

MyElection : An Election Voting Mobile Application

By

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Dissertation submitted in partial fulfilment
of the requirement for the
Degree of Information System (Hons)

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CERTIFICATION OF APPROVAL

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Application**

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Dissertation submitted to the
Information Systems Programme
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BACHELOR OF INFORMATION SYSTEM (Hons)

Approved by,



(Ts. Jale Bin Ahmad)

UNIVERSITI TEKNOLOGI PETRONAS
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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



A handwritten signature in black ink, appearing to read 'Nur', is written over a solid red horizontal line.

NUR SHAFIQAH BINTI NAZATUL AKIYA

ABSTRACT

Malaysian elections are held every four years on average, however a complete term lasts five years. In Malaysia, there is normally a procedure throughout the whole election week, including nominations, campaigning, polling or voting, counting the votes, and declaring which party would dominate in Parliament. Unfortunately, as a result of the attack on the COVID-19 in Malaysia, the Prime Minister has ordered that all Malaysians to stay at home and work from home. This measure is used to verify that people are not infected with COVID-19 and to prevent the virus from spreading. Because of the efforts implemented under the Malaysian Movement Control Order from 2019 to 2020, Malaysia was named the quickest in the world in reversing the spread of COVID-19, with zero instances reported. All Malaysians felt liberated, but they still had to adhere to the Standard Operating Procedures (SOP).

Another unfortunate occurred in July 2020, when the state of Sabah had an election for Pilihan Raya Negeri (PRN), which left the present Prime Minister of Sabah vacant. People who were born in Sabah but work outside the state must return to their home state and vote on election day. People did not follow the Standard Operating Procedure (SOP) when they assemble in physical interaction and do not follow the one-meter social separation during election week, as indicated in the procedure. Thus, Because one person tested positive for COVID-19, the virus spread to numerous persons who attended the election campaign and polling centre. While it also infects persons on board flights, those who stayed outside of the state are not confined at home and may return to work and live their lives as usual.

The objectives of this project emerged as a consequence of the issue statement regarding the prior scenario of the element that Malaysian instances were increasing, which

was to prevent a physical encounter with numerous people in one spot. Apart from that, this programme was established and developed in order to give a simple and user-friendly mobile application, particularly on election day. Also, to develop and deploy a secure system, such as two-factor authentication, that protects users' data and information from being exposed. This MyElection mobile application will eventually assist in reducing COVID-19 cases and to avoid being a close contact of each other.

The Agile Software Development Life Cycle will be used to construct the MyElection Mobile Application. All of the requirements will be acquired via various techniques, such as the distribution of surveys to Malaysian people. Other than that, the project's next effort will be to get the entire programme functionally created, as well as to make younger generations more inspired to vote and understand more about Malaysian elections.

ACKNOWLEDGEMENT

Alhamdulillah and many thanks to the Almighty Allah S.W.T for the many favours that enabled me to successfully complete my final year project report. This final year project writing has been one of the most significant academic hurdles I've encountered during my studies. I would want to use this time to express my gratitude to everyone who contributed to and assisted in the completion of my Final Year Project (FYP) II.

Firstly, I would like to wish my deepest thankfulness to my supervisor, Ts Jale Bin Ahmad for giving me an opportunity to be doing my final project under his guidance and providing me all support and help at all stages which made me able to complete my project on time. I am extremely grateful to her for providing such a nice support and assist even though he had busy schedule on his side. All ideas and support endlessly come from him from FYP I until this stage which has contributed and helped me a lot in execute the project successfully.

Then, I would like to thank my family and friends who have helped me with their valuable support, it has been helpful in various phases towards the completion of the project. The dissertation report would not have been possible without the support and love of my family, especially my mom, Alifa binti Mahmood, and my other family members, my dad, Nazatul Akiya, my step dad, Anuar Amin, my brother, Muhammad Shafiq, and my back and emotion supporters Mas Farish Quezudin. I would like to say thank you for their love, support, encouragement, and prayers. They have been such outstanding supporter to me and motivating me throughout the session.

Not to forget to my other family members, my aunties and my uncles where they currently at Selangor, Melaka, Johor, and Pulau Pinang to be part of this final year project

where they kind-hearted, despite having a busy schedule where they take their time to test the applications and give a honest reviews and give support and encouragement throughout this weeks to complete my projects. I am truly appreciated and noted from my side since they in range 18 to 50 years old to do more better enhancement through my weeks to settle or complete my project, and also they always keep me in their prayer for me survive my final year semester.

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LIST OF ABBREVIATION

FYP	Final Year Project
PRU	Pilihan Raya Umum
COVID-19	Corona Virus Disease - 19
IC	(Malaysian) Identical Card
PRN	Pilihan Raya Negeri
SOP	Standard Operating Procedure
BN	Barisan Nasional
PAS	Parti Islam Se Malaysia
PN	Perikatan Nasional
PH	Pakatan Harapan

SPR	Suruhanjaya Pilihan Raya
UML	Unified Modeling Language
GUI	Graphic User Interface
iOS	iPhone Operating System

CHAPTER 1

INTRODUCTION

1.0 MYELECTION INTRODUCTION

MyElection is a mobile application for voting that every Malaysian can use to vote in future elections for Pilihan Raya Umum (PRU). This programme also aims to assist in avoiding physical encounter or close contact during Malaysian elections. Furthermore, all Malaysians will not be required to leave their homes, there will be no big lines for the election, and most importantly, the virus of COVID-19 will be reduced. MyElection has also considered sensitive data, ensuring that all information on Malaysian identification cards (ICs) has been secure.

1.1 Background of Study

Malaysian elections involve elections for public office in the political entities that make up the Malaysian federation. When a seat in the Dewan Rakyat falls vacant, general elections such as Pilihan Raya Umum (PRU) or Pilihan Raya Negeri (PRN) are held. This is done once every five years in Malaysia. A seven-member Election Commission oversees elections, with members selected by the Yang di-Pertuan Agong on the advice of the Prime Minister.

The election procedure, campaigning, election day, agents, voting process, counting, and release of the results are all part of the Malaysian election process. All Malaysians will meet, support, and vote in voting centers, which are often conducted in schools. Unfortunately, the COVID-19 virus was discovered in

Malaysia in 2019, prompting the Prime Minister to declare a curfew and a Malaysian Movement Control Order for 2020. The COVID-19 virus has been attacking Malaysia for precisely two years. Malaysia, which likewise had zero occurrences in July 2020, is currently seeing an increase in cases because of the election in Sabah in December 2020. The election was held without following Standard Operating Procedure (SOP), and there was no physical separation between the candidates.

1.2 Problem Statement

Malaysia were not fully recovered from COVID-19, the amount of individuals who have returned from voting in any state in Malaysia may raise the possibility of close contact were infected. People were attended to ignore the social distancing during physical elections in Sabah in July 2020, when Malaysia reported zero cases and was announced as the first Asia to fully recover from COVID-19. As a result, people were attended to ignore the social distancing during physical elections in Sabah. As an illustration of how elections operate, if a person was born in Selangor but now lives in Perak, he or she must vote in the state where they were born, which is Selangor. That is how the elections in Sabah were conducted, with individuals who were born in Sabah but worked outside of the state having to schedule a trip only to return to their hometown for the elections.

