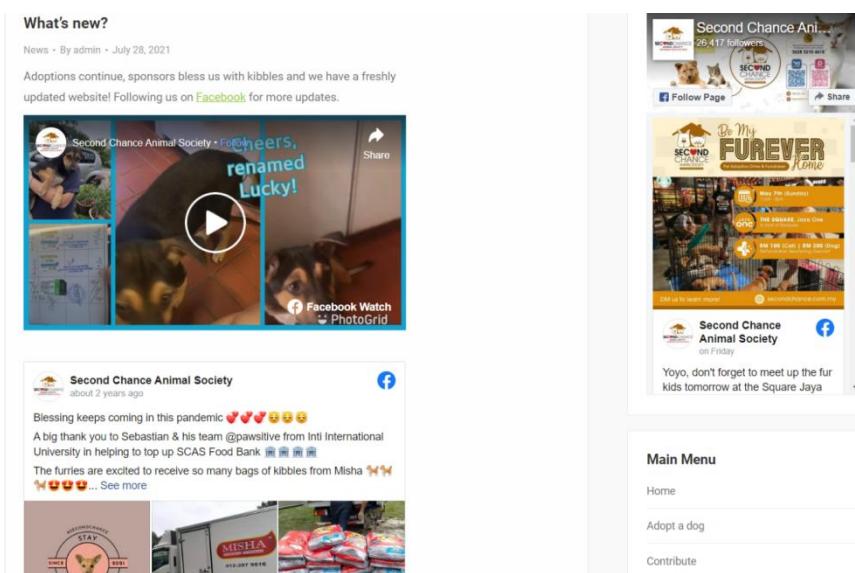


Figure 2.1 : Educational Resource in Second Chance Animal Society

Source : Second Chance Animal Society

2.5.2 Summary of Online Adoption Portals Application

Animal shelters and prospective adopters can connect online through the adoption portal Adopt-a-Pet. The website offers images and details of pets that are up for adoption at shelters throughout North America. Users can find animals that suit their needs and interests quickly by searching online for information and pictures of the animals. Users can store their favourite animals on the website and sign up for alerts when new animals that match their criteria become available. By enabling prospective adopters to submit adoption applications and connect with shelter employees online, Adopt-a-Pet also facilitates the adoption procedure. As a result, adoptions are on the rise and the number of animals in shelters is on the down.

By giving animal shelters a forum to advertise their animals and make connections with possible adopters, Adopt-a-Pet plays an essential part in promoting animal welfare. Adopt-a-Pet significantly improves the welfare of animals in shelters and decreases the demand for commercially bred animals by highlighting the advantages of adoption over buying from pet stores or breeders. This platform is a potent instrument for promoting pet adoption, improving the condition of animals in shelters generally, and discouraging the support of industrial breeding operations.

Adopt-a-Pet's reliance on shelters to update their listings is one of its drawbacks. If shelters don't remove adopted animals from their postings or update them, potential adopters can feel let down or frustrated. A disadvantage of online adoption portals is that some potential adopters could be reluctant to meet the animal before they can adopt it.

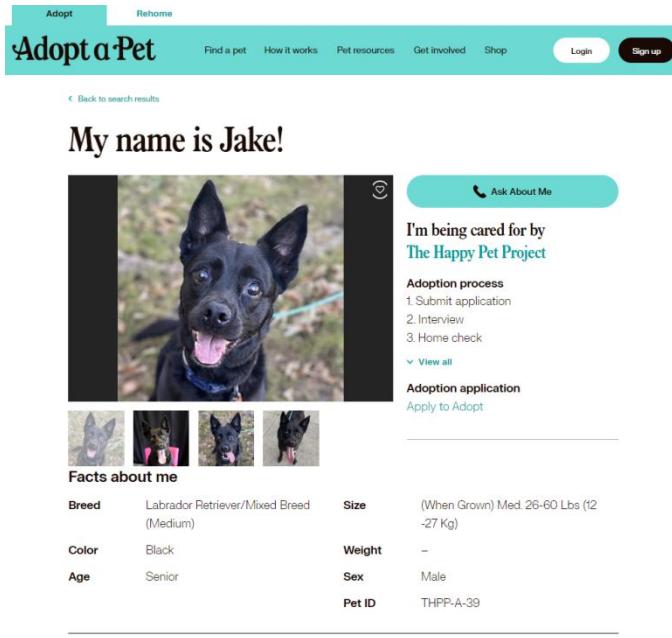


Figure 2.2 : Online Adoption Portals in Adopt-a-Pet

Source : Adopt-a-Pet

2.5.3 Summary of Volunteers Management Application

The website of the UK-based animal rescue group Battersea Dogs & Cats Home includes a section on volunteer management. On the website, users may manage their volunteer hours and schedules as well as apply for open positions. Volunteers can explore available shifts, choose the shifts that work best for them, and manage their schedules using the volunteer management system. Second, it offers volunteers the chance to view their volunteer hours and change their contact details. Having the most recent information about its volunteers is made possible thanks to this. Third, the system makes it possible for volunteers to get in touch with staff, get information about what the organisation is doing, and register for training courses. This keeps volunteers informed of and active in the operations of the organisation.

The Battersea Dogs & Cats Home's website's volunteer management system only accepts accepted volunteers, which might make it impossible for people who

haven't yet applied to help. Additionally, people who lack Internet access or are uncomfortable utilising technology might not be able to access the system.



Figure 2.3 : Volunteers Management in Battersea Dogs & Cats Home

Source : Battersea Dogs & Cats Home

2.5.4 Summary of Lost and Found Pets Application

A well-known internet service called Petfinder assists people who have lost or discovered pets in reporting them and reuniting them with their owners. A range of tools are available on this user-friendly website to aid pet owners in finding their lost animals.

Users can build and submit listings of lost or discovered pets in the Lost & discovered section of Petfinder. Users of the website can easily search for pets depending on location, gender, breed, colour, and species using the website's handy search function. In order to help people find lost pets, it also provides a thorough database of local animal shelters and rescue organisations. Users can upload photographs, update the status of their missing pets, and sign up for notifications when a pet that matches their pet is located. The simple search

function makes it easy to limit the results quickly. The tool also enables users to promote listings on social media, increasing visibility.

The fact that Petfinder depends on users to produce and post listings of lost or found pets is one of its drawbacks. As a result, not every pet that is lost will be reported on the platform, and some postings might not be current. Additionally, not all animal shelters and rescue groups might be included on the website, which could restrict search results.

The screenshot shows the PetFinder.my website interface. At the top, there is a navigation bar with links for Home, Find A Pet, WAGazine, App, Shop, PetGPT, Donate, More, and a dropdown menu for Pets and All. There are also social media icons for Facebook, Twitter, YouTube, and Instagram, along with a 'Join FREE' button and a 'Login Now' link. On the left, there are two sidebar menus: 'Browse By State' (listing Selangor, Kuala Lumpur, Johor, Kedah, Kelantan, Melaka, Negeri Sembilan, Pahang, Perak, Perlis, Pulau Pinang, Sabah, Sarawak, Terengganu, and All States) and 'Browse By Pets' (listing Dog, Cat, Rabbit, Hamster, Small & Furry, and All Pets). The main content area is titled 'Browse Available Pets' and contains a message encouraging users to click on pet profiles for details and to submit inquiries via advanced search or listing their own pet. It shows a page of ten pet profiles, each with a thumbnail image, name, breed, age, gender, location, and upload date. The pets listed are Kiara (a brown dog), Coco (a white dog), Sylvester (a brown cat), and Cute Boy (a brown cat).

Figure 2.4 : Lost and Found Pets in Petfinder

Source : Petfinder

2.5.5 Summary of Fundraising Application

A Malaysian animal sanctuary called PAWS Animal Welfare Society utilises its website to advertise fundraising events. Their website has tools that let users donate directly to the cause or set up their fundraising activities and projects to help the shelter.

The website of PAWS Animal Welfare Society offers a specific donation area where people may give quickly and securely. The donation page gives contributors the choice of making a one-time or regular donation and accepts a variety of payment options, including credit cards and online banking. The shelter's website also has a part for anyone who wants to create their fundraising activities and initiatives. This area contains instructions and tools to assist people in organising successful fundraising activities. Finally, PAWS can cut costs and administrative work related to conventional fundraising techniques by leveraging its website to facilitate fundraising.

The requirement for Internet connectivity and familiarity with online transactions is a drawback of using a website for fundraising. This may restrict the audience for fundraising efforts to particular demographics. Additionally, focusing only on a website-based fundraising campaign may make it more difficult for a company to reach out to potential donors and supporters who favour more conventional fundraising techniques, such as events or direct mail campaigns.

Donate Now

You may donate via credit / debit cards, online banking & eWallets

Donation Amount

RM 100

30 50 100 250

500 1,000 5,000 Custom

Donation Preferences

Digital Cert Yes

Print Physical Cert None

Tax Exemption Receipt Not Required

Donation Frequency Every Month

Land Dedication: 1 Sq Ft

Personal / Company Name *

Donor Name on Certificate (if different)

Email Address *

Phone *

Proceed To Payment ➔

Figure 2.5 : Fundraising in PAWS Animal Welfare Society

Source : PAWS Animal Welfare Society

2.5.6 Summary of Application Review

Table 2.1: Summary of Application Review

Platform	Educational Resources	Online Adoption Portals	Volunteer Management	Lost and Found Pets	Fundraising
Petfinder	Yes	Yes	No	Yes	Yes
PAWS	No	Yes	Yes	No	Yes
Adoptapet	Yes	Yes	No	Yes	No
Second Chance	Yes	Yes	Yes	No	Yes
Battersea Dogs & Cats Home	Yes	Yes	Yes	No	Yes

2.6 Chapter Conclusion

In conclusion, this chapter has offered a thorough analysis of the research and applications pertaining to pet shelter management systems. It can learn a lot about the difficulties and possibilities in this field by researching the literature on pet adoption, animal welfare, and the COVID-19 pandemic's effects on pets. In addition, I reviewed programs for educational resources, online adoption portals, volunteer management software, lost-and-found pet applications, and fundraising software.

Future research and system design will be made possible by our study, which uncovered crucial discoveries and gaps in the literature. Successful adoptions were emphasised in the literature review, along with the advantages and disadvantages of setting up positive shelter management systems. I also looked at the features and functionalities of e-commerce platforms to see how they could be used to enhance the user experience for pet adoption, volunteering, and contributions.

Overall, this chapter offers a robust framework for building an innovative and user-friendly management system for animal shelters. By utilising the already-existing literature and synthesising the learned information, the objective is to design a system that satisfies the needs of pet shelters, pet seekers, volunteers, and contributors. It is intended that this research will expand pet shelter management techniques, enhance animal welfare, and make it easier for animals in need to find forever homes.

CHAPTER 3

PLANNING

3.1 Introduction

This chapter introduces the methodology employed in the development of the Pawsitive Shelter Management System. The selection of an appropriate methodology is essential to ensure the project's success, efficiency, and effective management. The chosen methodology will provide the necessary guidelines to navigate through the development process, ensuring that the system meets the required standards and addresses the challenges faced by pet shelters effectively. The chapter is structured into four sections, each serving a specific purpose. In Section 3.1, a brief overview of the chapter is presented. Section 3.2 elaborates on the selected system development methodology, which is the most suitable for this project, considering its complexities and objectives. For the Peawsitive Shelter Management System, the chosen approach is the Waterfall Model of the System Development Life Cycle (SDLC). Section 3.3 discusses the data collection methods utilized, which involve gathering valuable insights from potential users and stakeholders of pet shelters. These methods include surveys and interviews, allowing us to understand user requirements comprehensively. Section 3.4 delves into the data analysis process, where the information collected is meticulously examined to derive meaningful insights into the system's design and functionality. Lastly, Section 3.5 provides a comprehensive summary of the chapter's contents, emphasizing the key takeaways and milestones achieved in the methodology.

Through the thoughtful implementation of this methodology, we aim to create an efficient and user-friendly Pawsitive Shelter Management System that caters to the unique needs of animal shelters and contributes to the welfare of homeless pets.

3.2 System Development Method

The waterfall model of the Software Development Life Cycle (SDLC) has been chosen as the system development method for developing, improving, and sustaining a high-quality pawsitive shelter management system. There are multiple stages in the SDLC process, including requirements analysis, design, implementation, testing, and maintenance (Albreiki, A., Almemari, A., & Shuhaimer, A., 2022). The primary goal of the SDLC is to guarantee that the software is delivered on schedule and under budget while also meeting the objectives of the stakeholders (Sinha, A., & Das, P., 2021). A crucial aspect of SDLC is the integration of security measures at each stage to develop software with robust security. By incorporating security considerations from the planning phase to maintenance, potential vulnerabilities can be mitigated, leading to the development of secure software applications (V. Aishwarya, S. Pediredla, B. Radhika, B. Vasanthi, K. Padmanaban and A. K. Velmurugan, 2023). Organizations have the flexibility to choose from different SDLC models based on their specific needs (Garg, A., Kaliyar, R. K., & Goswami, A., 2022). SDLC provides a structured and methodical approach to software development, ensuring reliability, efficiency, and compliance with privacy regulations like GDPR (Freitas, M. B., Araújo, V. M., & Magalhães, J. P., 2023). Furthermore, SDLC can be combined with methodologies such as Game Theory to develop secure software applications (Vaidhyanathan, M., Si, W., Javadi, B., & Camtepe, S., 2022). Overall, SDLC serves as a vital framework for software development teams to follow, ensuring the delivery of high-quality and secure software products.

Waterfall Project Management Phases

Task Management | Profit.co

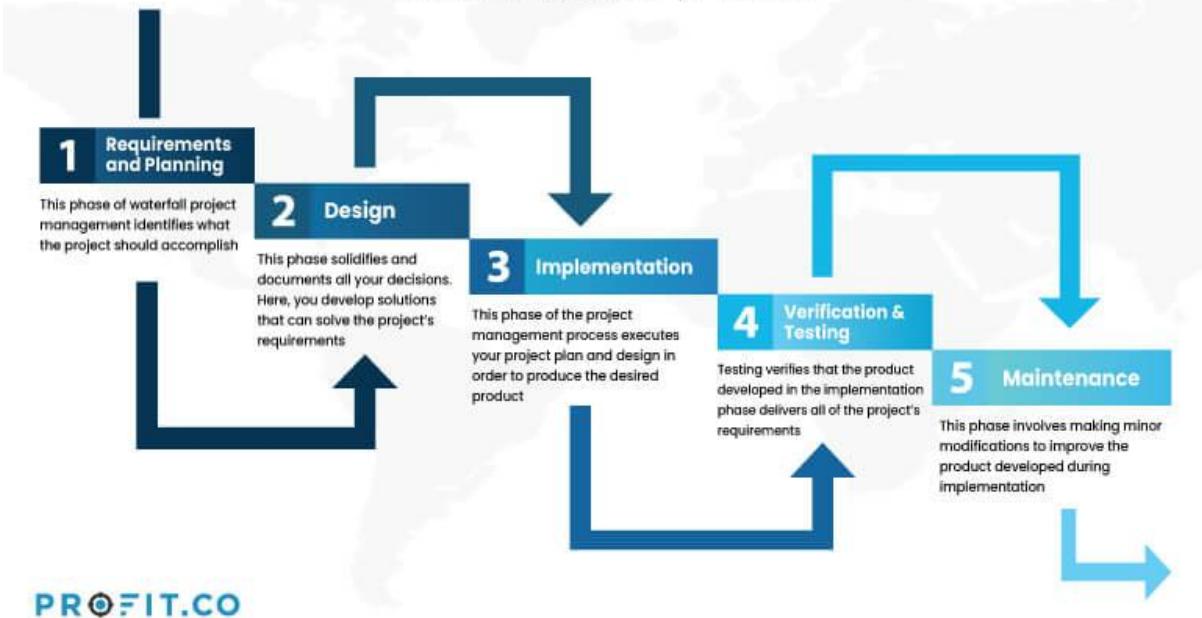


Figure 3.1 : Waterfall model of Software Development Life Cycle (SDLC)

Source : Profit.Co (<https://profit.co/>)

3.2.1 Requirements Analysis

The Requirements Analysis phase is a crucial stage in the development of the Pawsitive Shelter Management System, where the focus is to gather comprehensive information from existing research and applications to ensure the feasibility of the project (S. Reyal et al., 2021). This phase involves collecting requirements through various methods, including literature review, application review, and questionnaires.

The literature review delves into topics relevant to the project, such as animal sheltering and adoption, pet adoption analytics, emergency management and animal welfare, and the impact of the COVID-19 pandemic on pets. It also explores public perception of pets and examines changes in pet health and

behaviour influenced by the pandemic. The application review assesses different applications related to the management of educational resources, online adoption portals, volunteer management, lost and found pets, and fundraising.

Additionally, questionnaires are distributed to gather insights from potential users, focusing on system functionality and design. The collected data is then organized and analyzed to identify both functional and non-functional requirements, including system purpose, target users, interfaces, project scope, performance limits, and system limitations.

The outcomes of this phase will be documented in the analysis chapter, providing a comprehensive understanding of the requirements for the Pawsitive Shelter Management System. This information will serve as a foundation for subsequent chapters, such as the methodology and analysis, enabling the development of an effective and user-friendly system for pet shelter management.