In starting of July 2020, Malaysians who believe they have fully recovered have tended to ignore the Standard Operating Procedure (SOP) throughout the election. Before each election in Malaysia, they will collect members of each political party, such as the BN, PAS, PN, PH, and others. Also, on voting day, there is no social distancing, since they do not line up with a one-meter distance between them. Increased incidences of COVID-19 in Malaysia might be due to a

lack of social distance and a large number of individuals in one area who are not following the SOP.

1.3 Objectives

The study's objective for this project will be to:

- To provide an easy and user-friendly mobile application especially during the election day.
- To provide a secure system such as two-factor authentication to protect users' data & information from exposure.
- To provide a systematic voting system process during election day.

1.4 Scope of Study

This project aims to actually create a voting systems for target users which Malaysian citizens can start voted in range of 18 years old to above 50 years old. Next, this study also to emphasizes for every Malaysian, may cast their ballots using the mobile application. Users must snap their Malaysian Identification Card (IC) or known as MyKad and their faces to register in the MyElection application, which they may use the mobile application to vote and access other services.

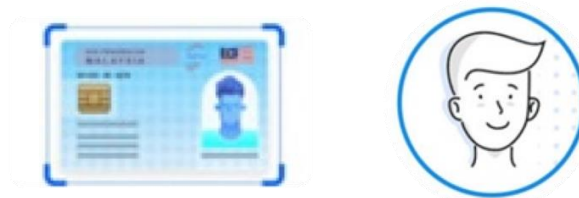


Figure 1: Snap user's face and MyKad

Snap of user's face and their MyKad (Malaysian Identification Cards) will be utilised to scan Malaysian Identification Cards (IC) and users' faces as additional tools to make MyElection mobile application more useful and user-friendly. The users' data that they have submitted in the MyElection application will be more safe if they have strong two-factor authentication.

1.5 Significance of Study

MyElection mobile application able to provide for target user need in MyElection application. With the needs and demand in todays of the pandemic thus, in developing MyElection application it can able to sustain within the next upcoming for the next generation in voting especially keep the social distancing and helps in decrease of COVID-19 in Malaysia. As now generations from oldest to youngest in Malaysia have been expose with the technologies and smartphones, it will be more easy to use MyElection mobile application. It is also that can be scalable to accommodate a larger capacity of user which MyElection application will do more upgrade version in time to time of the service specification and the application design to gain more attraction and expand more trust from the Malaysian users. Moreover, it helps to reduce the number of cases that have been drastically increasing in Malaysia time to time.

CHAPTER 2

LITERATURE REVIEW

2.1 Origins of the Proposed Reform of the Electoral System

Khoo, 2020 stated that Bersih (signifies ‘clean’ in the Malay language) was established following the formation of a joint action committee for electoral reform in 2005 consisting of leaders from non-governmental organisations and the opposition political parties. It was renamed as Bersih 2.0 in 2010 when political parties were excluded from the coalition. Bersih 2.0 to the recommendations of the Parliamentary Select Committee back on Electoral Reform on 3 April 2012. The process first began with Sarawak throughout 2015, whose new constituency redelineation plan was subsequently gazetted in December 2015, just in time for the 2016 state election. The review process for the new electoral maps of West Malaysia and Sabah was then launched in 2016.

After bulldozing through strenuous efforts of the civil society actors and opposition party leaders in contesting the irregularities identified, the government tabled the new electoral maps and got them approved in the parliament at the end of March, just in time for GE14 on 9 May, 2018 (Khoo, 2020). The unsuccessful efforts in challenging the newly drawn electoral boundaries had strengthened the resolve of Bersih 2.0 in pushing for a change of the electoral system to address the malapportionment and gerrymandering. In December 2017, Bersih issued a press statement calling for Malaysians to ‘seriously study the desirability and feasibility of a switch from FPTP to MMP after GE14’ which would make ‘gerrymandering and malapportionment simply pointless’, hence ensuring a proportionate translation of votes into seats (‘Bersih Media Statement: Malaysia’s Electoral System Must Now Change’, 7 December 2017).

2.2 Impact of COVID-19 about Election in Malaysia

Due to the statewide execution of severe lockdown measures, often known as the Movement Control Order (MCO), Malaysia experienced a four-month period of near-zero incidence across all states. However, after a state election in Sabah, a big East Malaysian state in northern Borneo with a population of approximately 3.9 million people, there was a jump in COVID-19 case counts in practically all major cities across the country. The expected direct impact of the Sabah state election on COVID-19 transmission in Sabah and the predicted spill-over implications to other areas, according to the source, are resistant to the types of matching variables used to produce the baseline transmission level (Jue et al, 2021).

These estimates are similarly resistant to the metrics employed to infer the impact of spillovers to other locations. According to Adhy (2020), The spread of infectious illnesses such as COVID-19 has been shown to have an impact on election scheduling and administration. Despite the low number of cases, the spread of COVID-19 is always something to be concerned about, especially in light of recent resurgences in a number of nations. Countries can be flexible and creative in their approach to holding a secure election. However, it may be sensible for nations with little resources and poor pandemic management to postpone elections since an increase in cases would be disastrous, putting many lives at risk (Syaza et al, 2020). As a result, every election, large or small, held during the pandemic must take preventative and mitigation steps to avoid spreading the disease further through the voting process, which often includes hundreds or thousands of people interacting in confined spaces.

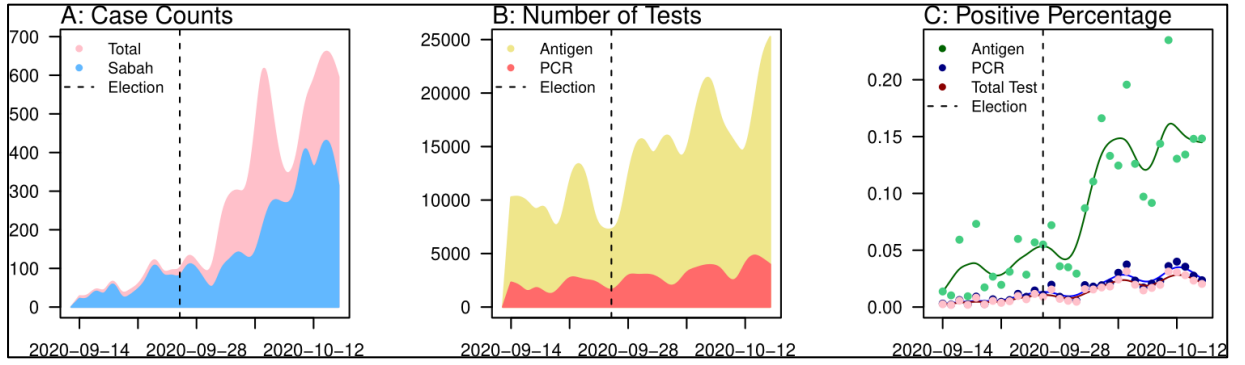


Figure 2: Statistics COVID-19 after election in Sabah (2020)

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter will go through the approach that will be employed and what will happen at each step. The aims of the project might be fully articulated in the methodology section of the narrative plan. When it comes to attaining the specified goal of a project in a set amount of time, it is critical to have a solid strategy and schedule in place so that the project can be completed on time. Excellent organization necessitates thorough planning and meticulous scheduling, which has an impact on the project's success.