3.2.2 Design

The design phase of the Software Development Life Cycle (SDLC) is a crucial step in the development process. It encompasses both logical and physical design phases. The logical design phase focuses on abstractly representing the flow of software data, often depicted through graphical data flow diagrams (Sinha, A., & Das, P., 2021). For instant, the logical design includes the context diagram, data flow diagram (DFD), and entity-relationship diagram (ERD) that depict data relationships and aid in system understanding (Albreiki, A., Almemari, A., & Shuhaiber, A., 2022). On the other hand, the physical design phase determines the necessary hardware and software infrastructure to bring the logical design to life. This phase involves specifying the system's architecture, database design, user interfaces, data storage, and necessary queries (Garg, A., Kaliyar, R. K., & Goswami, A., 2022). It also includes designing interfaces to guide users, provide instructions, and handle potential errors (Elghali, A. A., 2021). Vital planning and design are emphasized during this phase to ensure that the software meets the user's

requirements and establishes the foundation for the subsequent implementation and maintenance stages (Garg, A., Kaliyar, R. K., & Goswami, A., 2022).

3.2.3 Implementation

The Implementation phase, also referred to as the coding phase, is a critical stage in the development of the Pawsitive Shelter Management System as it involves transforming the design into a functional system. This phase focuses on converting the gathered requirements and designs into a production-ready environment (Kapur, R., & Sodhi, B., 2019).

During the Implementation phase, the actual code for the Pawsitive Shelter Management System will be written. To accomplish this, the chosen programming language will be utilized. In this instance, we'll use Visual Studio Code as our main Integrated Development Environment (IDE) and programming languages like PHP. The necessary data for the system will also be created and built into a database system, such as MySQL.

The implementation phase, which includes developing the code, building the database, and ensuring the system's functionality, is often the longest portion of the project. Thorough testing will be done at every stage of this phase to make sure that the system works as intended and adheres to the specifications established in earlier phases.

By the end of the Implementation phase, the Pawsitive Shelter Management System will be ready for testing and evaluation. The outcome of this phase is the functional system itself—a comprehensive platform that facilitates pet adoption, volunteer management, lost and found pets, fundraising, and other essential functionalities for the efficient operation of a pet shelter.

3.2.4 Testing

The Testing phase, also known as verification and validation, plays a crucial role in ensuring that the Pawsitive Shelter Management System meets the specified requirements and serves its intended purpose effectively. There are various types of testing that will be performed to ensure the system's quality and functionality.

- i. White box testing is the first kind of testing, which looks at a system's internal operations to make sure it operates in accordance with its intended use and requirements. This testing approach focuses on confirming the system's correctness and adherence to the established standards at the code level.
- ii. The second type is Black box testing, which examines the external functionality of the system without knowledge of its internal workings. This testing approach aims to verify that the system performs correctly from the user's perspective, testing its functionalities and interactions.
- iii. The third sort of testing, user acceptability testing, entails actual users testing the system to make sure it satisfies their needs and is prepared for distribution to the general public. With this testing approach, the usability, user-friendliness, and general user satisfaction of the system are assessed.

At the conclusion of the Implementation phase, the Testing phase will be used to increase the project's overall efficiency and effectiveness. Any flaws, defects, or errors in the system can be found and fixed through testing, resulting in a high-quality and dependable Pawsitive Shelter Management System.

The testing phase for the Pawsitive Shelter Management System includes acceptance testing, where end users or customers assess the effectiveness and suitability of the system, unit testing, which tests individual components or modules, integration testing, which verifies the interfaces between various system components, system testing, which ensures the overall quality and functionality of the entire system (Elghali, A. A., 2021).

By conducting comprehensive testing at each level, the Pawsitive Shelter Management System can be thoroughly evaluated and any identified errors or

system disorders can be recorded, debugged, and resolved. This phase ensures that the system meets the defined objectives, requirements, and quality standards, providing a robust and reliable solution for managing and operating a pet shelter effectively.

3.2.5 Maintenance

The Maintenance phase is a crucial stage in the lifecycle of software or system development, focusing on refining the output, correcting bugs, and enhancing the performance and quality of the deployed solution (Garg, A., Kaliyar, R. K., & Goswami, A., 2022). However, in the context of the Pawsitive Shelter Management System, the Maintenance phase is not directly involved.

Since the primary objective of the project is to develop a Pawsitive Shelter Management System with specific functionalities, such as managing pet information, adoption processes, and shelter operations, the main focus is on the initial development and deployment stages. Therefore, the Maintenance phase, which typically involves activities like bug fixing, error correction, and system improvement, is not applicable to this specific project.

The Pawsitive Shelter Management System aims to provide a comprehensive solution for managing a pet shelter efficiently, streamlining operations, and facilitating pet adoption processes. While the system may require updates or enhancements in the future to accommodate evolving needs or address potential issues, the focus of this project lies in developing the initial functional system rather than long-term maintenance.

By dedicating efforts to thorough development and testing during the earlier phases, the Pawsitive Shelter Management System can be designed to meet the desired requirements and function optimally upon deployment. While the project may not encompass the traditional Maintenance phase, the emphasis is on creating a robust and reliable system that supports the effective management of a pet shelter and delivers a positive user experience.

Overall, the Maintenance phase is not explicitly included in the scope of the Pawsitive Shelter Management System project. Instead, the project concentrates on developing a feature-rich and reliable system that fulfills the specific needs of managing a pet shelter efficiently, ensuring the successful adoption of pets and supporting the overall welfare of animals in the shelter.

3.3 Data Collection Method

For the Pawsitive Shelter Management System project, the data collection method chosen to gather requirements is surveyed. This blend of quantitative and qualitative approaches ensures a comprehensive understanding of the needs and expectations of stakeholders involved in the management of a pet shelter. Surveys provide a quantitative perspective by enabling the collection of structured data from a larger sample size. A well-designed questionnaire will be developed to gather information from various stakeholders, such as the public, volunteers, and potential adopters. The survey will consist of targeted questions that focus on specific aspects of the Pawsitive Shelter Management System, including pet information management, adoption processes, and shelter operations. By analyzing the responses, valuable insights can be derived to guide the development of the system. The combination of surveys and interviews as data collection methods for the Pawsitive Shelter Management System project ensures that both quantitative and qualitative aspects of the requirements are adequately addressed. This approach enables a comprehensive understanding of the needs, preferences, and challenges faced by pet shelters, empowering the development team to create a tailored solution that effectively supports shelter operations, pet adoption processes, and overall animal welfare.

3.3.1 Questionnaires

A questionnaire will be used as a data-gathering technique to compile the needs for the Pawsitive Shelter Management System. The questionnaire is made to gather important information from different parties involved in running and managing animal shelters. Three sections make up the questionnaire, each of which focuses on a different area to collect thorough and pertinent data.

The respondents' demographic data will be gathered in the questionnaire's first section. The respondents will be questioned about their age, gender, occupation, and amount of involvement with pet shelters in this section. Understanding the respondents' demographics will help us better understand the various needs and viewpoints of people who are involved in the pet shelter community.

Respondents will be questioned about any prior experiences they may have had with pet shelter management systems in this section. In order to discover potential pain points or places for improvement, it is essential to determine how comfortable they are with the current systems. This part will aid in gaining an understanding of the advantages and disadvantages of existing solutions and alert the development team to the precise areas that require improvement.

The third section will concentrate on obtaining user opinions and expectations regarding a management system for pet shelters. It will contain inquiries into respondents' opinions regarding the potential contribution of a pet shelter management system to the decline in the number of homeless animals. The purpose of this part is to evaluate the respondents' interest in and readiness to implement such a system.

The results gathered through the survey will be examined to determine which needs are in high demand and to rank them for implementation in the design phase. Using the information received from the questionnaire, the Pawsitive Shelter Management System will be developed in a way that is in line with the needs and preferences of pet shelters, staff, volunteers, and other stakeholders.

3.4 Data Analysis

Data analysis is performed after the data have been collected from the interview and documents. It is essential to define the system requirement correctly.

3.4.1 Section A: User Demographic

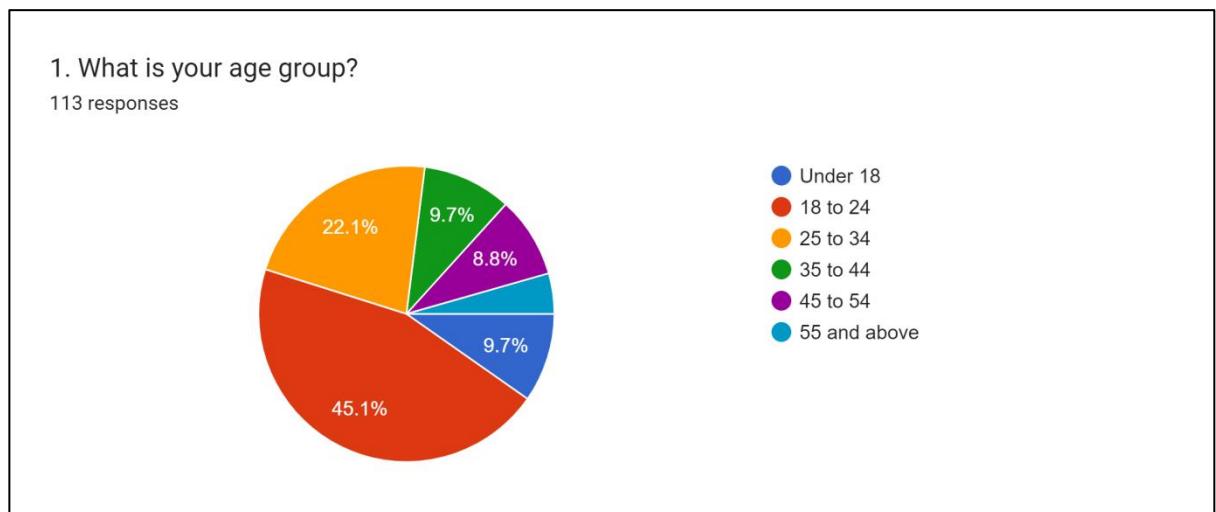


Figure 3.2: Age Group

Figure 3.2 shows the respondent age range, with 18 to 24 being the highest among the 113 respondents, where there are 20 respondents(45.1%). While 55 and above have only 5 respond (4.4%) different from each other.

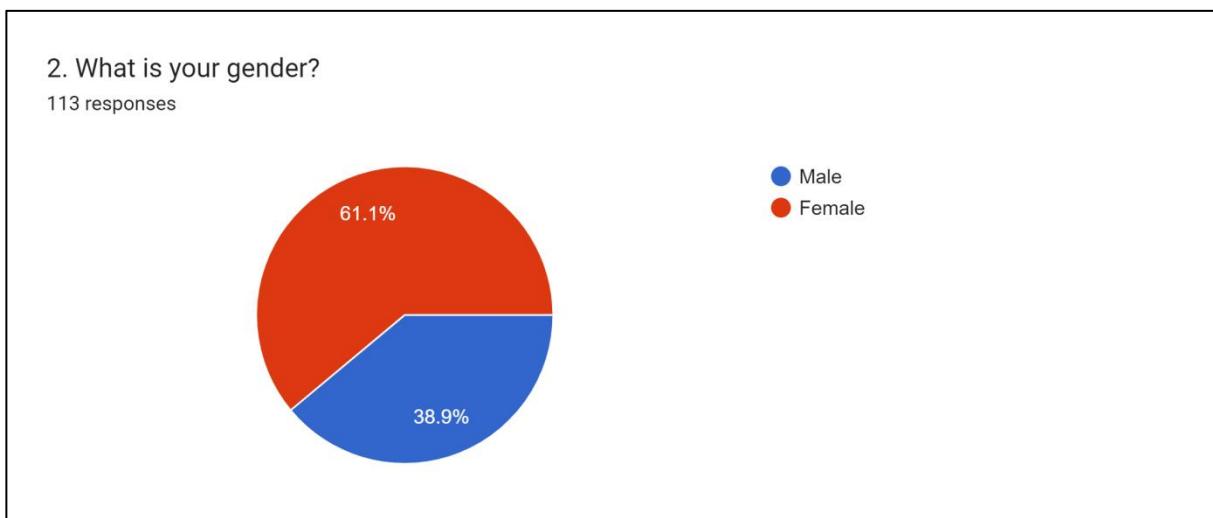


Figure 3.3: Gender

Based on Figure 3.3, it is shown that among the 113 respondents, 69 respondents (61.1%) are female while the other 44 respondents (38.9%) are male.

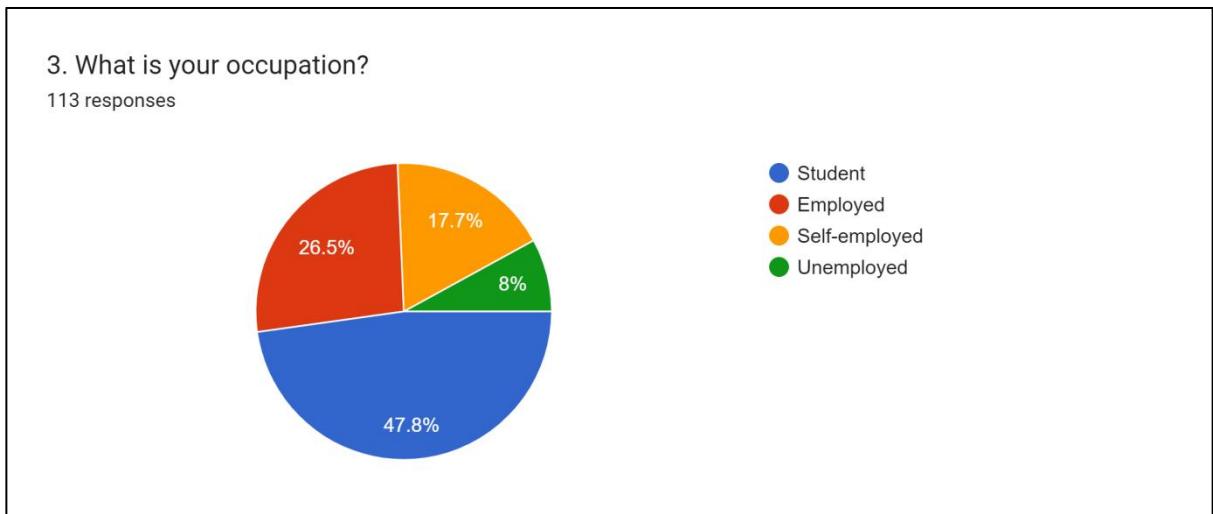


Figure 3.4: Occupation

Figure 3.4 shows the occupation of respondents. As it can be seen from the figure above, the student has the highest count reaching 54 respondents (47.8%),

followed by Employed 30 respondents (26.5%), Self-employed 20 respondents (17.7%) and Unemployed 9 respondents (8%).

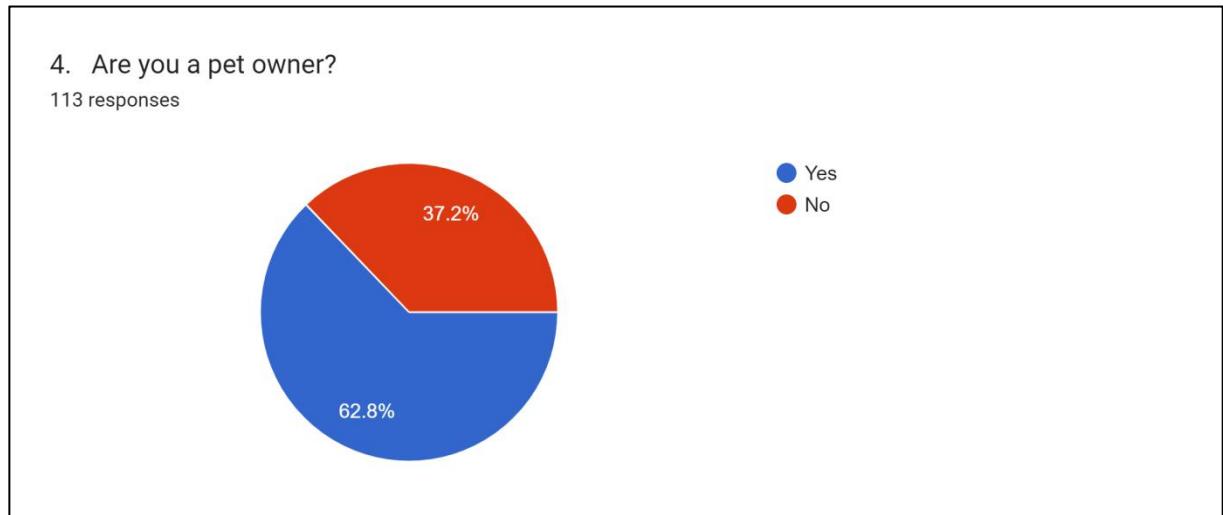


Figure 3.5: Pet Owner

From the figure 3.5, it can be seen from the graph that 71 respondents (62.8%) are pet owner while 42 respondents (37.2%) are not pet owner.

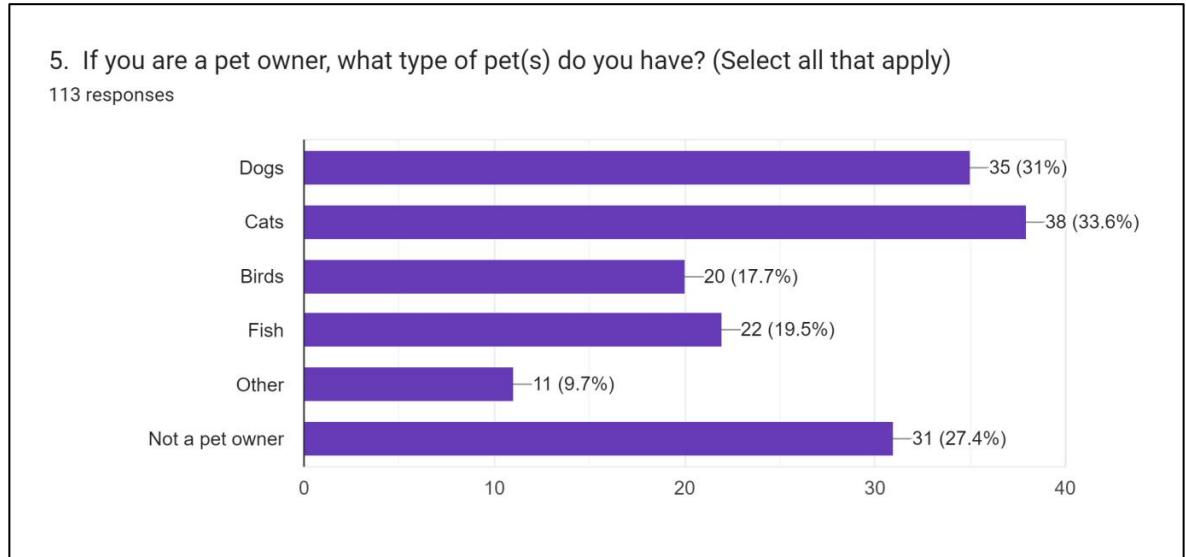


Figure 3.6: Type of pet

Based on Figure 3.3, it is shown that out of the 113 participants, cats and dogs emerge as the most popular choices, with 38 respondents (33.6%) opting for cats and 35 respondents (31%) preferring for dogs. Additionally, there is a noticeable prevalence of fish and birds, with 22 respondents (19.5%) and 20 respondents (17.7%) respectively owning fish and birds as pets. Approximately 9.7% (11 respondents) of pet owners said they also have other kinds of animals. Surprisingly, a sizable percentage of survey respondents (26.5%) stated that they did not possess a pet.

3.4.2 Section B: User Experiences on using pets shelter management system

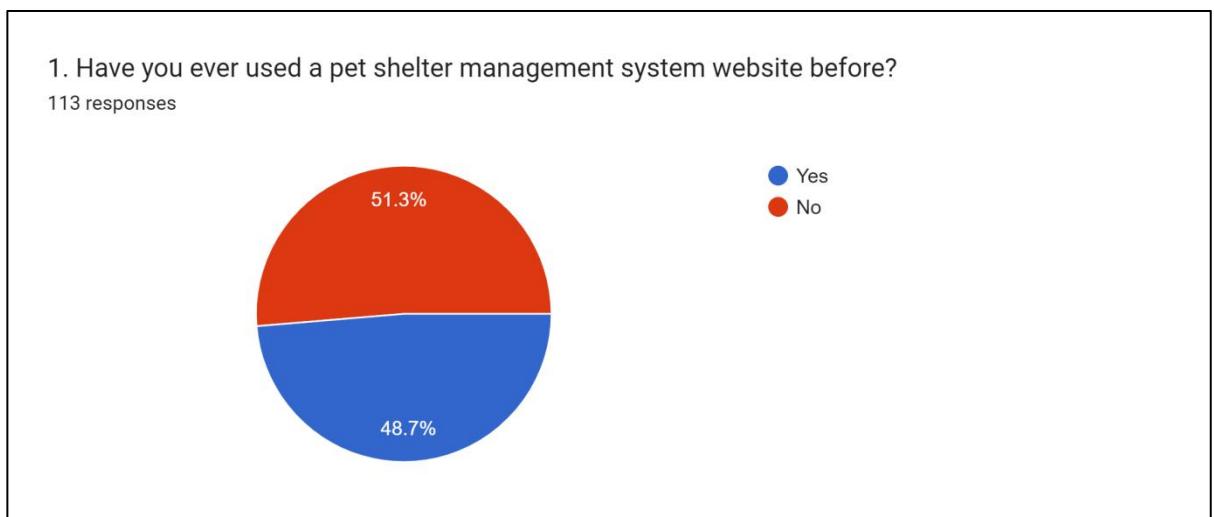


Figure 3.7: Used a Pet Shelter Management System Website

Figure 3.7 shows if respondents have ever used a pet shelter management system website before. The margin for respondents who chose No is higher than those who chose Yes.

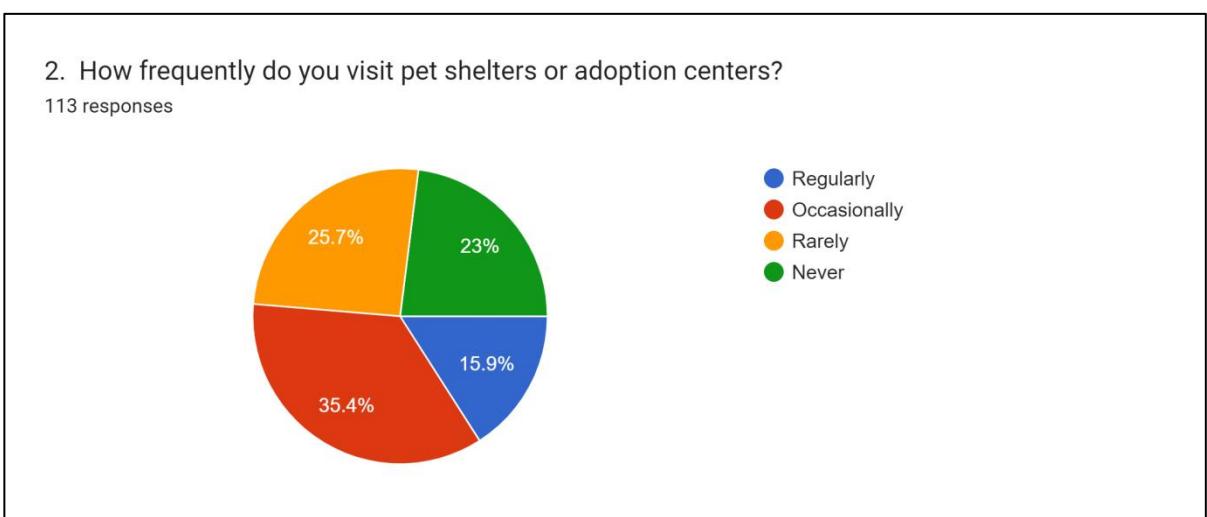


Figure 3.8: Frequent of Visit Pet Shelters or Adoption Centers

From the Figure 3.8, it shown the frequency of respondents visiting pet shelters or adoption centers. The respondents shop online for books or reading materials online shopping times per month from highest to lowest are occasionally, rarely, never and regularly are 40 respondents (35.4%), 29 respondents (25.7%), 26 respondents (23%) and 18 respondent (15.9%) respectively.

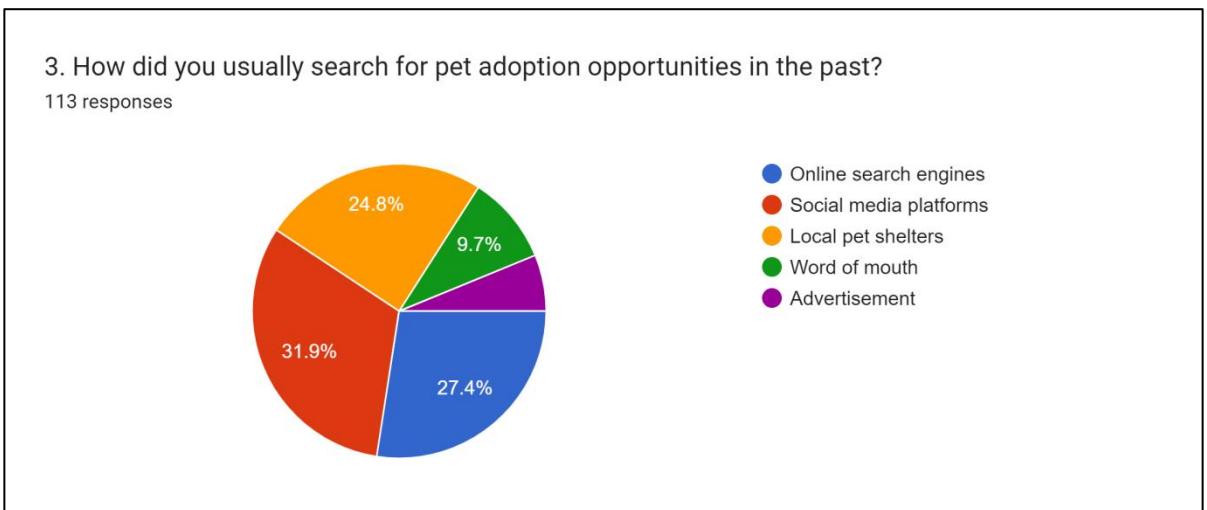


Figure 3.9: Method for Search Pet Adoption Opportunities in the Past

Figure 3.9 shows the method for search pet adoption opportunities in the past. There are two highest percentage which is social media platforms (36 respondents, 35.4%) and online search engines (31 respondents, 27.4%), and there are only 5 respondents different from each other. The third and forth highest count reaching is local pet shelters which have 28 respondents (24.8%) and word of mouth which have 11 respondents (9.7%) usually searched for pet adoption opportunities in the past. The lowest percentage of survey respondents (7 respondents, 6.2%) stated that they searched for pet adoption opportunities in the past by advertisement.

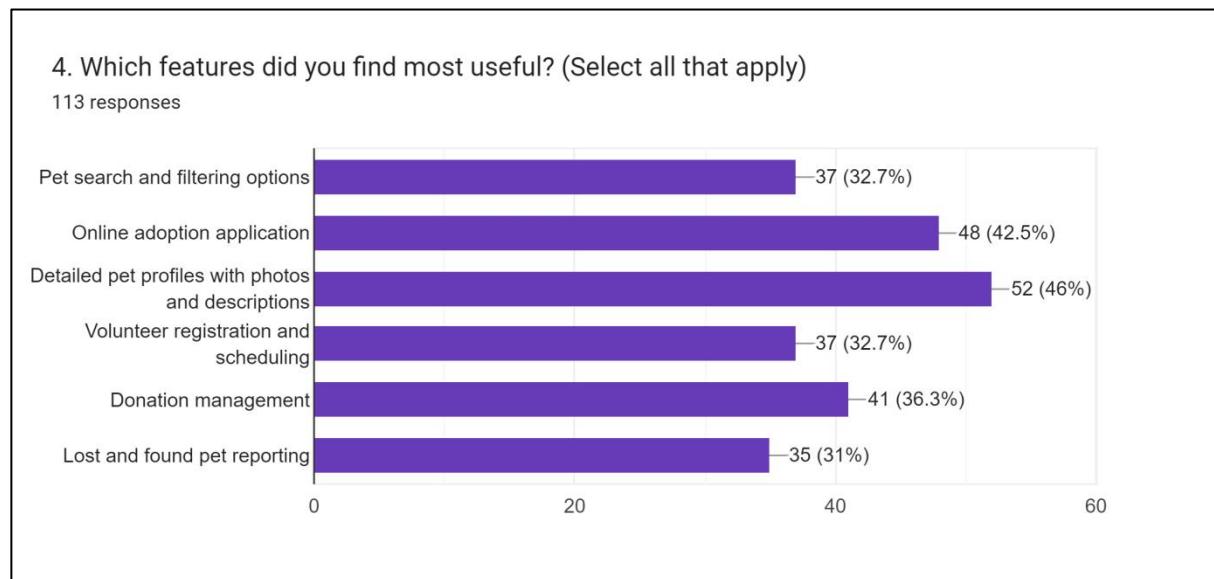


Figure 3.10: Useful Features

Based on the responses from 113 participants, the most useful features of the Pawsitive Shelter Management System were identified. The feature with the highest rating was "Detailed pet profiles with photos and descriptions," which received positive feedback from 52 respondents, accounting for 46% of the total. The next most appreciated feature was "Online adoption application," which garnered 48 responses, representing 42.5% of the participants. Other notable features were "Donation management" with 41 responses (36.3%), "Pet search and

filtering options" and "Volunteer registration and scheduling" with 37 responses each (32.7%), and "Lost and found pet reporting" with 35 responses (31%).

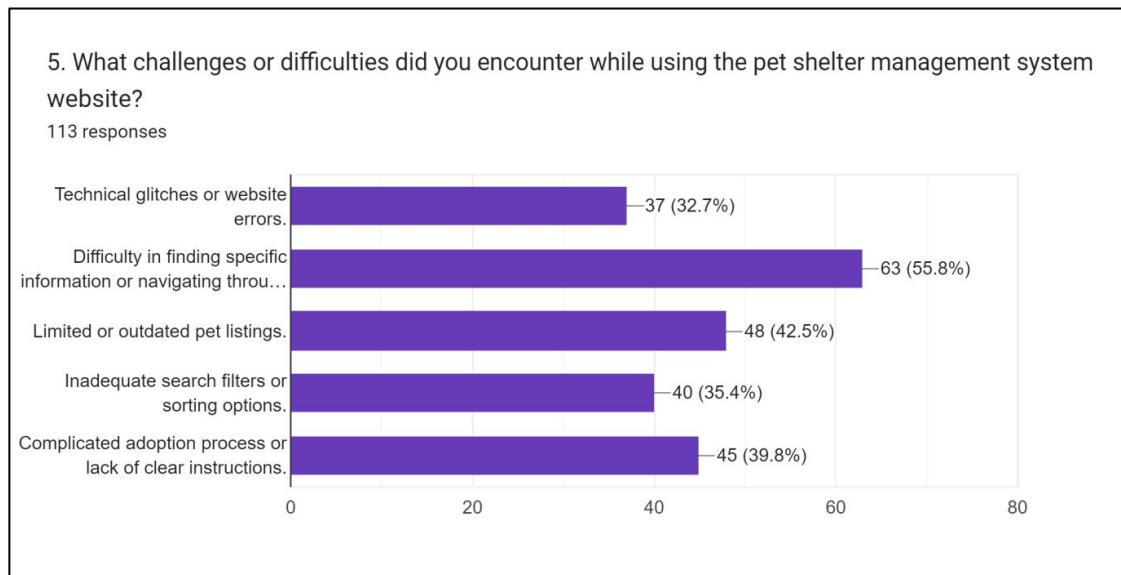


Figure 3.11: Challenges or difficulties

Based on the Figure 3.11, responses from 113 participants regarding their challenges or difficulties while using the pet shelter management system website, the data analysis reveals the following findings. The most common difficulty reported was related to navigating the website and finding specific information, which accounted for 55.8% of the responses (63 respondents). This was followed by technical glitches or website errors, reported by 32.7% of the respondents (37 respondents). Additionally, a significant number of participants mentioned issues such as limited or outdated pet listings (42.5%, 48 respondents), inadequate search filters or sorting options (35.4%, 40 respondents), and a complicated adoption process or lack of clear instructions (39.8%, 45 respondents).

3.4.3 Section C: User Viewpoint on having a Pet Shelter Management System

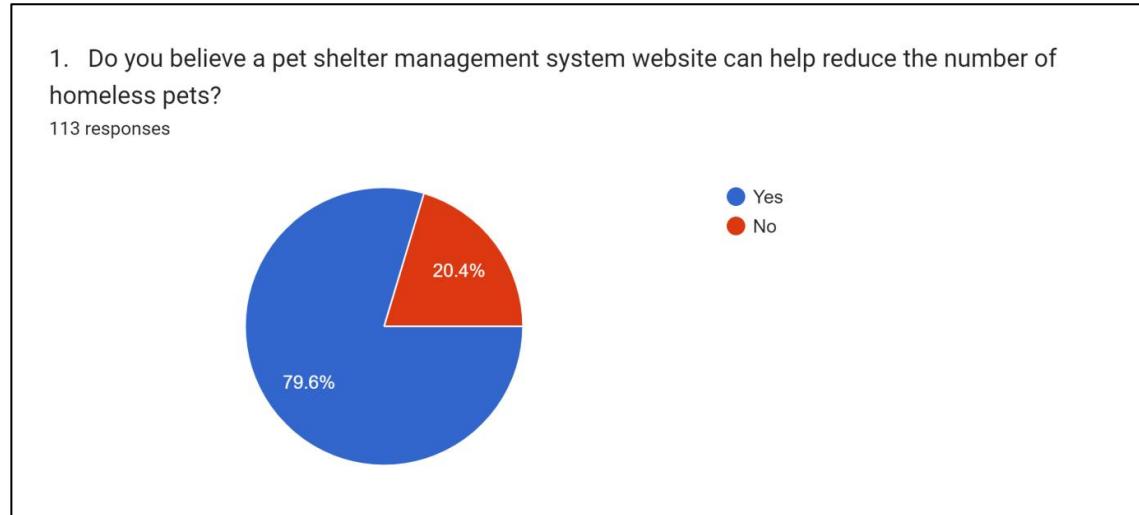


Figure 3.12: Help to Reduce Homeless Pets

From the figure 3.12, it can be seen from the graph that 90 respondents (79.6%) do believe a pet shelter management system website can help reduce the number of homeless pets while 23 respondents (20.4%) do not believe of it.