3.2 Agile Methodology

Agile Software Development Life Cycle was chosen as the methodology for this project. One of the easiest approaches for describing the specifics of a project is Agile software development methodology. It is a project management technique that is quick, flexible, error-free, and simply superior. Requirements, design, development and coding, integration and testing, implementation and deployment, and review are the six (6) phases of the Agile approach.

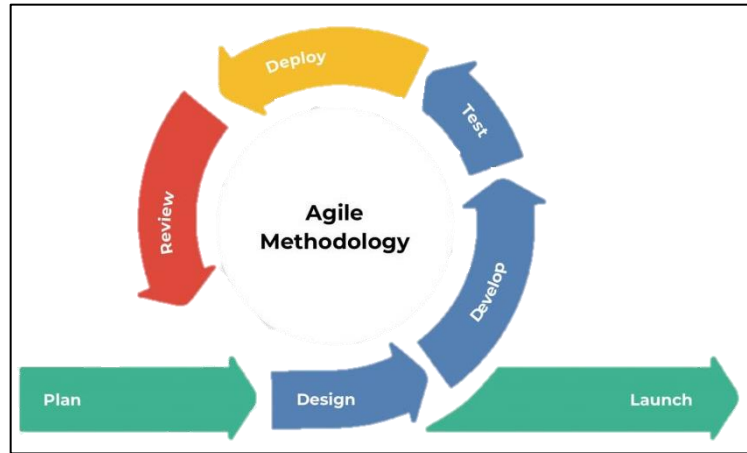


Figure 3: Agile Software Development Life Cycle

3.2.1 Planning Phase

Since the number of instances of COVID-19 during the election in Sabah has grown, a decision to create an interactive application in conjunction with the development of a voting system would aid Malaysian users in adhering to SOP and avoiding infection with the COVID-19 virus. So, depending on the project's concept, the planning phase is when thorough planning is done to ensure the application's effective development, which must be scheduled. The project Milestones and Gantt Chart are also included in the planning process, and both may be used as a reference to ensure that each work is completed within a specific time period.



Figure 4: Key Milestones of the development for MyElection mobile application in FYP

I

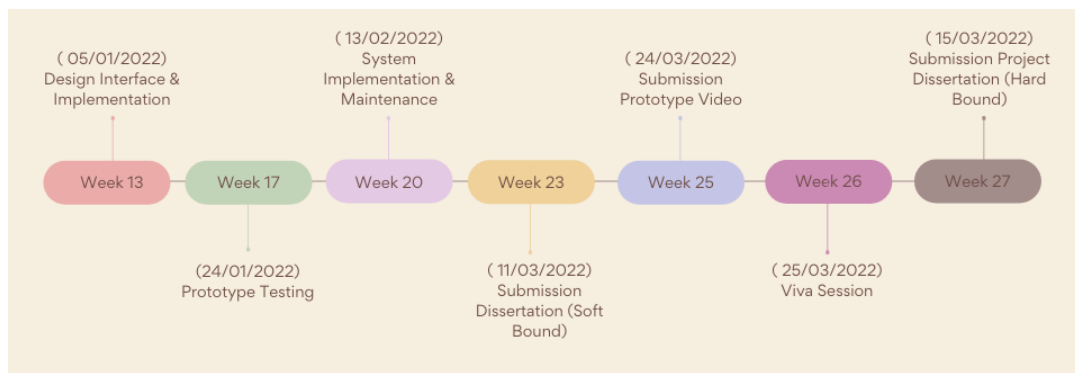


Figure 5: Key Milestones of the development for MyElection mobile application in FYP

II

MyElection Project Elements	Week																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
FYP I																													
Topic Selection																													
Background Study																													
Project Proposal																													
Literature Review																													
Data Collection																													
Proposal Defense																													
Data Analysis																													
Requirement Gathering																													
Interim Report																													
Design Interface																													
Design Implementation																													
Phase 1: Development																													
Prototype																													
Digital Content																													

Phase 2: Testing																																																								
Prototype																																																								
Fixed Testing																																																								
Submission of Progress Assessment 1																																																								
Phase 3: Deployment and Maintenance																																																								
System Implementatio n																																																								
System Maintenance																																																								
Submission of Draft Dissertation																																																								
Submission of Dissertation (Soft Bound)																																																								
Phase 4: FYP2 Completion																																																								
Submission of Prototype Video																																																								
Viva Presentation																																																								
Submission of Progress Assessment 2																																																								

3.2.3 Design Phase

This is where the application design process takes place. Making a proper Unified Modelling Language (UML) diagram, such as a use case diagram, is critical. During this time, the application's Graphical User Interface (GUI) must also be designed. It explains how the project will be carried out and provides a large picture. Design is a crucial step that can determine the project's conclusion. It attempts to focus on systematic software inclusion, which might result in a system design based on the pet owners and users' specifications for this application. The design application is displayed in the report's appendices.

3.2.4 Development Phase

3.2.4.1 Front-end

Front-end development is part of a system of direct user interaction called the frontend. This is also known as the "client side" of the application. This includes everything that the user experiences directly. This development were use Figma and Canva to create a front-end system for MyElection.

Figma is a web-based vector graphics editor, a prototyping tool with offline capabilities provided through macOS and Windows desktop programs. Figma is used because it comes with the Figma Mirror application for Android only, allowing you to view your prototype in real time on your mobile device. Figma's feature set focuses on real-time collaboration and is intended for use in UI and UX design.

Canva is a graphic design tool that makes it easy for users to create graphics, presentations, posters and other visual materials on social media.

This application contains templates that you can customize. Canva is a free platform, but I have subscribe to Canva Pro and Canva for Enterprise to take advantage of more features. Canva helped create a user-friendly interface for mobile applications during the design phase.

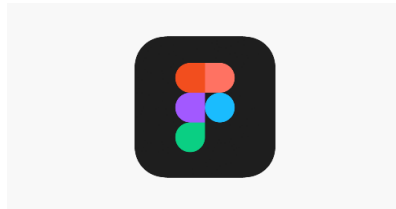


Figure 6: Figma logo



Figure 7: Canva logo

3.2.4.2 Back-end

Back-end development is on the server side of your website. Save and organize your data to make sure everything is working properly on the client side of your system. It is part of the website and cannot be viewed or manipulated. Therefore, use Flutter and Firebase for the back-end of the MyElection system.

Xcode is iOS's portable UI toolkit for building beautifully natively created mobile, web and desktop apps from a single code base. I'm developing a mobile application using swiftUI language. This is because it is compatible with current code, which is widely used by developers and organizations around the world, and is completely free and open source.

Firebase acts as a back-end service for mobile apps that support the development of high-quality applications using Google infrastructure. Firebase offers a variety of services, one of which is authentication. I'm using Firebase Authentication to simplify the process of developing a

secure authentication system and improve the user login and onboarding experience.



Figure 8: Xcode logo



Figure 9: Firebase logo

3.2.5 Testing and Review Phase

Before a system or application can be deployed in a production environment, it must be thoroughly tested. It reveals as many flaws as possible, thus it must be done in a methodical manner with the results documented. Unit tests, integration tests, system tests, and acceptance tests are the four stages of testing. Each test has its own set of objectives, but they all have the same purpose in mind which is to find as many errors as possible. In terms of application durability and user experiences, the project's field-testing phase necessitates the experience and results achieved from testing the app with a chosen group of people. As a consequence of the testing, it is necessary to create a comprehensive prototype application before launching it. The feedback gained from users is critical in the construction of the prototype displaying the systematic software implemented.