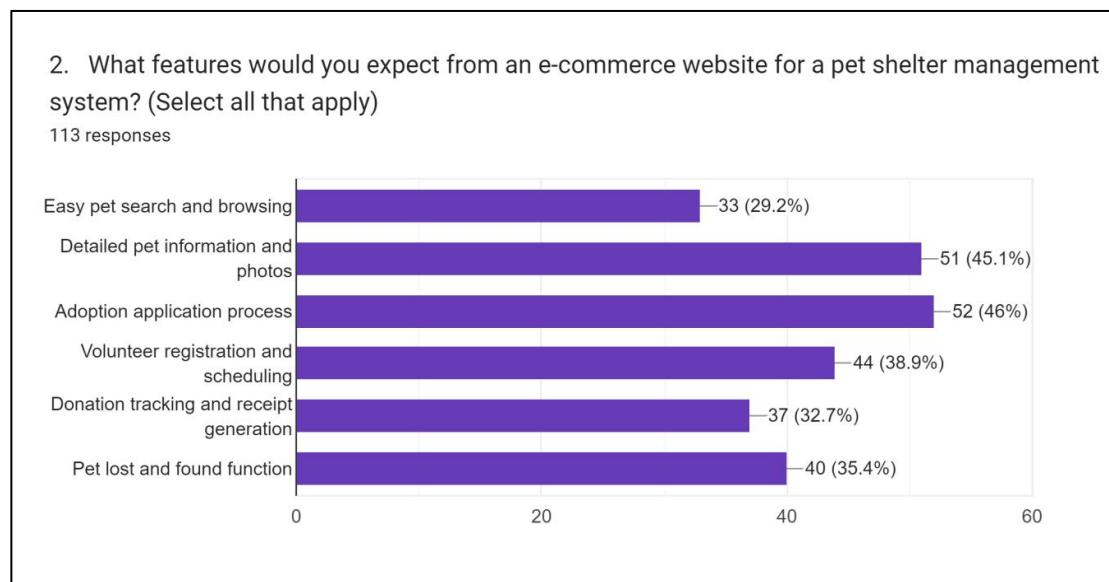


Figure 3.13: Expected Features

Based on the Figure 3.13, it shown the features that are expected from e-commerce for a pet shelter management system. The most desired feature among respondents is "Detailed pet information and photos," with 45.1% of participants selecting it (51 respondents). Other popular features include "Adoption application process" (46%, 52 respondentss), "Volunteer registration and scheduling" (38.9%, 44 respondents), and "Pet lost and found function" (35.4%, 40 respondents).

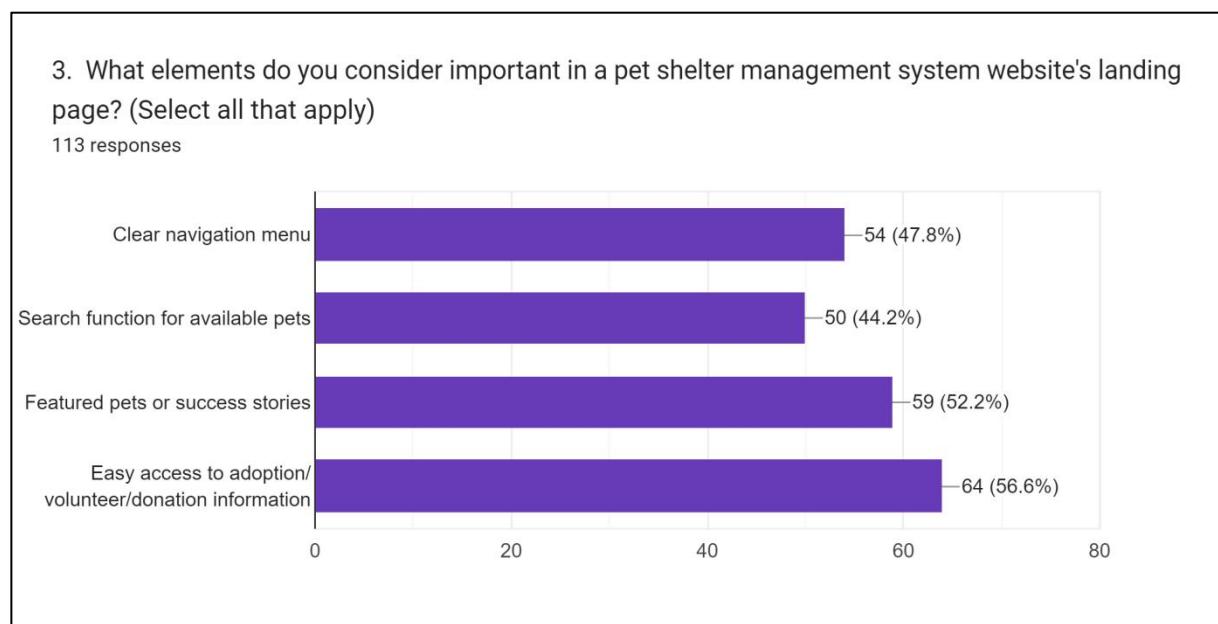


Figure 3.14: Important Elements

From the Figure 3.14, it shown the important elements that are considered in a pet shelter management system website's landing page. The majority of respondents, 56.6%, emphasized the significance of easy access to adoption, volunteer, and donation information. Additionally, 52.2% of participants valued featured pets or success stories, indicating a desire for engaging and heartwarming content. A clear navigation menu was considered important by 47.8% of respondents, emphasizing the need for an intuitive website structure. Finally, a

search function for available pets garnered importance from 44.2% of participants, enabling them to find desired pets efficiently.

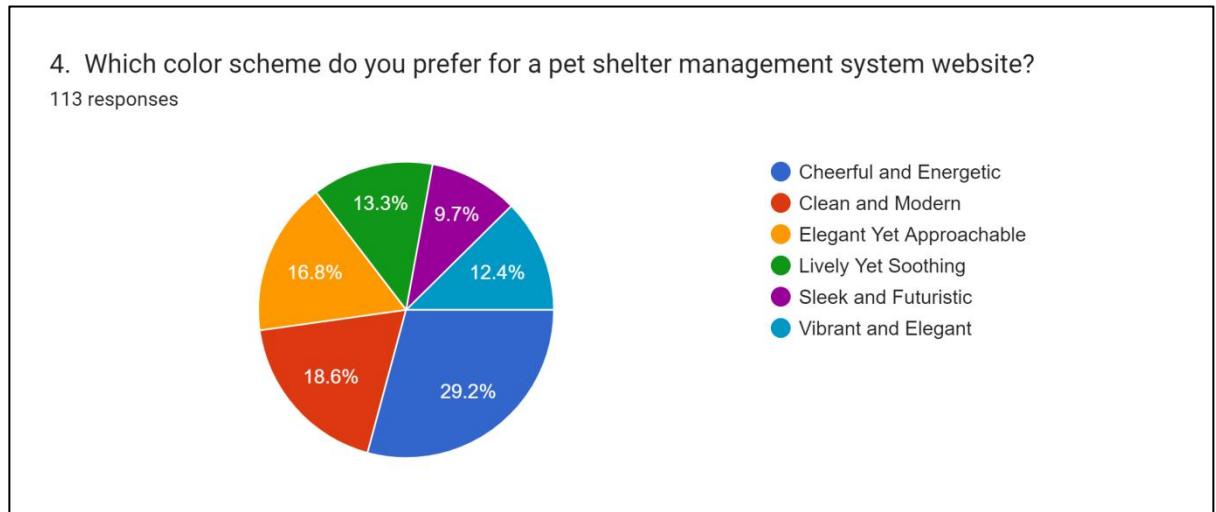


Figure 3.15: Color Scheme

Based on the Figure 3.15, it shows the color scheme that prefers for pawsitive shelter management system website. The most popular choice is the "Cheerful and Energetic" color scheme, which garnered 29.2% (33 respondents) of the votes. It is closely followed by the "Clean and Modern" option at 18.6% (21 respondents). The "Elegant Yet Approachable" and "Lively Yet Soothing" schemes received 16.8% (19 respondents) and 13.3% (15 respondents) of the votes, respectively. The remaining options, "Sleek and Futuristic" and "Vibrant and Elegant," received 9.7% and 12.4% of the votes, (11 respondents and 14 respondents) respectively. These findings indicate a preference for color schemes that evoke positive emotions and convey a modern and approachable atmosphere for the pawsitive shelter management system website.

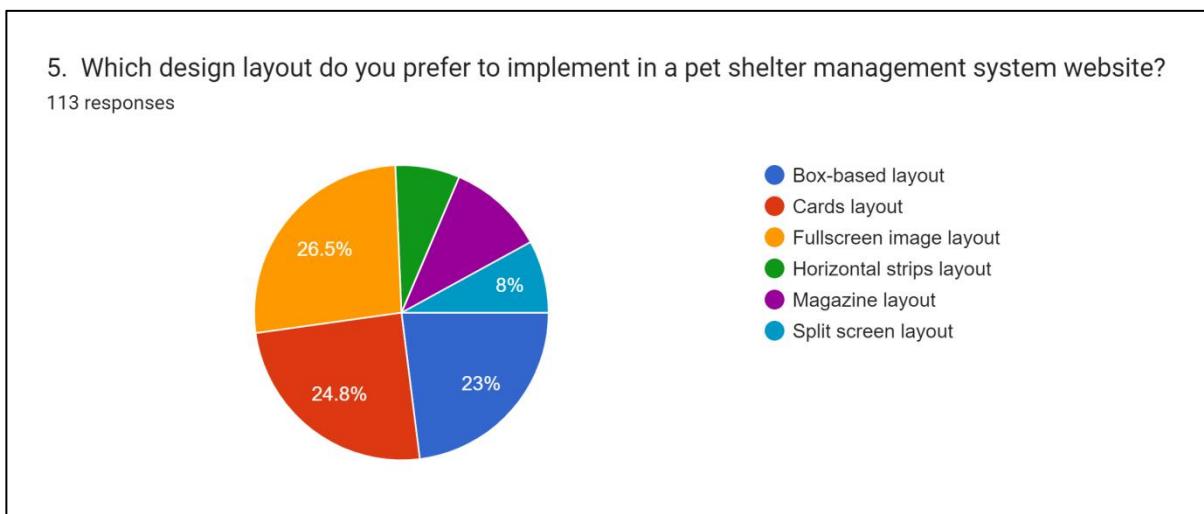


Figure 3.16: Design Layout

From the Figure 3.16, it shows the design layout that prefers to implement in pawsitive shelter management system website. Among the options provided, the most favored design layout is the Fullscreen image layout, receiving 30 votes or 26.5% of the total responses. The Cards layout closely follows with 28 votes (24.8%), while the Box-based layout received 26 votes (23%). The Magazine layout garnered 12 votes (10.6%), the Split screen layout received 9 votes (8%), and the Horizontal strips layout had the fewest votes with 8 (7.1%).

3.5 Chapter Conclusion

This chapter presented the methodology employed in the development of the Pawsitive Shelter Management System. The System Development Life Cycle (SDLC) waterfall model was chosen as the best strategy for this project due to its structured and sequential nature. The technique was divided into various stages, each of which contributed to the system's ultimate performance. These phases included planning, analysis, design, implementation, and maintenance. The maintenance phase, however, was left out of this project because its primary goal

is to create the Pawsitive Shelter Management System's initial edition. To gather requirements and understand the challenges faced by pet shelters, questionnaires were distributed to various stakeholders, enabling a comprehensive understanding of their needs and expectations. Through meticulous data analysis, crucial information was extracted and organized to determine the system's inputs and outputs. By adhering to this methodology, we strive to develop an efficient and user-friendly Pawsitive Shelter Management System that addresses the unique requirements of animal shelters and contributes to the well-being of homeless pets. The methodology employed in this project lays a solid foundation for the subsequent stages of system development and ensures a systematic and successful approach towards achieving the project's objectives.

CHAPTER 4

DESIGN

4.1 Introduction

The introduction section provides an overview of the logical and physical design of the Pawsitive Shelter Management System. The logical design, also known as the conceptual design, encompasses the abstract representation of data flow, input, and output within the system. It involves the use of tools such as context diagrams, data flow diagrams (DFDs), entity-relationship diagrams (ERDs), and data dictionaries to illustrate the system's flow and database design. On the other hand, the physical design focuses on the graphical illustration of the system involving the external and internal entities. In this chapter, the pre-interface design of the system will be presented. The chapter is divided into sections, with Section 4.2 discussing the logical design using various modelling techniques, Section 4.3 presenting the system architecture, ERD, and data dictionary, Section 4.4 providing a pre-interface design and Section 4.5 providing a summary of the chapter.

4.2 Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) is a valuable tool for analyzing and modelling the flow of data within the Pawsitive Shelter Management System. The DFD provides a visual representation of how data is processed, highlighting the inputs, outputs, and processes involved in the system (Zhang, H., Liu, W., Xiong, H., & Dong, X., 2018). By using a professional visual CASE tool, we can create a clear and comprehensive DFD for the Pawsitive Shelter Management System. The DFD Level 1 diagram will serve as the primary representation, illustrating the overall flow of data through the system (Hu, M., Cleland, S., & Burt, S., 2019). DFDs can be divided into different levels, which provide varying degrees of detail about the system. Additionally, tables and well-designed processes will be incorporated to enhance the understanding and clarity of the DFD. Figure 4.1 shows the symbols and notations used in DFD.

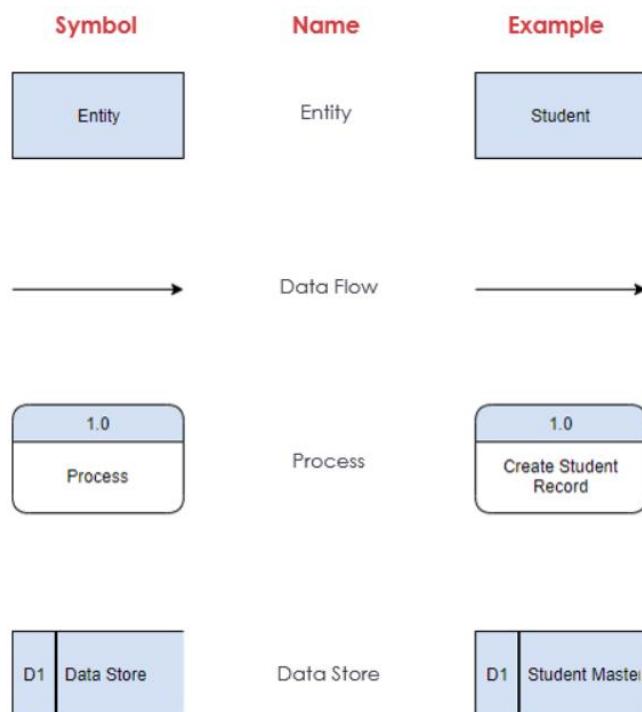


Figure 4.1 : Symbols and Notations Used in DFD

Source : Visual Paradigm (<https://online.visual-paradigm.com/>)

4.2.1 Context Diagram

In the context of the Pawsitive Shelter Management System, a data flow diagram (DFD) can be used to provide a high-level view of how the system operates and interacts with external entities. The context diagram serves as the highest-level representation and acts as a guideline for developing more detailed DFD levels. It showcases the logical interactions and operations of the system. For the Pawsitive Shelter Management System, the context diagram would include external entities such as admin and public. The interactions between these entities and the system will be depicted, highlighting the inputs, outputs, and processes involved (Akundi, A., Smith, E. E., Tseng, T. B., & Rubio, I., 2018). The context diagram provides a visual overview of the system and helps in understanding its overall functionality. Figure 4.2 shows the context diagram of Pawsitive Shelter Management System.

Context Diagram

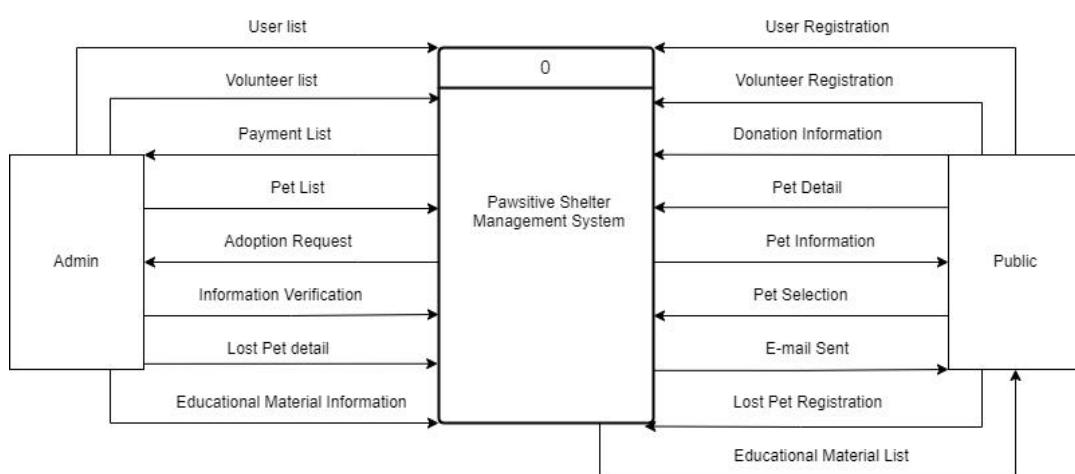


Figure 4.2: Context Diagram of Pawsitive Shelter Management System

4.2.2 Data Flow Diagram (DFD) Level 0

The Data Flow Diagram (DFD) for the Pawsitive Shelter Management System at level 0 represents the major processes, data flows, and data stores of the system at a high level (Zhang, H., Liu, W., Xiong, H., & Dong, X., 2018). The DFD includes two external entities, which are the admin and the public. The admin staff is responsible for generating the adoption function of the pet system management system, while the public has the ability to view pet profiles. The DFD illustrates the flow of information and interactions within the system, highlighting the core functionalities related to managing pets in the shelter, including adoptions, volunteers, donations, lost pets, and news updates. The major processes identified in the DFD level 0 encompass tasks such as pet adoption, volunteer applications, donation management, lost pet reports, and news publishing. The DFD level 0 provides an overview of the Pawsitive Shelter Management System, outlining the key entities, processes, and data stores involved in the system's operation. Figure 4.3 shows the data flow diagram (DFD) level 0 of Pawsitive Shelter Management System.

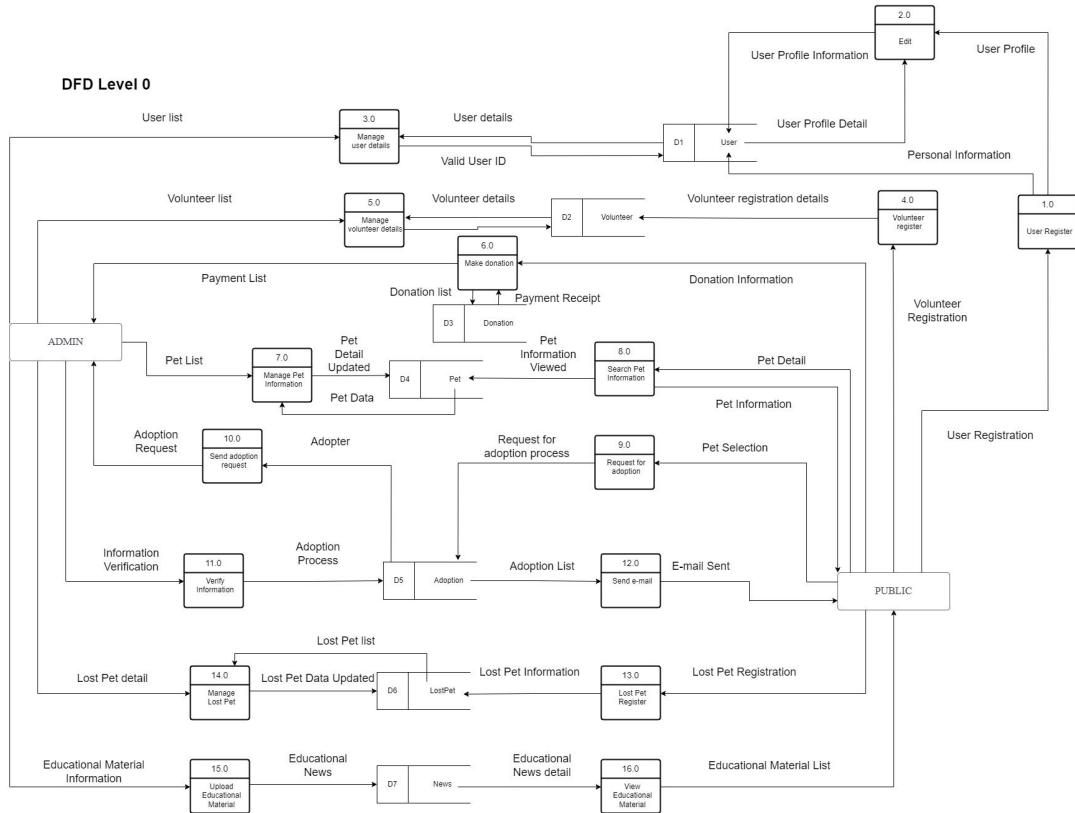


Figure 4.3: Data Flow Diagram (DFD) Level 0 of Pawsitive Shelter Management System.

4.2.3 Data Flow Diagram (DFD) Level 1

The Data Flow Diagram (DFD) Level 1 for the Pawsitive Shelter Management System provides a more detailed representation of the major processes, data flows, and data stores within the system. Building upon the DFD Level 0, the DFD Level 1 delves into the specific functionalities and interactions of the system. It maintains the two external entities, namely the admin and the public. In the context of the Pawsitive Shelter Management System, the DFD Level 1 captures the intricate operations involved in managing the shelter. It includes processes such as pet adoption, volunteer applications, donation management, lost pet reports, and news publishing. The DFD Level 1 demonstrates the flow of information between these processes, emphasizing the importance of data

exchanges to support the efficient management of pets within the shelter. Furthermore, the DFD Level 1 identifies the relevant data stores where information is stored, ensuring data integrity and facilitating the smooth functioning of the system. Figure 4.4 shows the data flow diagram (DFD) level 1 of Pawsitive Shelter Management System.

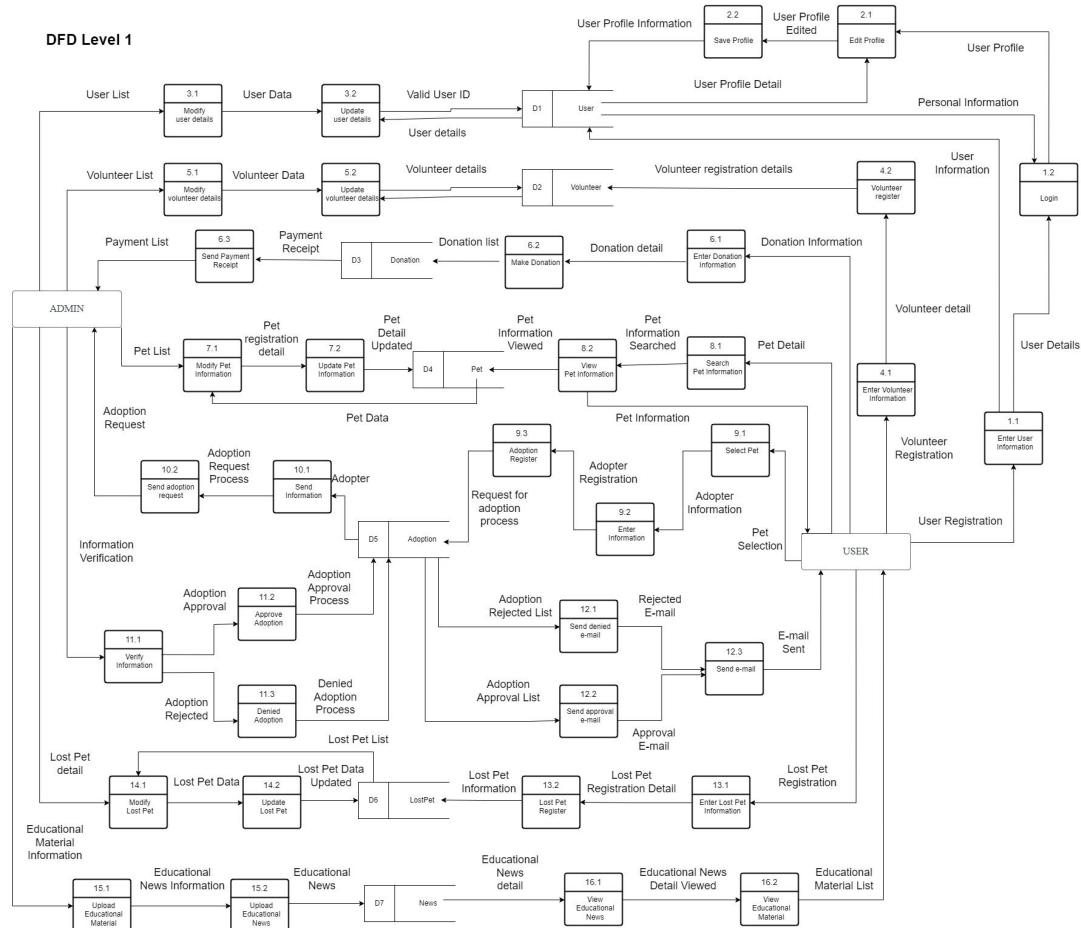


Figure 4.4: Data Flow Diagram (DFD) Level 0 of Pawsitive Shelter Management System.

4.3 Database Design

The Database design for the Pawsitive Shelter Management System involves the processes of designing, developing, implementing, and maintaining the database management system for the application. The goal is to organize the data according to the database model specific to the system. In this project, an Entity-Relationship Diagram (ERD) can be drawn to depict the relationships between data entities in the Pawsitive Shelter Management System. With appropriate normalization and organization, the database structure can support the storage and retrieval of pet-related information such as pet details, adoption records, volunteer applications, donations, lost pet reports, and news updates.

4.3.1 Entity-Relationship Diagram (ERD)

The Entity-Relationship Diagram (ERD) for the Pawsitive Shelter Management System provides a structural representation of the relationships between entities and their attributes within the database. Building upon the class diagram provided, the ERD for this assignment consists of several entities to store essential data related to the pet shelter management. These entities include Pet, User, Adoption, Volunteer, Donation, LostPet, and News. The ERD illustrates the connections between these entities and their corresponding attributes, such as Pet_ID, User_ID, Adoption_ID, Volunteer_ID, Donate_ID, Lost_ID, and News_ID. The relationships between entities are established through associations, as indicated in the Figure 4.5. The ERD serves as a foundational diagram for designing the relational database for the Pawsitive Shelter Management System, ensuring efficient storage and retrieval of pet-related information.

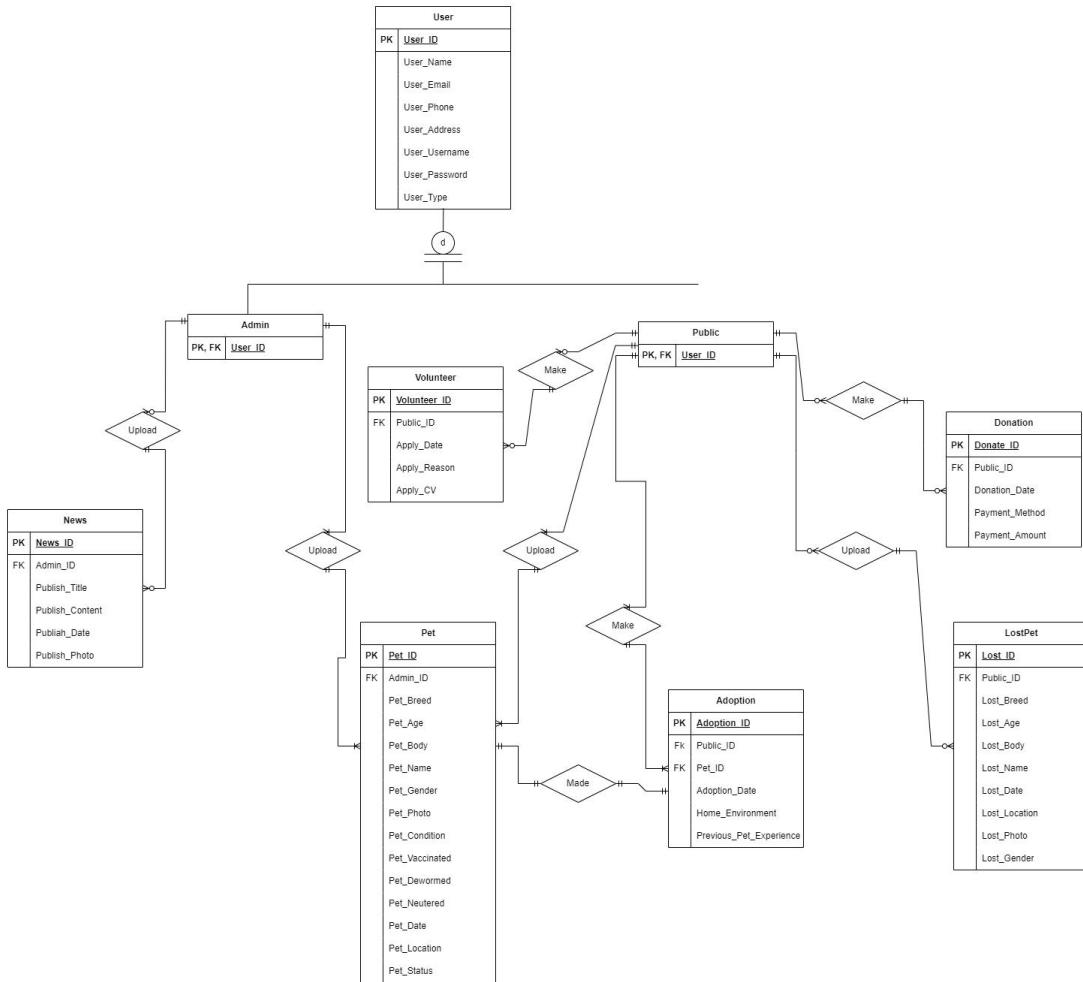


Figure 4.5: Entity-Relationship Diagram (ERD) of Pawsitive Shelter Management System.

4.3.2 Data Dictionary

The Data Dictionary for the Pawsitive Shelter Management System serves as a valuable resource to provide additional metadata and information about the database used in the application system. It encompasses various tables that store important data related to the management of pets in the shelter. The data dictionary provides detailed insights into the structure and characteristics of each table, including the field names, data types, constraints, and descriptions. The

tables in the data dictionary correspond to the entities identified in the class diagram, such as Pet, User, Adoption, Volunteer, Donation, LostPet, and News. Each table within the data dictionary contains specific columns that capture relevant information about the respective entity, such as unique identifiers, names, attributes, and relationships.

Table 4.1: User Entity

Column Name	Data Type	Null	Comments	Description	Example
User_ID	Integer(10)	No	Primary Key, Auto-Increment	Unique identifier for user	456
User_Name	varchar(50)	No		Name of the user	"John Doe"
User_Email	varchar(50)	No		Email of the user	" john@example.com "
User_Phone	varchar(11)	No		Phone number of the user	"1234567890"
User_Address	varchar(100)	No		Address of the user	"123 Main St"
User_Username	varchar(50)	No		Username of the user	"johndoe"
User_Password	varchar(50)	No		Password of the user	"*****"
User_Type	varchar(50)	No		Type of the user	"Admin"

Table 4.2: Volunteer Entity

Column Name	Data Type	Null	Comments	Description	Example
Volunteer_ID	integer	No	Primary Key, Auto-Increment	Unique identifier for volunteer	111
Public_ID	integer	Yes	Foreign Key (User)	Identifier of the public	987
Apply_Date	date	Yes		Date of application	"2023-02-20"
Apply_CV	varchar	Yes		Availability for volunteering	"Weekends"
Apply_Reason	varchar	Yes		Reason for applying	"Passion for animals"

Table 4.3: Pet Entity

Column Name	Data Type	Null	Comments	Description	Example
Pet_ID	Integer(10)	No	Primary Key, Auto-Increment	Unique identifier for pet	1
Admin_ID	integer(10)	No	Foreign Key (User)	Identifier of admin	123
Pet_Breed	varchar(50)	No		Breed of the pet	"Labrador"

Pet_Age	integer(10)	No		Age of the pet in months	24
Pet_Body	varchar(50)	No		Body type of the pet	"Medium"
Pet_Name	varchar(50)	No		Name of the pet	"Buddy"
Pet_Gender	varchar(10)	No		Gender of the pet	"Male"
Pet_Photo	blob	No		URL/path to pet's photo	"https://..."
Pet_Condition	varchar(50)	No		Condition of the pet	"Healthy"
Pet_Vaccinated	varchar(10)	No		Indicates if pet is vaccinated	true
Pet_Dewormed	varchar(10)	No		Indicates if pet is dewormed	true
Pet_Neutered	varchar(10)	No		Indicates if pet is neutered	true
Pet_Date	date	No		Date of pet's entry	"2023-01-15"
Pet_Location	varchar(50)	No		Location of the pet	"Shelter A"
Pet_Status	varchar(10)	No		Status of the pet	"Available"

Table 4.4: Adoption Entity

Column Name	Data Type	Null	Comments	Description	Example
Adoption_ID	Integer(10)	No	Primary Key, Auto-Increment	Unique identifier for adoption	789
Public_ID	integer(10)	No	Foreign Key (User)	Identifier of the public	987
Pet_ID	integer(10)	No	Foreign Key (Pet)	Identifier of the pet	1
Adoption_Date	date	No		Date of adoption	"2023-03-10"
Home_Environment	varchar(100)	No		Description of home environment	"Spacious, fenced yard"
Previous_Pet_Experience	varchar(100)	No		Description of previous pet experience	"Owned a dog before"

Table 4.5: LostPet Entity

Column Name	Data Type	Null	Comments	Description	Example
Lost_ID	integer(10)	No	Primary Key, Auto-	Unique identifier for	333

			Increment	lost pet	
Public_ID	integer(10)	No	Foreign Key (User)	Identifier of the public	987
Lost_Breed	varchar(50)	No		Breed of the lost pet	"Golden Retriever"
Lost_Age	integer(10)	No		Age of the lost pet in months	36
Lost_Body	varchar(50)	No		Body type of the lost pet	"Large"
Lost_Name	varchar(50)	No		Name of the lost pet	"Max"
Lost_Date	date	No		Date when the pet was lost	"2023-06- 15"
Lost_Location	varchar(100)	No		Location where the pet was lost	"Park A"
Lost_Photo	blob	No		URL/path to lost pet's photo	"https://..."