CHAPTER 4

RESULTS AND DISCUSSION

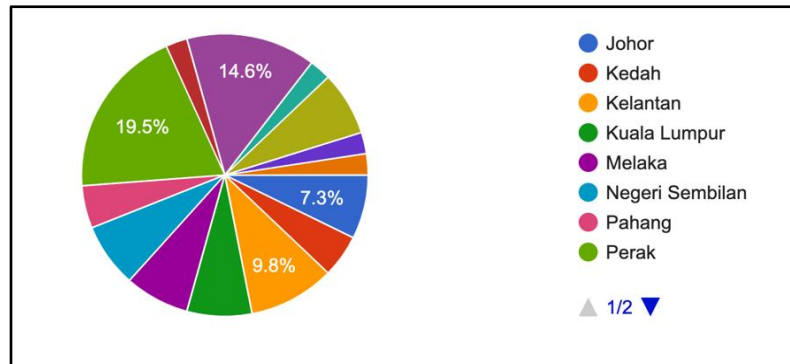
4.1 Survey Results

To gather further information on the study issue statement and project aim, an online survey was conducted. The poll was created with Google Forms and shared on a number of social media channels, including WhatsApp, Facebook, and Instagram. The survey was given to a wide range of persons, ranging in age from 18 to over 50, in order to elicit replies. There were a total of 41 people that took part in the survey. The sampling questionnaire is included as an appendix.

Question 1:

- **State**

14 states of Malaysia have been listed in the poll which to see the populated respondents in every each country. Based on the chart, respondents are in various country including Sabah and Sarawak.



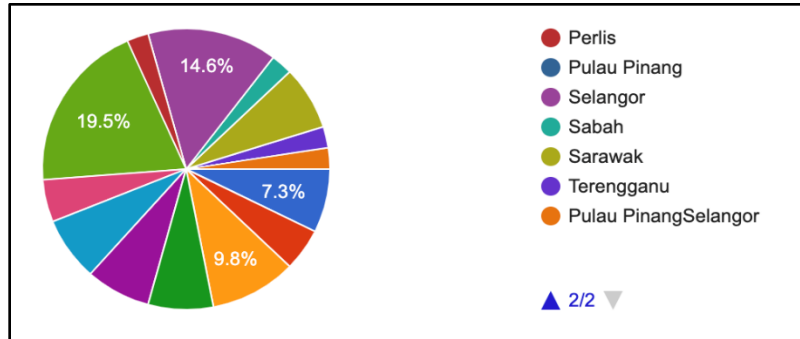


Figure 10: State

Question 2:

- Gender**

From 41 total of respondents in the survey, 56.1% which is 23 people are female and the remaining are male.

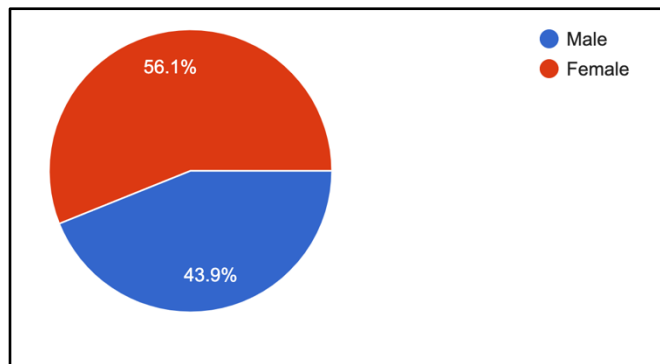


Figure 11: Gender

Question 3:

- Age**

The respondents in this study are largely between the ages of 18 and above 50 years old. The author believes that the majority of responses are between the ages of 18 to 29 years old, as the survey is mostly were

distributed to the author's circle. The remaining respondents may have been sent to this survey via social media groups.

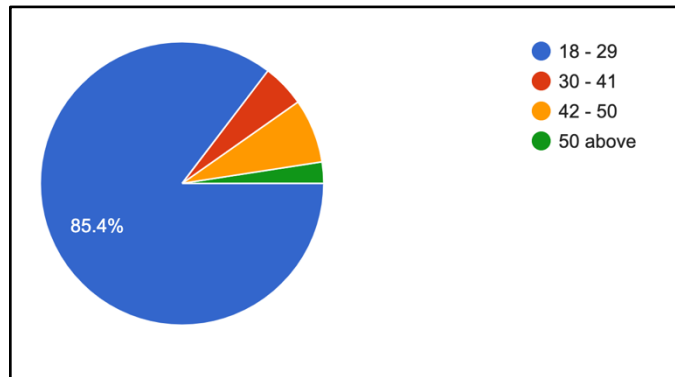


Figure 12: Age

Question 4:

- **Occupation**

From 41 total of respondents in the survey, 70.7% which is 29 out of 41 respondents are Students, 14.6% which is 6 out of 41 respondents are Housewife, 9.8% which is 4 out of 41 respondents are Private Worker, and others are from Government Worker, Students and Worker.

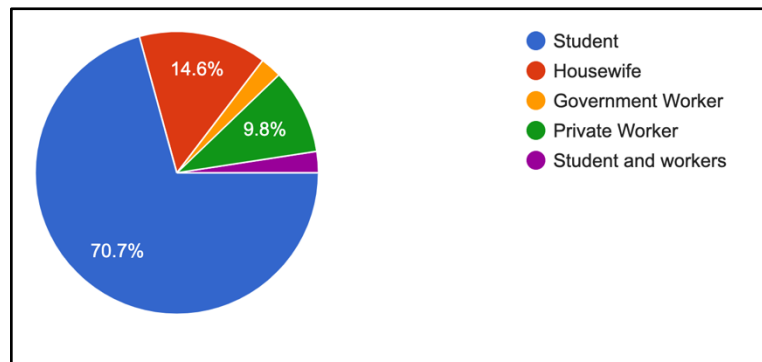


Figure 13: Occupation

Question 5:

- **Do you use you smartphone daily?**

The author of this query enquired if the respondents are using a smartphone daily or not, since MyElection Application were built in mobile application. From the survey author can see all 41 people of the respondents were using smartphone in their daily.

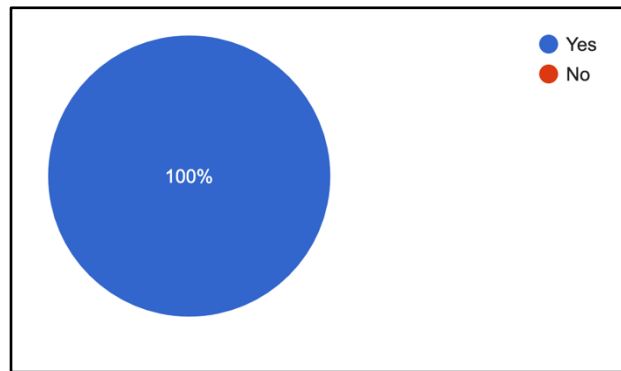


Figure 14: Smartphone users

Question 6:

- **Which smartphone software do you use?**

From the survey of the respondents using smartphone daily, author enquired if the respondents are using Apple's iOS or Google's Android, since MyElection Application need to build in which software. From the survey 63.4% which is 26 out of 41 respondents is using Apple's iOS, and 36.6% which is 15 out of 41 respondents is using Google's Android.

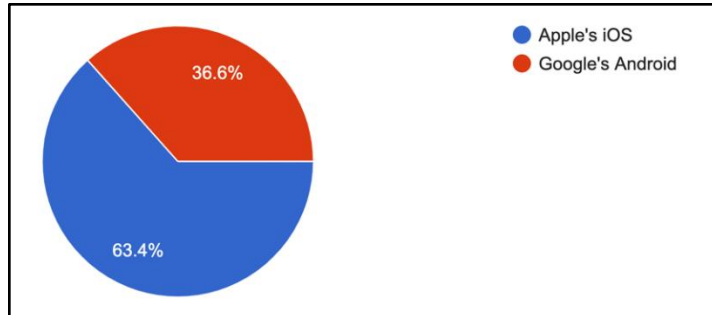


Figure 15: Smartphone software

Question 7:

- **In your opinion, is it better to have an election (PRU) physically or online in future?**

The author of this question inquires of respondents whether is it better to have a voting election for Pilihan Raya Umum (PRU) physically or online in future. As an answer, 87.8% which is 36 out of 41 respondents choose Online, and 12.2% which is 5 out of 41 respondents choose to vote Physically.

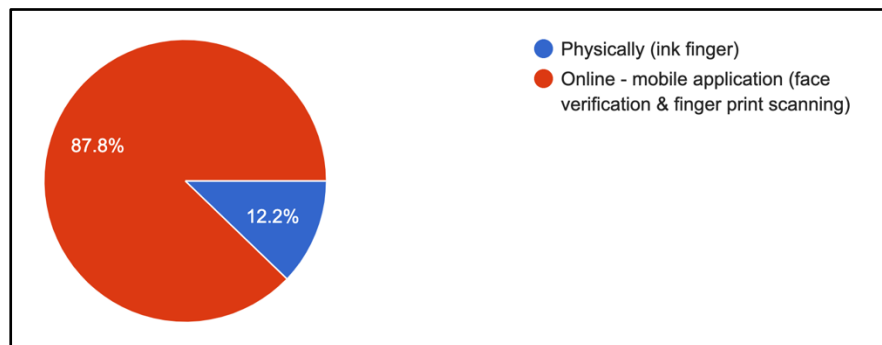


Figure 16: Physical or Online election

Question 8:

- **In your opinion, for online election (PRU) through mobile apps will there be #UndiRosak #UndiKoyak**

The author of this question asked all respondents, from their opinion if online election through mobile apps will there be spoiled ballot or torn ballot. 53.7% which is 22 out of 41 respondents answer No, 17.1% which is 7 out of 41 respondents answer Maybe, and 29.3% which is 12 out of 41 respondents answer Yes.

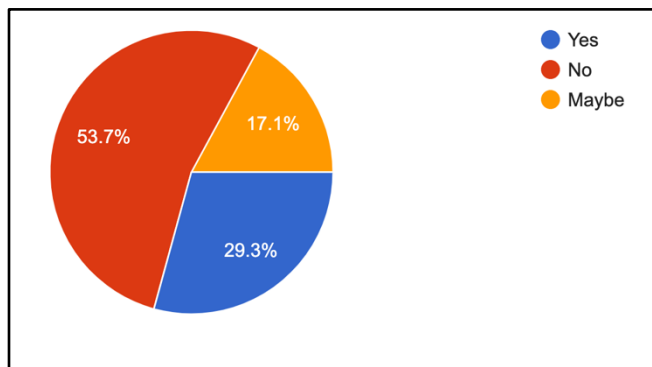


Figure 17: Opinion – Spoilt ballot / torn ballot in online election

Question 9:

- **Do you feel online voting election were helpful in the future?**

The author of this inquiry inquired of respondents whether if they feel online voting election were helpful in the future or not. As a results, 92.7% which is 38 out of 41 respondents answer Yes, and 7.3% which is 3 out of 41 respondents answer No.

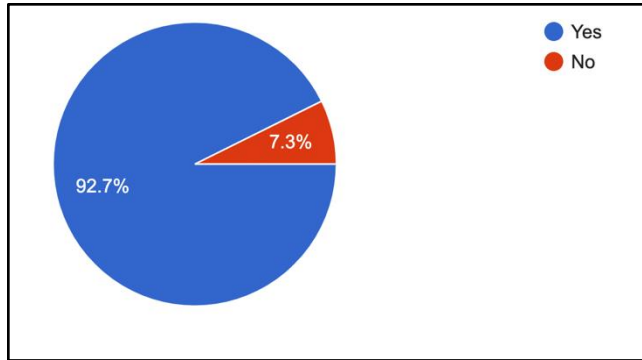


Figure 18: Opinion – Online voting election helpful in the future

Question 10:

- **In scale 1 - 10, if MyElection is exist, will you use it or you more prefer with physical voting election?**

The author of this question inquired whether respondents desired in preferring MyElection as online voting election platform. 51.2% which is 21 out of 41 respondents give scale of 10 out of 10, 19.5% which is 8 out of 41 respondents give scale of 9 out of 10, and 12 other respondents rate in scale 7 and 8 out of 10 for online voting election platform.

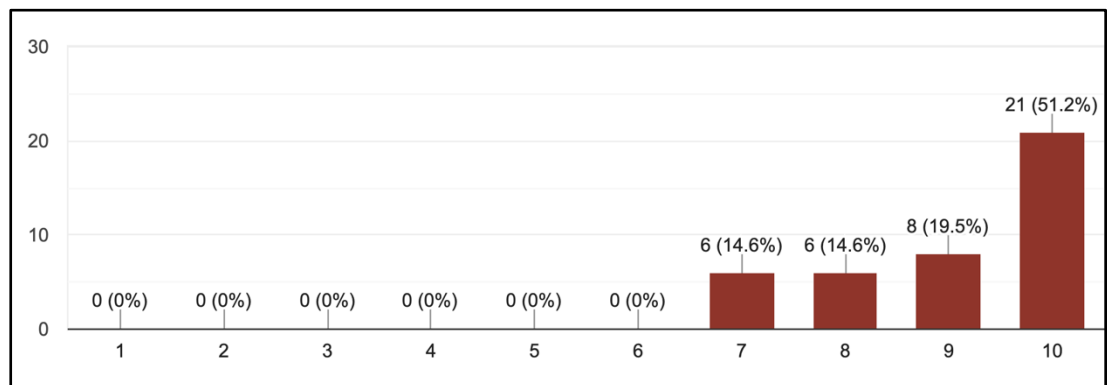


Figure 19: Scale for MyElection application

4.2 Final Prototype

The final prototype model of the MyElection mobile application will begin with a main page interface, which will be available to those who will serve as users who may vote in future Pilihan Raya Umum (PRU). The user will choose whether to 'Login' or 'Sign Up.' Users who already have a MyElection account may quickly log in by clicking the 'Login' button. On the other hand, if the user does not have an account, they must first register by clicking the 'Sign Up' option as seen in *Figure 23*. All user information will be recorded in the database of the system.



Figure 20: Main Page interface

If users click on 'Sign Up' button, users will be directed to Sign Up interface where users need prompted to input their full name, number of their Identical Card (NRIC), email address, password, and password confirmation during the data entry process, as seen in

figure 24. All user data will be saved in the system's database. In other hand, if users already have an account, user can click on 'Login' button, where users will be directed to Login Interface in *figure 25*, where users need to enter their NRIC or email as same as they have been registered then they can login to their MyElection application.