Table 4.6: News Entity

Column Name	Data Type	Null	Comments	Description	Example
News_ID	Integer(10)	No	Primary Key, Auto- Increment	Unique identifier for news	444

Admin_ID	integer(10)	No	Foreign Key (User)	Identifier of admin	123
Publish_Title	varchar(50)	No		Title of the news	"Upcoming Adoption Event"
Publish_Content	Long text	No		Content of the news	"Join us for our adoption event on..."
Publish_Date	date	No		Date of publication	"2023-07-01"
Publish_Photo	blob	No		URL/path to news photo	"https://..."

Table 4.7: Donate Entity

Column Name	Data Type	Null	Comments	Description	Example
Donate_ID	integer(10)	No	Primary Key, Auto-Increment	Unique identifier for donation	222
Public_ID	integer(10)	No	Foreign Key (User)	Identifier of the public	987
Donation_Date	date	No		Date of donation	"2023-04-05"
Payment_Method	Varchar(50)	No		Payment method	"Credit Card"
Payment_Amount	decimal(10,2)	No		Amount donated	100.00

4.4 Pre-Interface Design

The pre-interface design phase of the Pawsitive Shelter Management System focuses on developing the visual elements and user interactions of the system. The interface design plays a crucial role in ensuring a pleasant and user-friendly experience for the users. It is essential to follow design principles to create an intuitive and easy-to-use interface. Although the pre-interface design provided in this section is a preliminary sketch and subject to change during the system development phase, it offers a glimpse into the envisioned interface for the Pets Shelter Management System. The design aims to be simple, minimalist, and effective in conveying the system's functionalities. It includes pages such as the registration page, login page for each user type, homepage, and other key features that facilitate the management of pets in the shelter. The complete set of interfaces can be found in Appendix A, showcasing the visual representation and user interactions planned for the Pawsitive Shelter Management System.

4.4.1 Register and Login Page for Each User

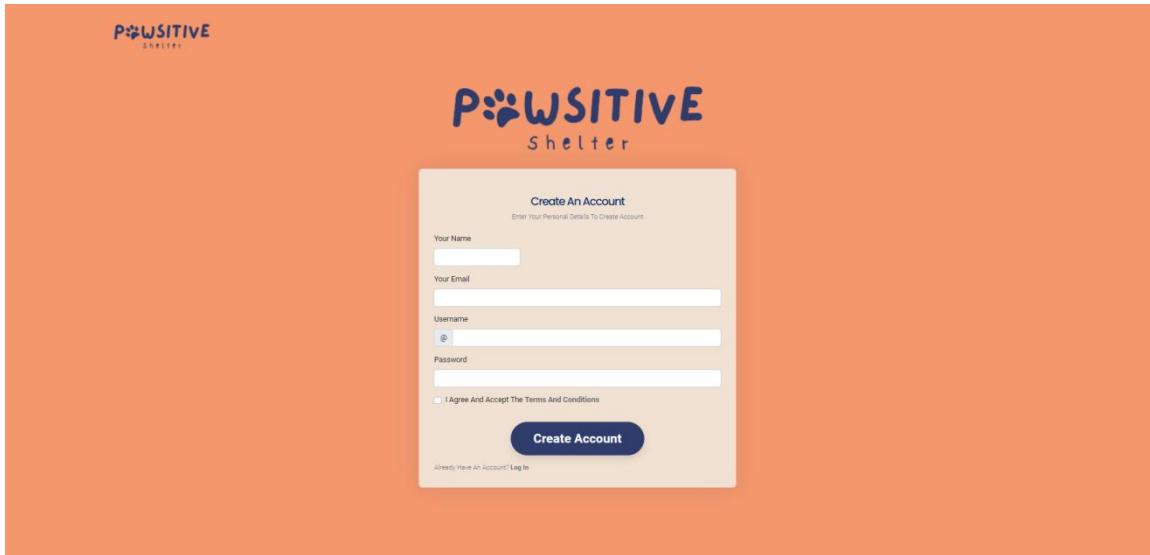


Figure 4.6: Register Page



Figure 4.7: Login Page

The Register Page serves as the initial point of entry for new users of the Pawsitive Shelter Management System. Users can establish accounts on this page using a user-friendly interface by entering necessary details including their name,

email address, and password. Users can enter extra fields on the Register Page to provide pertinent information such as their contact information, location, and preferences. By filling out these fields accurately, users can ensure a seamless experience within the system, allowing them to access features like pet adoption, volunteering, and donation tracking. The Register Page emphasizes the importance of user registration to establish a secure and personalized experience while engaging with the Pets Shelter Management System.

The Login Page is designed to facilitate the access of registered users to their accounts within the Pets Shelter Management System. The Login Page's simple and user-friendly layout asks visitors to enter their registered email address and password in order to access their customized profiles and features. The system maintains the confidentiality and privacy of user information by validating the submitted login credentials. In case users forget their password, a password recovery option is available on the Login Page to facilitate the retrieval of their account access. The Login Page serves as the gateway for users to explore the various functionalities and resources offered by the Pawsitive Shelter Management System, enabling them to engage in activities such as pet adoption, volunteering, and donation tracking.

4.4.2 Homepage of Pawsitive Shelter Management System

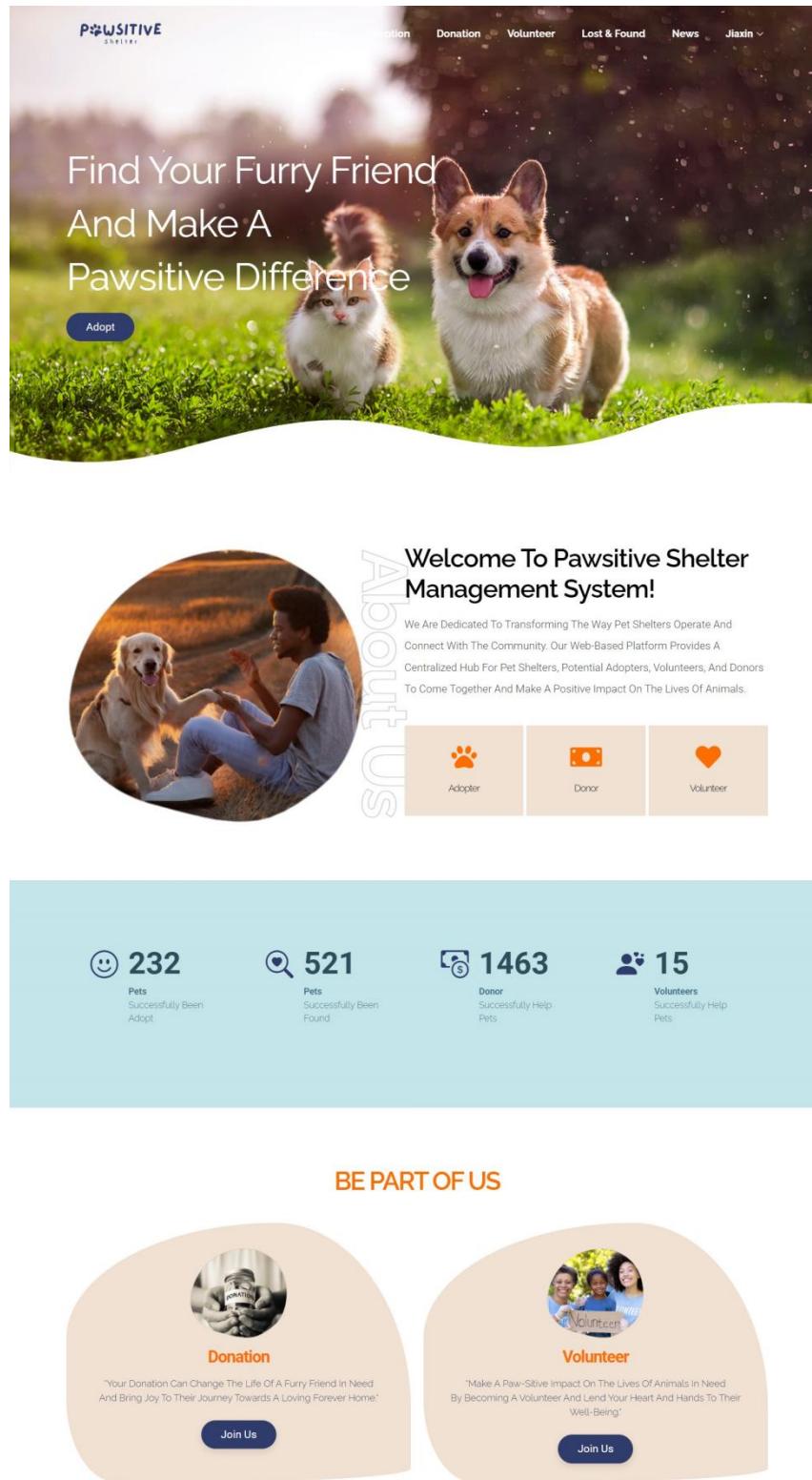


Figure 4.8: Homepage of Pawsitive Shelter Management System

The Homepage of the Pawsitive Shelter Management System serves as the central hub and entry point for users, providing them with a comprehensive overview and access to various features and functionalities. It is designed to be visually appealing, user-friendly, and informative. The Homepage typically showcases key information, such as recent updates and important announcements from the pet shelters. The Homepage also provides intuitive navigation menus or sections that allow users to explore different areas of the system, such as adoption listings, volunteer opportunities, donation options, lost and found pet listings, educational resources, and contact information. The goal of the Homepage is to provide a welcoming and engaging experience, encouraging users to actively participate in the pet shelter community and facilitate their interaction with the system's various functionalities.

4.4.3 Adoption Function

Pawsitive Shelter

Home Adoption Donation Volunteer Lost & Found News Justin ▾

ADOPT

Adopting A Pet Is Not Just About Saving Them, It's About Finding A Lifelong Companion Who Will Fill Your Life With Love And Joy.

Search Animals:

 Dog Oreo ★ Smart, Calm, And Friendly Boy Seeking Human Family ★ Once Settled, Easy To Adapt To New Environments ★ Great With Dogs And Children, Will Take Care Of You Forever 19 Apr 2023	 Small & Furry Milo N Jiwoo ★ Cute, Active, Friendly Guinea Pigs Seek New Owner With Young Kids ★ Has A Love To Eat And Drink, Comes With All Belongings 22 Jun 2023	 Small & Furry Hedgehog ★ Small, Furry, And Adorable: The Perfect Addition To Your Family! ★ Ready To Be A Friend: A 2-Month-Old Female Waiting To Be Adopted ★ Ready To Cuddle: This Furry Friend Will Bring Joy To Your Life 21 May 2023
 Hamster Crystal ★ Cute Male Hamster Looking For Forever Home ★ Friendly And Active, Loves To Play And Explore ★ Will Bring Lots Of Joy And Laughter To Any Household 25 May 2023	 Hamster Axel ★ Active Syrian Hamster Looking For A Special Home ★ Almost 2 Years Old And Located In Desa Sri Hartamas ★ Contact For Adoption Or Hamster Advice 29 Apr 2023	 Rabbit Leo ★ Leo, The Orange Fur Rabbit With A Strong Personality, Loves To Play And Run Around ★ He's A Sucker For Treats, Sometimes Lazy, But Super Cute And Loves Jumping On Legs ★ Adopt Leo Now And Make Him Your Playful Companion! 3 Jul 2023
 Rabbit Snowy N Ruby ★ Quiet Player, Contented In Your Backyard ★ Two Male Rabbits Up For Adoption ★ Looking For A New Home, Together Or Separately 3 Jul 2023	 Cat Brady ★ Rescued From A Risky Road ★ Prefer Wet Food, Endless Energy ★ Companion Needed For Non-Stop Playtime 21 Jun 2023	 Cat Candy ★ Rescued From A Disastrous Journey, Candy Survived And Is Looking For A Loving Home ★ Clean, Vaccinated, Dewormed And Litter Trained. Needs Love And Care To Get Healthy ★ Affectionate And Grateful, Candy Deserves A Second Chance 2 Jun 2023

Previous | 1 2 3 4 5 Next

Figure 4.9: Adoption Listing Page

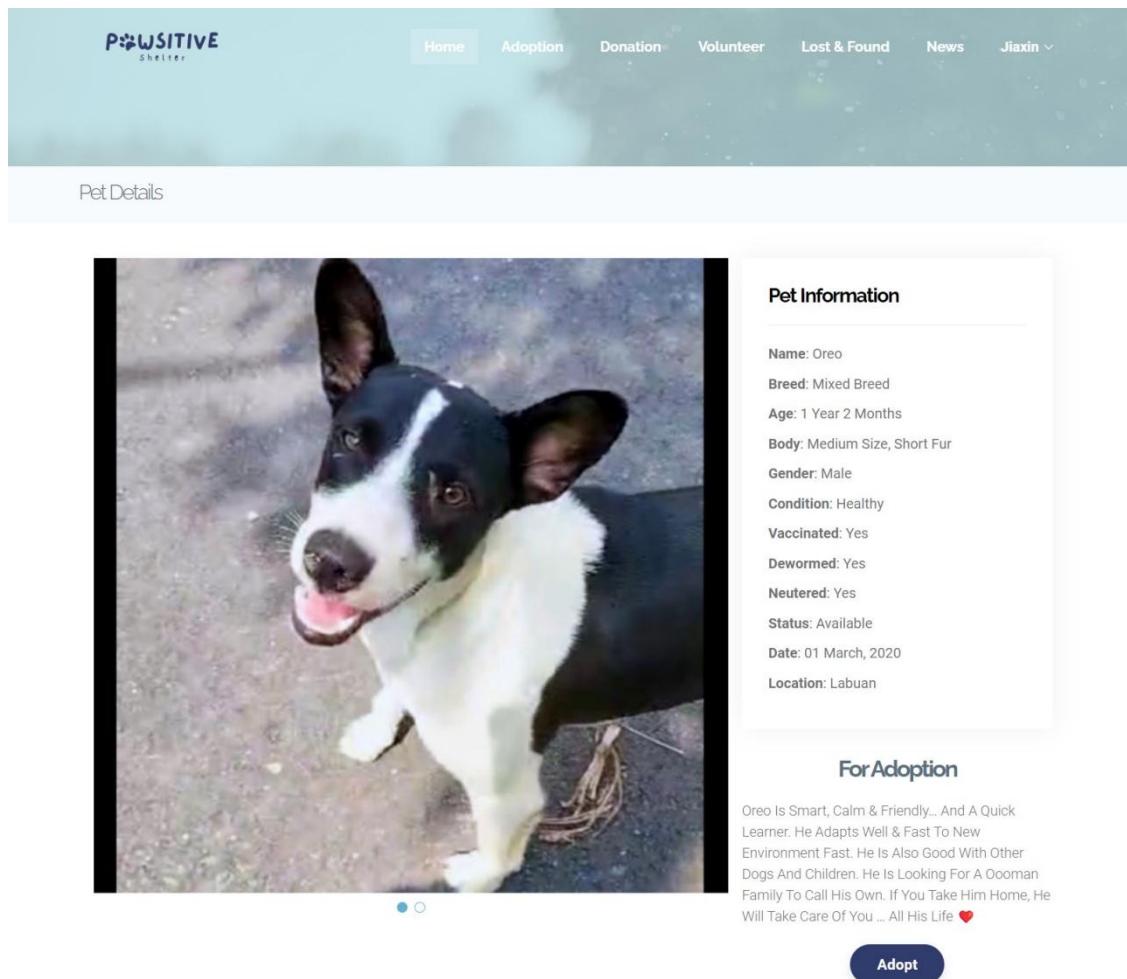


Figure 4.10: Adoption Pet Detail Page

The Adoption Listing Page on the Pawsitive Shelter Management System is a dedicated user interface page that displays a comprehensive list of pets available for adoption. It provides a centralized platform where potential adopters can browse through the profiles of various animals in search of their perfect companion. The page presents essential information about each pet, including their name, breed, age, gender, and a brief description highlighting their unique qualities and personality traits. Alongside the pet's details, the page often features appealing photographs or images to capture the attention of potential adopters and create a connection. Users can utilize search filters to refine their search based on specific

criteria such as species, size, or location. Additionally, the Adoption Listing Page may include interactive features, allowing users to express their interest in a particular pet by submitting an adoption application directly through the system. This page aims to streamline the adoption process, facilitate meaningful connections between adopters and pets, and ultimately promote successful and responsible adoptions within the Pawsitive Shelter Management System.