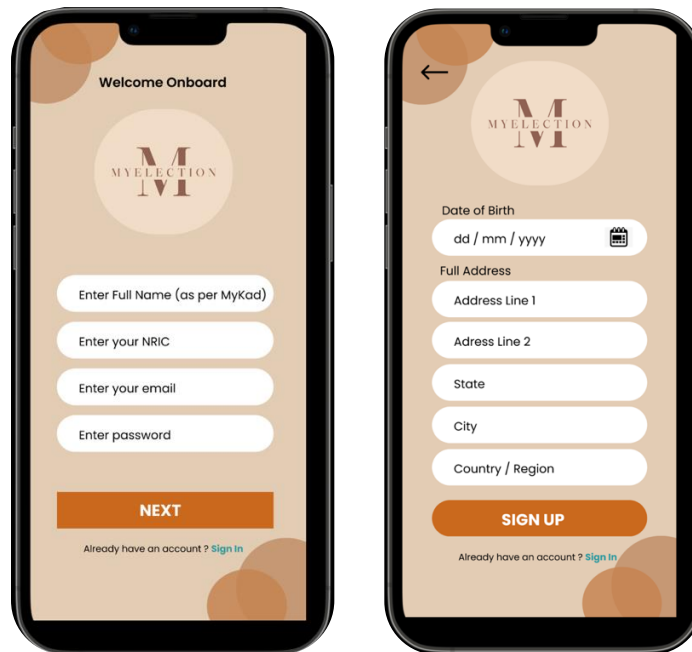


Figure 21: Sign Up interface



Figure 22: Login interface

After users get to Login their application, they will be directed to Profile interface as in *figure 26*. In Profile interface, there are usability for users to get their account verification, where in the account verification, users need to verify their account to get accessibility to cast their PRU Voting. So, users need to click on 'Account Verification' button and it will be directed to Confirmation Verification interface as in *figure 27*. For users that have been verify their account, they don't need to repeat the steps. In other hand, if users not yet verify their account, they need to click 'Yes', and then they will be directed Account Verification interface as shown in *figure 28*.

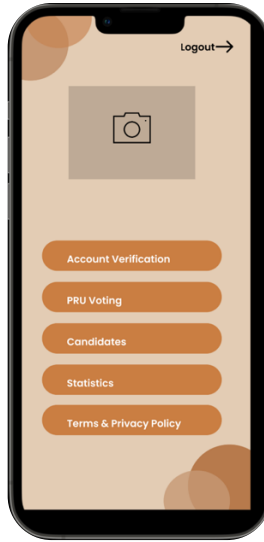


Figure 23: Profile interface



Figure 24: Confirmation Verification interface

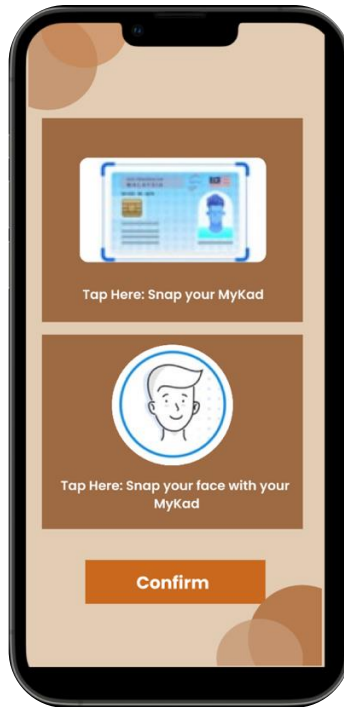


Figure 25: Account Verification interface

After users click 'Verify Now' button, users will be directed to 'IC and Face Verification' interface. In this phase, users need to snap their MyKad (Malaysian ID Card), and their current faces with holding their MyKad. Users can click 'Confirm' button, their account verification will take a minute to verify and it will lead to Account Verified interface as in *figure 29*. Then, if users 'Continue' button, it will be directed back to users Profile interface.



Figure 26: Account Verified interface

For users who are ready to cast their vote, users can click on ‘PRU Voting’ button, and it will lead to PRU Voting – 1 interface as in *figure 30*. Users can read the terms and conditions and then click ‘Proceed’ button. After that, users will be directed to *figure 31*, which users need to fill their full name, address as per MyKad, choose their state, city, country. Then, users can click ‘Next’ button and it will appear PRU Candidates interface as in *figure 32*.