4.4.4 Donation Function

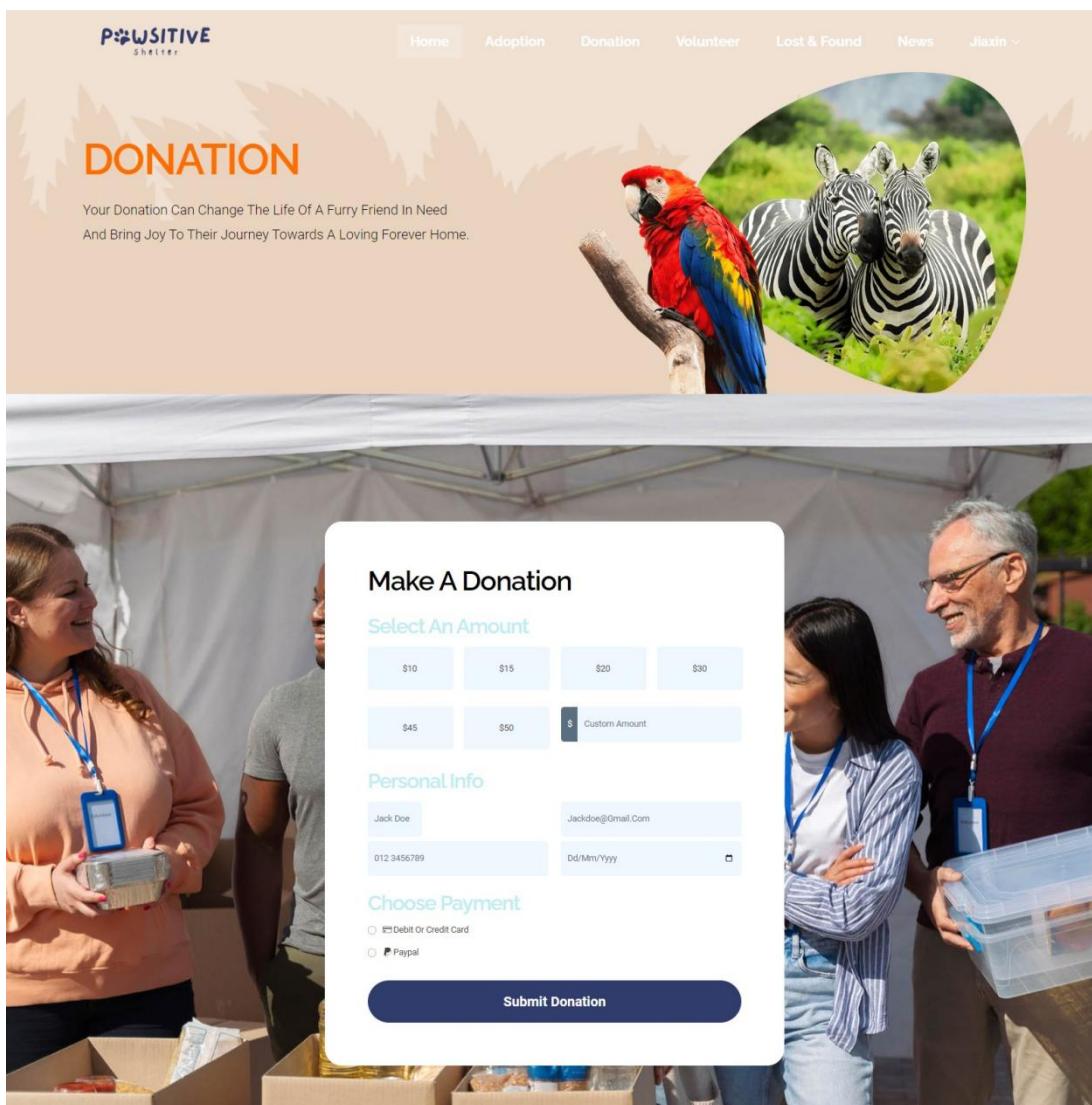


Figure 4.11: Donation Page

The Donation feature of the Pawsitive Shelter Management System is a vital component that facilitates the contribution of funds and resources to support the welfare and operations of pet shelters. It provides users with a seamless and secure platform to make monetary donations. Users can select the amount they desire to donate by using the Donation tool, which normally offers them a variety of donation alternatives. To provide convenience and flexibility for users, it might contain a variety of payment options, such as credit/debit cards or online payment portals. The Donation feature also includes tracking and receipt generation functionalities, ensuring transparency and accountability. It allows donors to keep a record of their contributions and provides them with a sense of fulfillment and satisfaction in knowing that their donations directly benefit the animals and operations of the pet shelters.

4.4.5 Lost and Found Function

LOST & FOUND

Lost And Found: Reuniting Hearts, One Paw At A Time.



Lost Your Pet?

Register Your Lost Pet On Our Pets Shelter Management System And Let Us Be Their Voice In Reuniting Them With Their Loving Family. Together, We Can Bring Hope And Joy Back Into Their Lives.

[REGISTER](#)

Search Animals.

		
Dog Oreo ★ Smart, Calm, And Friendly Boy Seeking Human Family! ★ Outgoing, Easy To Adapt To New Environments. ★ Great With Dogs And Children, Will Take Care Of You Forever 19 Apr 2023	Small & Furry Milo N Jiwoo ★ Cute, Active, Friendly Guinea Pigs Seek New Owner With Young Kids ★ Highly Love To Eat And Drink, Comes With All Belongings 22 Jun 2023	Small & Furry Hedgehogg ★ Small, Furry, And Adorable: The Perfect Addition To Your Family! ★ Meet Hedgehog Friend: A 2 Month Old Female Waiting To Be Adopted ★ Ready To Cuddle: This Furry Friend Will Bring Joy To Your Life 21 May 2023
		
Hamster Crystal ★ Cute Male Hamster Looking For Forever Home ★ Friendly And Active, Loves To Play And Explore ★ Will Bring Lots Of Joy And Laughter To Any Household 25 May 2023	Hamster Axel ★ Active Syrian Hamster Looking For A Special Home ★ Almost 2 Years Old And Located In Desa Sri Hartamas ★ Contact For Adoption Or Hamster Advice 29 Apr 2023	Rabbit Leo ★ Leo, The Orange Fur Rabbit With A Strong Personality, Loves To Play And Run Around ★ He's A Sucker For Treats, Sometimes Lazy, But Super Cute And Loves Jumping On Legs ★ Adopt Leo Now And Make Him Your Playful Companion! 3 Jul 2023
		
Rabbit Snowy N Ruby ★ Quiet Player, Contented In Your Backyard ★ Two Male Rabbits Up For Adoption ★ Looking For A New Home, Together Or Separately 3 Jul 2023	Cat Brady ★ Rescued From A Risky Road ★ Prefer Wet Food, Endless Energy ★ Companion Needed For Non-Stop Playing 21 Jun 2023	Cat Candy ★ Rescued From A Disastrous Journey, Candy Survived And Is Looking For A Loving Home ★ Clean, Vaccinated, Dewormed And Litter Trained. Needs Love And Care To Get Healthy ★ Affectionate And Grateful, Candy Deserves A Second Chance 2 Jun 2023

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Figure 4.12: Pet Lost and Found Page

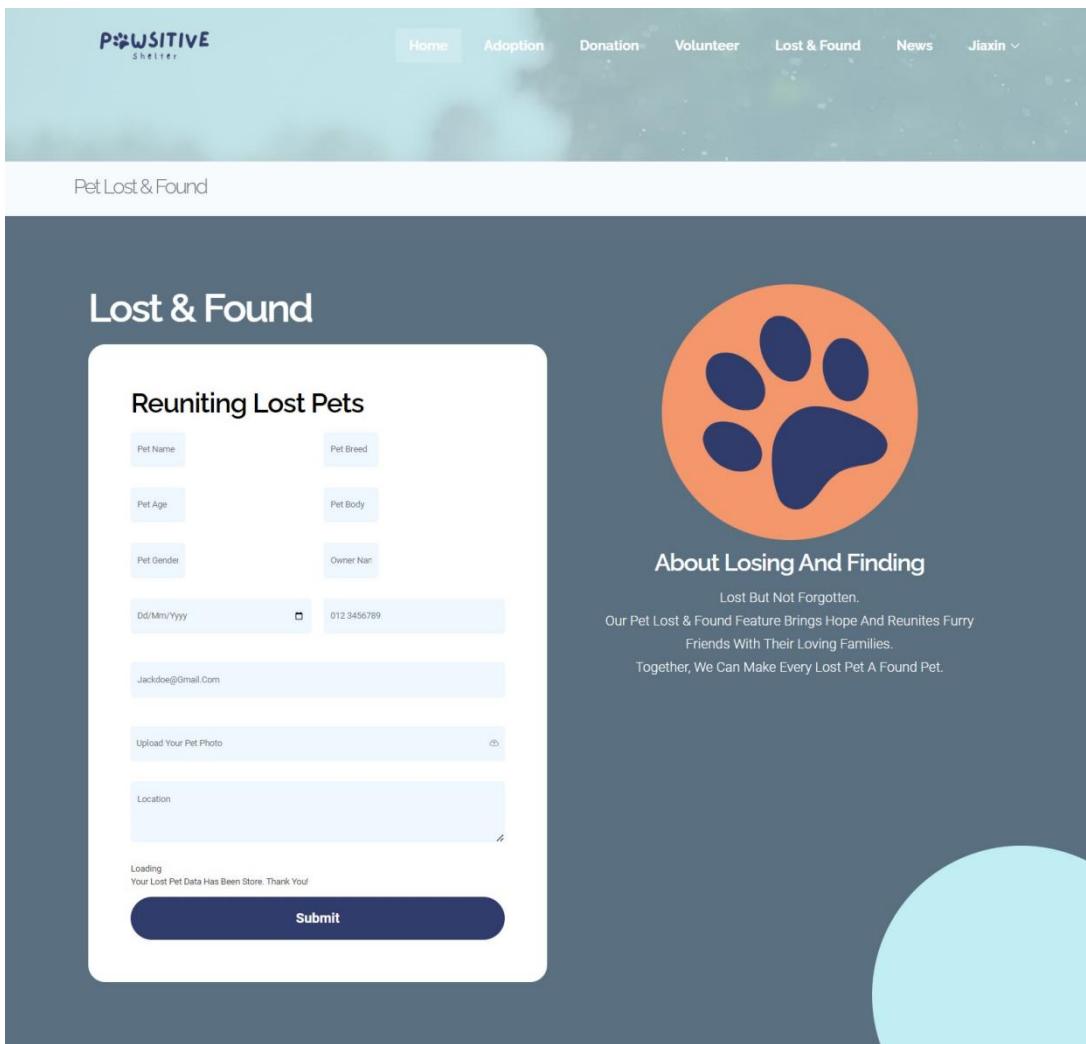


Figure 4.13: Pet Lost and Found Register Page

The Lost and Found Function of the Pawsitive Shelter Management System is a crucial feature that facilitates the reunification of lost pets with their owners. This function serves as a centralized platform where users can report lost or found pets, increasing the chances of successful reunions. Users who find a lost pet can report it using a special form or interface by providing pertinent details including the animal's description, the place where it was discovered, and any distinguishing characteristics. The database of the system then stores this data, making it available to pet owners looking for their lost animals. The Lost and Found Function

streamlines the procedure for reuniting lost pets with their owners, serving as a useful community service and raising the likelihood of a happy reunion. It helps alleviate the stress and anxiety experienced by pet owners during these difficult times, reinforcing the system's commitment to supporting responsible pet ownership and welfare.

4.5 Chapter Conclusion

In conclusion, this chapter has provided an in-depth understanding of the logical and physical design aspects of the Pets Shelter Management System. The logical designs, including the context diagram, data flow diagram (DFD) level 0, entity-relationship diagram (ERD), and data dictionary, have showcased the flow of data within the system and the relationships between entities. The context diagram and DFD level 0 have illustrated the processes involved in managing pets, such as adoptions, volunteers, donations, lost pets, and news updates. The ERD has established the structure and attributes of the database, ensuring efficient storage and retrieval of pet-related information. Additionally, the data dictionary has provided valuable insights into the nature of each attribute within the system. The physical design, presented as the pre-interface design, has depicted the graphical representation of the system. With this comprehensive design approach, the development of the Pawsitive Shelter Management System is expected to proceed smoothly, with a reduced margin for errors, and ultimately fulfill the objectives of the project.

CHAPTER 5

CONCLUSION

5.1 Introduction

The introduction section of Chapter 5 in this report provides an overview of the entire project work conducted for the Pawsitive Shelter Management System. While the project has reached the design phase within the chosen development method, it is important to note that further work is required to complete the project. This chapter consists of six sections, each serving a specific purpose. Section 5.1 introduces the chapter, setting the context for the subsequent sections. Section 5.2 offers a summary of the completed project work, providing an overview of the progress made thus far. Sections 5.3 and 5.4 delve into the predicted strengths and limitations of the system, highlighting its potential benefits and areas that require attention. In Section 5.5, the focus shifts to outlining the future work and areas of improvement for the Pawsitive Shelter Management System. Finally, Section 5.6 concludes the chapter with a summary, encapsulating the key points discussed throughout.

5.2 Project Work Summary

The objective of the Pawsitive Shelter Management System project is to develop a comprehensive system that integrates various functionalities for the efficient management of a pet shelter. Chapter 1 provides an introduction to the project, including the project background, problem statement, project objectives, and scope. It also outlines the target audience, project framework, and project timeline. In Chapter 2, a thorough literature review is conducted to explore existing pet shelter management systems and identify potential solutions. Chapter 3 describes the chosen system development method, data collection method, and data analysis approach for this project. The waterfall model is selected as the system development method, and data collection involves the use of questionnaires. Chapter 4 presents the logical design and physical design of the Pawsitive Shelter Management System. The logical design includes system diagrams, such as the context diagram and data flow diagrams, while the physical design encompasses the interface of the system.

5.3 Predicted Strength of the System

The Pawsitive Shelter Management System is anticipated to exhibit several strengths similar to the examples provided. Firstly, the system will offer a user-friendly interface accessible through web applications, ensuring convenience and accessibility for shelter staff, volunteers, and potential adopters. Additionally, the integration of a detailed pet search and filtering function will enable users to easily find their desired pets based on specific criteria, enhancing the efficiency of the adoption process. The online adoption function will streamline the adoption process by allowing interested individuals to submit applications directly through the system, simplifying communication between the shelter and potential adopters. Detailed pet profiles with photos and descriptions will provide comprehensive information to

help users make informed decisions, while the lost and found pet function will aid in reuniting lost pets with their owners. Furthermore, features such as volunteer registration and scheduling, donation tracking, and receipt generation will facilitate efficient coordination of volunteers and manage donations effectively. Lastly, the inclusion of an educational news section will provide valuable information and resources to pet owners, promoting responsible pet care and enhancing the overall user experience.

5.4 Predicted Weakness/Limitation of the System

Despite the anticipated strengths of the Pawsitive Shelter Management System, there are certain weaknesses or limitations that should be acknowledged. One potential limitation is the lack of multi-shelter coverage within the initial development phase. As the system prototype is developed based on a specific local animal shelter, it may not encompass the needs and requirements of other shelters without further customization. Additionally, the system may have limited scalability, meaning it may face challenges when accommodating a larger number of shelters or a higher volume of pet data. Another potential limitation is the absence of a dedicated mobile application for accessing the system. As the system may rely on web-based access or a computer application, it may limit the portability and convenience for users who prefer accessing the system on their mobile devices. This limitation might restrict user accessibility and convenience, requiring users to rely on specific devices or platforms to interact with the system effectively. These limitations highlight areas for future development and enhancement to ensure broader shelter coverage and improved accessibility for users across various devices.

5.5 Project Following Work

In order to enhance the Pawsitive Shelter Management System, several areas for future development and improvement have been identified. Firstly, considering the implementation of back-end development for the system would provide efficient data organization and storage capabilities. This would ensure smooth functionality on the client side of the mobile app, optimizing user experience. Furthermore, conducting rigorous testing and maintenance phases after the coding phase is crucial to identify and rectify any errors, bugs, or glitches that may arise during usage. This continuous improvement process helps optimize the system's performance and reliability, reducing the likelihood of malfunctions. These areas of focus for future work aim to enhance the system's reach, functionality, and user satisfaction.

5.6 Chapter Conclusion

In conclusion, the Pawsitive Shelter Management System project aims to automate and streamline the management of pet shelters. The system intends to provide a comprehensive solution by integrating various functionalities such as pet adoption, volunteer management, donation tracking, and lost or found pet management. The project has reached the design phase, but further work is required to complete its development. The system's strength lies in its ability to offer a user-friendly interface, detailed pet profiles, and efficient search and filtering options for potential adopters. Future work includes implementing back-end development for data organization, conducting rigorous testing, and addressing scalability and accessibility concerns. The completion of the Pawsitive Shelter Management System project is expected within the next six months, with the aim of enhancing the efficiency, effectiveness, and user experience within pet shelters.