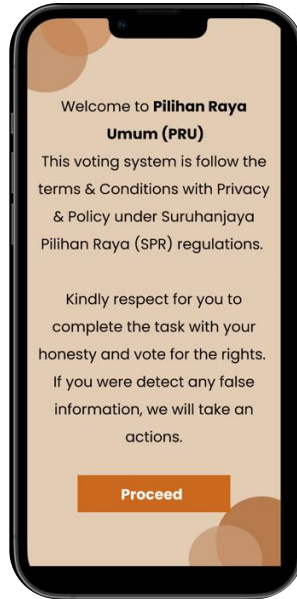


Figure 27: PRU Voting – 1 interface

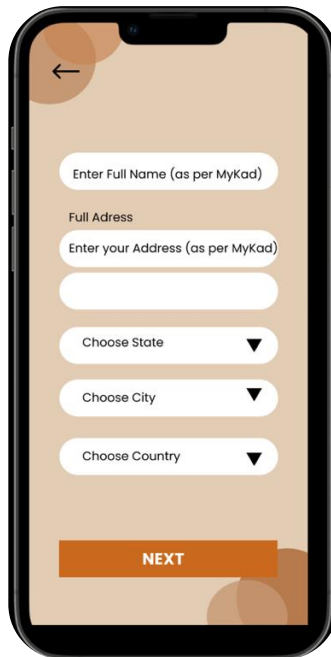


Figure 28: PRU Voting – 2 interface

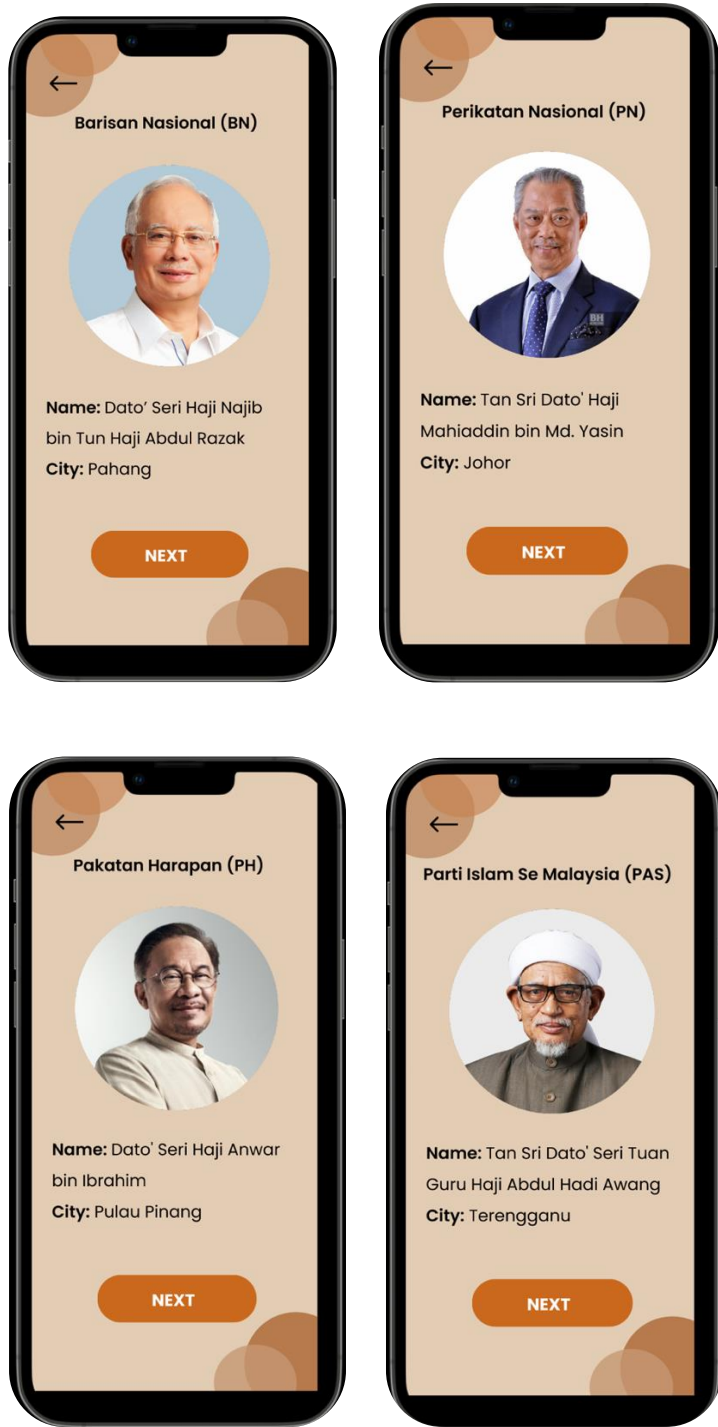


Figure 29: PRU Candidates – 1 interface

In PRU Candidates – 1 interface, user can click ‘Next’ button to see others candidates, and so on. Then, users will directed to Voting Phase interface as illustrated in *figure 33*, where users need to choose their choice. In this interface, users can click at the picture of the flag, and it will directed to Confirmation Vote interface as in *figure 34*, which users can choose and confirm their vote. One users can only vote for one time only.



Figure 30: Voting Phase interface



Figure 31: Confirmation Vote interface

After users have confirm their choice by click on ‘Yes’ button, then it will directed to Voting Confirmation interface as illustrated in *figure 35*. If users click ‘No’ button, it will go back to Voting Phase (*figure 33*). In Voting Confirmation interface, users need to click ‘Proceed’ button to submit their vote. Then, it will directed to *figure 36*, where it will appear a Vote successful submitted and have been recorded. Then, users can click ‘Done’ button and it will directed to Profile interface, as seen in *figure 26*.

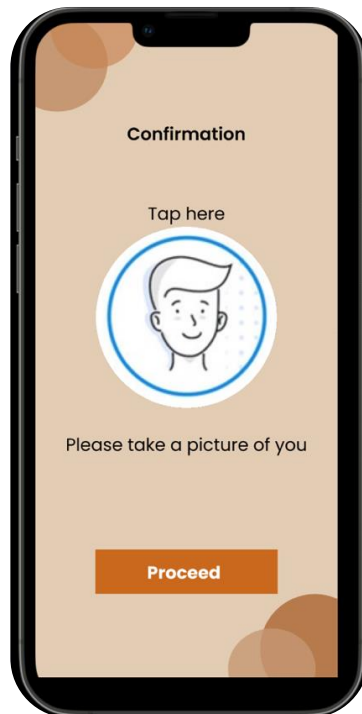


Figure 32: Voting Confirmation interface

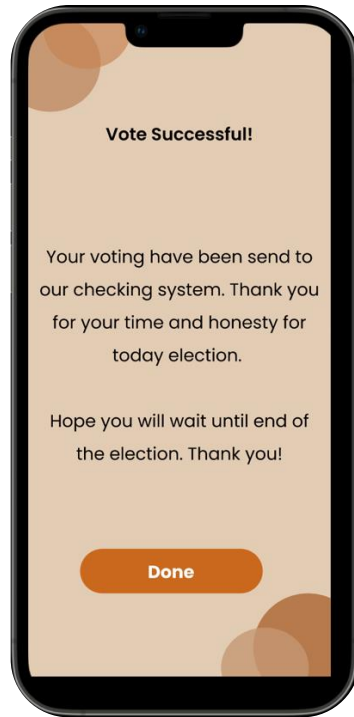


Figure 33: Vote Submitted interface

In Profile interface (*figure 26*), users also access to see the candidates before voting, which users can simply click on 'Candidates' button, and Which users can click on 'Candidates' button, then users will direct to choose either to see PRU or PRN candidates, and users need to tap on PRU Candidate and it will directed to PRU Candidate interface as in *figure 37*. In this interface users can click 'Next' button to see other candidates, and if done, they can click 'Done' button which will directed back to Profile interface (*figure 26*).



Figure 34: Candidates interface

Same goes to if users want an update about the PRN Candidate for every time PRN election in every city. Which users can click on ‘Candidates’ button, then users will direct to choose either to see PRU or PRN candidates, and users need to tap on PRN Candidate and it will directed to PRN Candidate interface as in *figure 38*. If users click ‘Done’ button, it will go back to Profile interface (*figure 26*)



Figure 35: PRN Candidate interface

Lastly, in the Profile interface (figure 26), users can click ‘Terms and Conditions’ button to have an overview about the pros and cons in the Terms and Conditions as in figure 39, in using MyElection application.