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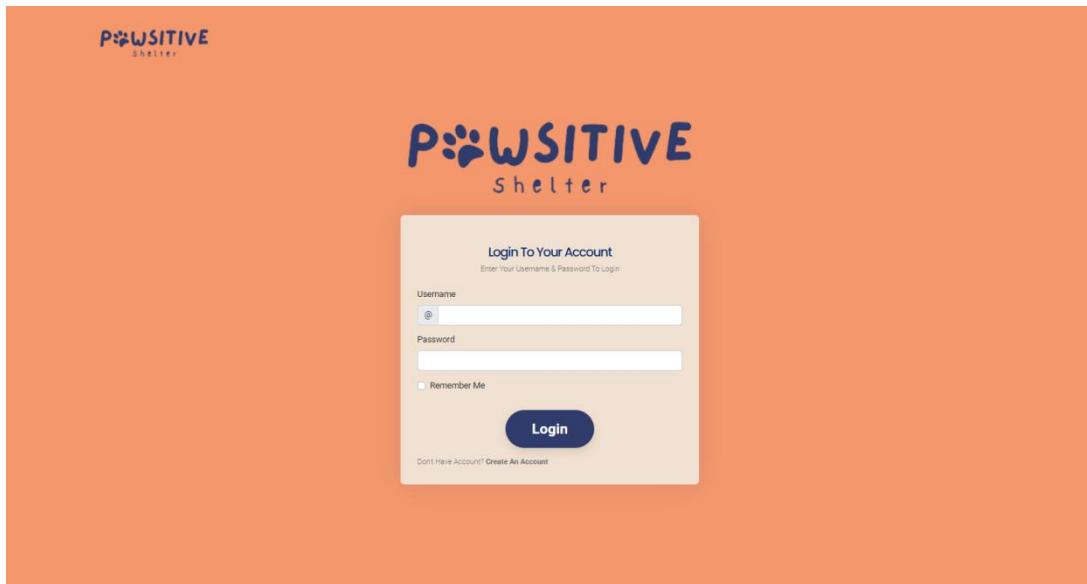
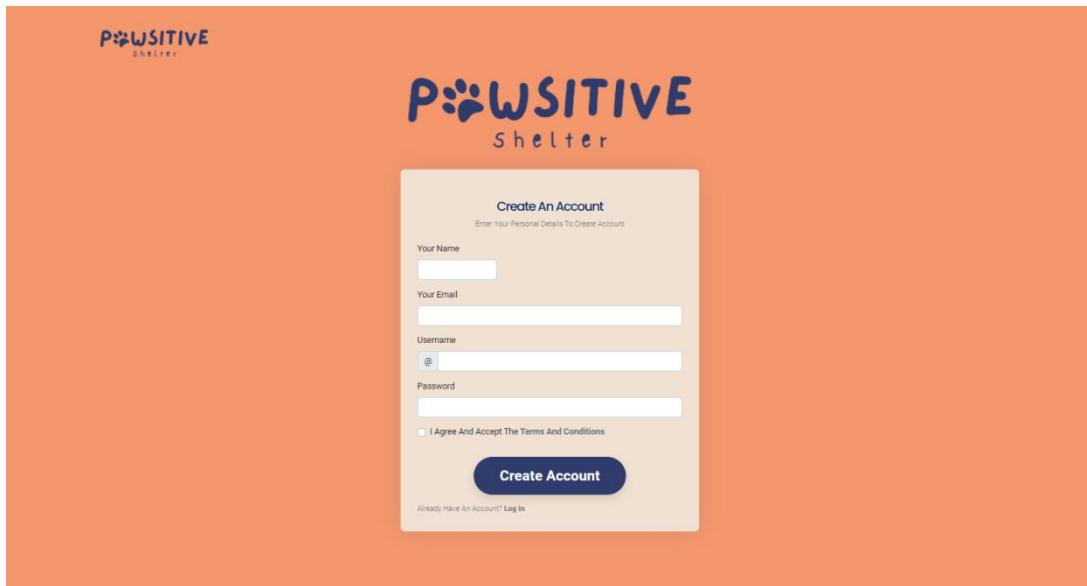
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APPENDIX A

PRE-INTERFACE DESIGNS





Welcome To Pawsitive Shelter Management System!

We Are Dedicated To Transforming The Way Pet Shelters Operate And Connect With The Community. Our Web-Based Platform Provides A Centralized Hub For Pet Shelters, Potential Adopters, Volunteers, And Donors To Come Together And Make A Positive Impact On The Lives Of Animals.

Adopter

Donor

Volunteer



BE PART OF US

Donation

"Your Donation Can Change The Life Of A Furry Friend In Need And Bring Joy To Their Journey Towards A Loving Forever Home."

[Join Us](#)

Volunteer

"Make A Paw-Sitive Impact On The Lives Of Animals In Need By Becoming A Volunteer And Lend Your Heart And Hands To Their Well-Being."

[Join Us](#)

Pawsitive
Shelter

Enhancing Efficiency, Adoption, And Care.

UMSKAL, Labuan
87000 Malaysia

Phone: 014 338 9917
Email: Chong.Jean.Biao@lulu.Ums.edu.my

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Useful Links

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ADOPT

Adopting A Pet Is Not Just About Saving Them, It's About Finding A Lifelong Companion Who Will Fill Your Life With Love And Joy.

Search Animals.

Oreo
Dog

- Smart, Calm, And Friendly Boy Seeking Human Family
- Quick And Easy To Adapt To New Environment
- Great With Dogs And Children, Will Take Care Of You Forever

19 Apr 2023

Milo N Jiwoo
Small & Furry

- Cute, Active, Friendly Guinea Pigs Seek New Owner With Young Kids
- Healthy, Love To Eat And Drink, Comes With All Belongings

22 Jun 2023

Hedgehog
Small & Furry

- Cute, Active, Friendly Guinea Pigs Seek New Owner With Young Kids
- Healthy, Love To Eat And Drink, Comes With All Belongings
- Ready To Cuddle: This Furry Friend Will Bring Joy To Your Life

21 May 2023

Crystal
Hamster

- Cute Male Hamster Looking For Forever Home
- Friendly And Active, Loves To Play And Explore
- Will Bring Lots Of Joy And Laughter To Any Household

25 May 2023

Axel
Hamster

- Active Syrian Hamster Looking For A Spacious Home
- Almost 2 Years Old And Located In Desa Sri Hartamas
- Contact For Adoption Or Hamster Advice

29 Apr 2023

Leo
Rabbit

- Leo, The Orange Fur Rabbit With A Strong Personality, Loves To Play And Run Around
- He Likes Sucker For Treats, Sometimes Lazy, But Super Cute And Loves Jumping On Legs
- Add Leo Now And Make Him Your Playful Companion!

3 Jul 2023

Snowy N Ruby
Rabbit

- Quiet Player, Contented In Your Backyard
- Two Male Rabbits Up For Adoption
- Looking For A New Home, Together Or Separately

3 Jul 2023

Brady
Cat

- Rescued From A Risky Road
- Prefer Wet Food, Endless Energy
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Candy
Cat

- Rescued From A Disastrous Journey, Candy Survived And Is Looking For A Loving Home
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Pet Details

Oreo

Pet Information

Name: Oreo
Breed: Mixed Breed
Age: 1 Year 2 Months
Body: Medium Size, Short Fur
Gender: Male
Condition: Healthy
Vaccinated: Yes
Dewormed: Yes
Neutered: Yes
Status: Available
Date: 01 March, 2020
Location: Labuan

For Adoption

Oreo Is Smart, Calm & Friendly... And A Quick Learner. He Adapts Well & Fast To New Environment Fast. He Is Also Good With Other Dogs And Children. He Is Looking For A Oooman Family To Call His Own. If You Take Him Home, He Will Take Care Of You ... All His Life ❤

[Adopt](#)

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The screenshot shows the 'Pet Adoption' section of the Pawsitive Shelter website. At the top, there is a navigation bar with links for Home, Adoption, Donation, Volunteer, Lost & Found, News, and Jiaxin. Below the navigation is a sub-navigation menu for Pet Adoption. The main content area features a large orange paw print icon and the heading 'About Adopting'. Below this, a text block reads: 'Adopting A Pet Is Not Just About Giving Them A Home, But Also About Finding A Lifelong Companion Who Will Fill Your Days With Unconditional Love And Joy.' To the left, there is a form titled 'Become A Adopter Today' with fields for Name (Jack Doe), Email (Jackdoe@gmail.com), Phone (012 3456789), Date (Dd/Mm/YY), Home Env (Home Env), Previous A (Previous A), Address, and a 'Submit' button. A message at the bottom of the form says 'Your Adoption Form Has Been Sent. Thank You.'

The screenshot shows the footer of the Pawsitive Shelter website. It features the Pawsitive Shelter logo with the tagline 'Enhancing Efficiency, Adoption, And Care.' Below the logo, it lists the address: UMSKAL Labuan, 87000 Malaysia, and provides contact information: Phone: 014 338 9917, Email: Chong_jiaxin_b120@lulu.Ums.Edu.Mt, and social media links for Twitter, Facebook, Instagram, and LinkedIn. To the right, there is a 'Useful Links' sidebar with links to Home, Adoption, Donation, Volunteer, Lost & Found, and News. At the bottom, a copyright notice states: '© 2023 Copyright Pawsitive. All Rights Reserved' and 'For Educational Purpose Only.'

DONATION

Your Donation Can Change The Life Of A Furry Friend In Need
And Bring Joy To Their Journey Towards A Loving Forever Home.

Make A Donation

Select An Amount

\$10 \$15 \$20 \$30

\$45 \$50 Custom Amount

Personal Info

Name: Jack Doe Email: Jackdoe@gmail.com
Phone: 012 3456789 Date of Birth: DD/MM/YYYY

Choose Payment

Debit Or Credit Card
 Paypal

Submit Donation

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VOLUNTEER

Make A Paw-Sitive Impact On The Lives Of Animals In Need By
Becoming A Volunteer And Lend Your Heart And Hands To Their Well-
Being.

Volunteer

Become A Volunteer Today

Jack Doe Jackdoe@gmail.com

DD/MM/YYYY

Upload Your CV

Reason

Loading
Your Message Has Been Sent. Thank You!

Submit

About Volunteering

Volunteers Don't Necessarily Have The Time;
They Just Have The Heart.*

- Elizabeth Andrew

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Pawsitive Shelter

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LOST & FOUND

Lost And Found: Reuniting Hearts, One Paw At A Time.

Lost Your Pet?

Register Your Lost Pet On Our Pets Shelter Management System And Let Us Be Their Voice In Reuniting Them With Their Loving Family. Together, We Can Bring Hope And Joy Back Into Their Lives.

[REGISTER](#)

Search Animals.

Oreo

- Smart, Calm, And Friendly Boy Seeking Human Family
- Open-Minded Easy To Adapt To New Environments
- Great With Dogs And Children, Will Take Care Of You Forever

19 Apr 2023

Milo N Jiwoo

- Cute, Active, Friendly Guinea Pigs Seek New Owner With Young Kids
- A Healthy Animal Love To Eat And Drink, Comes With All Belongings

22 Jun 2023

Hedgehog

- Small, Furry, And Adorable: The Perfect Addition To Your Family!
- Most Popular Pet Friend: A 2-Month-Old Female Waiting To Be Adopted
- Ready To Cuddle: This Furry Friend Will Bring Joy To Your Life

21 May 2023

Crystal

- Cute Male Hamster Looking For Forever Home
- Friendly And Active, Loves To Play And Explore
- Will Bring Lots Of Joy And Laughter To Any Household

25 May 2023

Axel

- Active Syrian Hamster Looking For A Spacious Home
- Almost 2 Years Old And Located In Desa Hartamas
- Contact For Adoption Or Hamster Advice

29 Apr 2023

Leo

- Leo, The Orange Fur Rabbit With A Strong Personality, Likes To Play And Run Around
- Her A Sucker For Treats, Sometimes Lazy But Super Cute And Loves Jumping On Legs
- Add Leo Now And Make Him Your Playful Companion!

3 Jul 2023

Snowy N Ruby

- Quiet Player Contented In Your Backyard
- Two Male Rabbits Up For Adoption
- Looking For A New Home, Together Or Separately

3 Jul 2023

Brady

- Rescued From A Risky Road
- Prefer Wet Food, Endless Energy & Companion Needed For Non-Stop Playtime

21 Jun 2023

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Pet Lost & Found

Lost & Found

Reuniting Lost Pets

<input type="text" style="width: 150px; height: 30px; border-radius: 5px; border: 1px solid #ccc; padding: 5px; margin

Pawsitive
Shelter

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NEWS

Bringing Hope And Happiness To Every Paw: Unleashing The Potential Of The Pets Shelter Management System In Transforming Lives.



Loreum Ipsum Dolor Sit

Lorem Ipsum Dolor Sit Amet Elit. Nec
Pretim Miura Bitur Facili Ornare Velit Non
Vulpote Liquum Metus Tortor

Admin | 15 Comments

Loreum Ipsum Dolor Sit

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Pawsitive
Shelter

Enhancing Efficiency, Adoption, And Care.

UMSKAL Labuan
87000 Malaysia

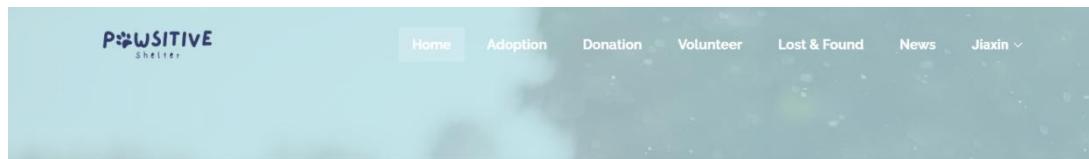
Phone: 014 338 9917
Email: Chong_jiaxin_bizo@liluv.Ums.Edu.Mt

Useful Links

- > Home
- > Adoption
- > Donation
- > Volunteer
- > Lost & Found
- > News

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Profile

Overview Edit Profile Settings Change Password

Profile Details

Full Name	Chong Jiaxin
Email	Chong_jiaxin_b20@llov.Ums.Edu.My
Phone	014 338 9917
Address	UMSKAL Labuan, 87000 Malaysia
Username	Jiaxin

PAWSITIVE
Shelter
Enhancing Efficiency, Adoption, And Care.
UMSKAL Labuan
87000 Malaysia
Phone: 014 338 9917
Email: Chong_jiaxin_b20@llov.Ums.Edu.My
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APPENDIX B

LOGBOOK



UNIVERSITI MALAYSIA SABAH
FACULTY OF COMPUTING AND INFORMATICS

Final Year Project Student Log Book

Project Title
PAWSITIVE SHELTER MANAGEMENT SYSTEM

Student

Name : CHONG JIAXIN
Matric No : BI20110148
Email : chong_jiaxin.bi20@iluv.ums.edu.my
Mobile No : 014-338 9917
Course Code : UH6481003/HC12

Supervisor

Supervisor : Madam Hadzariah Binti Ismail
Co-Supervisor (if applicable) : -



UNIVERSITI MALAYSIA SABAH
FACULTY OF COMPUTING AND INFORMATICS

LOG BOOK

Semester : 2 (2022/2023)

Date: 30 March 2023

Meeting : **1 / 2 / 3 / 4 / 5 / 6**

Student (Meeting Minute/ Achievement s/ Activities	: <hr/> <hr/>
Supervisor (Suggestion & Comments)	: <hr/> <hr/>
Next Meeting Plan	: <hr/> <hr/>

Supervisor's Signature: _____ Date: _____



UNIVERSITI MALAYSIA SABAH
FACULTY OF COMPUTING AND INFORMATICS

LOG BOOK

Semester : 2 (2022/2023)

Date : 5 April 2023

Meeting : 1 / **2** / 3 / 4 / 5 / 6

Student (Meeting Minute/ Achievement s/ Activities	: 1. Inquiries about the project objective. 2. Update the findings of the topic from related research
Supervisor (Suggestion & Comments)	: 1. Switch the objective 2 with objective 3. 2. Continue with doing the Chapter 1. 3. Update the progress in Microsoft Teams. 4. Continue doing Chapter 2 after submitting Chapter 1.
Next Meeting Plan	: 1. Update the progress for Chapter 2.

Supervisor's Signature: _____ Date: _____



UNIVERSITI MALAYSIA SABAH
FACULTY OF COMPUTING AND INFORMATICS

LOG BOOK

Semester : 2 (2022/2023)

Date : 13 April 2023

Meeting : 1 / 2 / **3** / 4 / 5 / 6

Student (Meeting Minute/ Achievement s/ Activities	: 1. Inquiries about the literature review and application review. <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Supervisor (Suggestion & Comments)	: 1. Application review needs to be 60% onwards similarity with the system. 1. Literature Review must be more include than 10 academic paper. <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Next Meeting Plan	: 1. Update the complete progress of chapter 2 <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

Supervisor's Signature: _____ Date: _____



**UNIVERSITI MALAYSIA SABAH
FACULTY OF COMPUTING AND INFORMATICS**

LOG BOOK

Semester : 2 (2022/2023)

Date : 8 May 2023

Meeting : 1 / 2 / 3 / **4** / 5 / 6

Student (Meeting Minute/ Achievement s/ Activities	: 1. Inquiries about the function suitable to be included in the system. 2. Update the progress of the report 1. Inquiries about the progress presentation
Supervisor (Suggestion & Comments)	: 1. Find more suitable functions for the pawsitive shelter management system system. 2. Switch the position of the second objective with the third objective in the report. 3. Make sure everything written in report should have reference to support.
Next Meeting Plan	: 1. Update the comments received during the progress Presentation.

Supervisor's Signature: _____ Date: _____



**UNIVERSITI MALAYSIA SABAH
FACULTY OF COMPUTING AND INFORMATICS**

LOG BOOK

Semester : 2 (2022/2023)

Date : 17 May 2023

Meeting : 1 / 2 / 3 / 4 / **5** / 6

Student (Meeting Minute/ Achievement s/ Activities	: <hr/> <hr/>
Supervisor (Suggestion & Comments)	: <hr/> <hr/>
Next Meeting Plan	: <hr/> <hr/>

Supervisor's Signature: _____ Date: _____



UNIVERSITI MALAYSIA SABAH
FACULTY OF COMPUTING AND INFORMATICS

LOG BOOK

Semester : 2 (2022/2023)

Date : 19 June 2023

Meeting : 1 / 2 / 3 / 4 / 5 / **6**

Student (Meeting Minute/ Achievement s/ Activities) : 1. Show the progress of context diagram, data flow diagram level 0 and level 1, entity- relationship diagram.
2. Show the progress of the prototype for the pawsitive shelter management system.
3. Inquiries regarding the certain process flow in the data flow diagram level 0 and level 1.

Supervisor (Suggestion & Comments) : 1. Make some amendments to the data flow diagram level 0 and level 1.
2. Make some changes and improvement to the interface of the Prototype.

Next Meeting Plan :

Supervisor's Signature: _____ Date: _____

APPENDIX C

TURNITIN REPORT