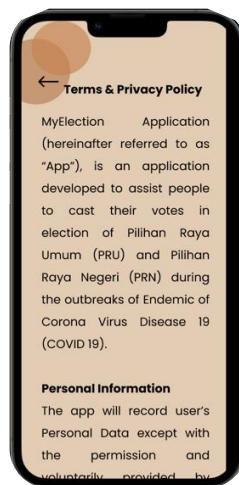


Figure 36: Terms and Conditions interface

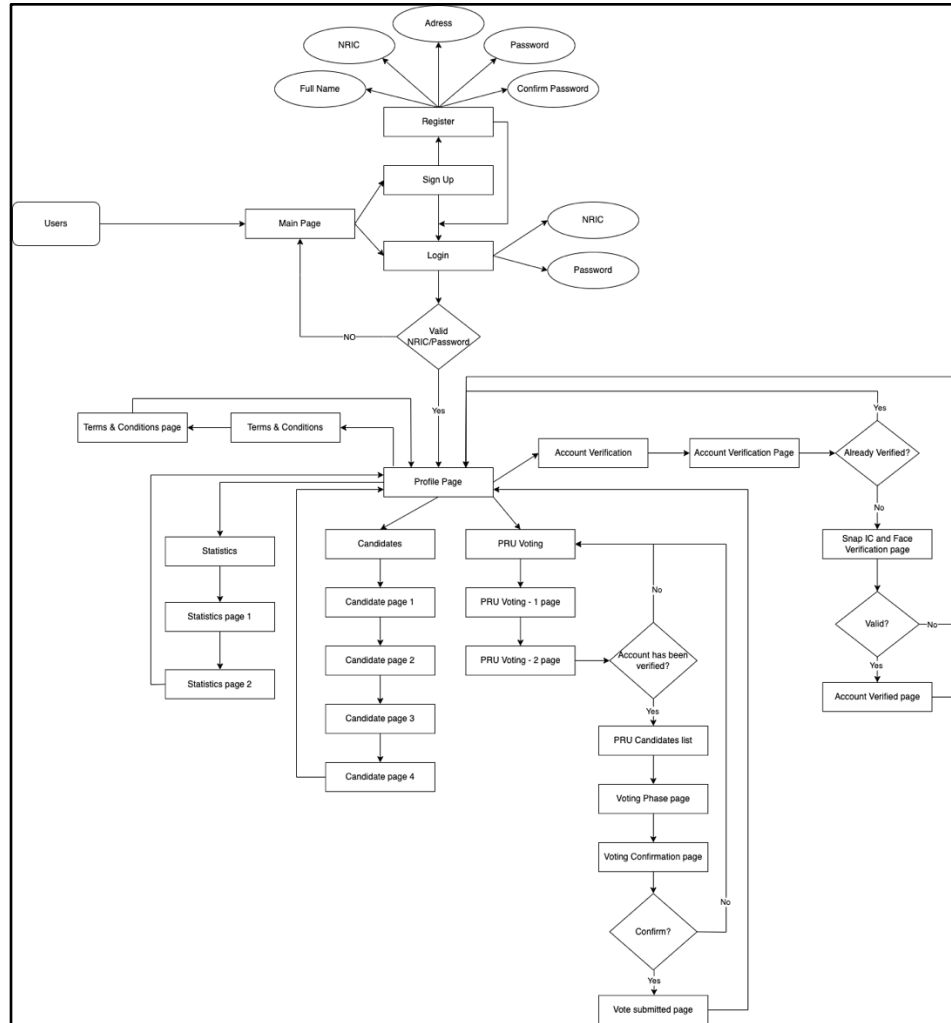


Figure 37: Flow of applications for user perspectives

Above is the illustration on how the flow of MyElection application for the users perspectives. The illustration shows the user friendliness and ease of use, and also to get the idea for users to use the services.

4.3 User Testing Results

A survey and interview with a target user group were conducted to assess the app's suitability and efficacy, ensuring that the project's objectives were satisfied. A poll was conducted with 18 randomly selected age groups ranging from 18 to 50 years old who were asked to participate. This is because we are interested in their opinions on the online platform's voting election. They will each be able to utilise this mobile application on a number of Android devices, including phones and tablets. They are handed a survey form at the end of the session. The results of the survey are discussed and reviewed.

4.3.1 Usability Testing

Scale 1 indicates the lowest rate and scale 5 represents the greatest rate in the following study.

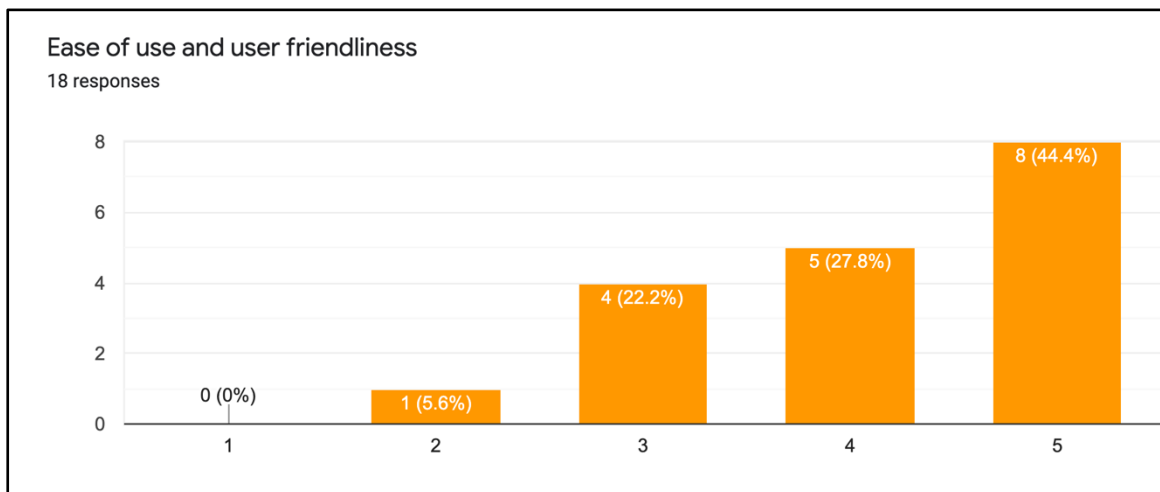


Figure 38: Ease of use and user friendliness

As shown in Figure 41, 13 out of 18 users rated the product on a scale of 4 to 5 for simplicity of use and user friendliness. This implies that, even when using the mobile application for the first time, the majority of users found it to be straightforward and

simple to use. Aside from that, one person acting as a user has been reported to be having problems utilising the mobile application.

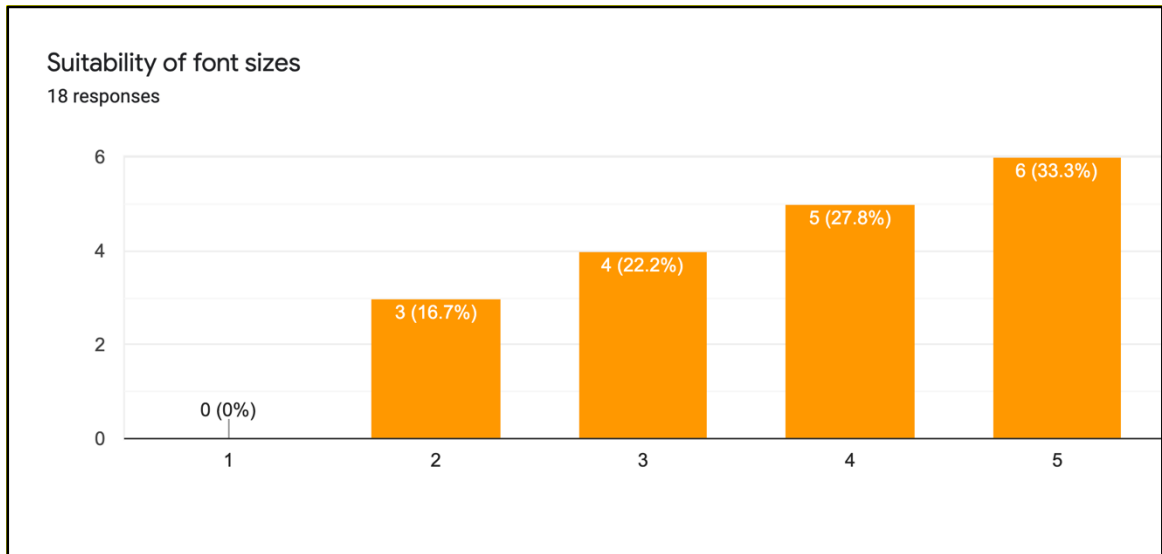


Figure 39: Suitability of font sizes

Six users consider the font size used in this mobile application is adequate and enjoyable for them, as shown in Figure 42. Another five customers gave it a four-star rating, while the other two gave it a three or two-star rating. Users generally agree that the font sizes used are suitable and acceptable. However, this ranking indicates that there is still room for growth.

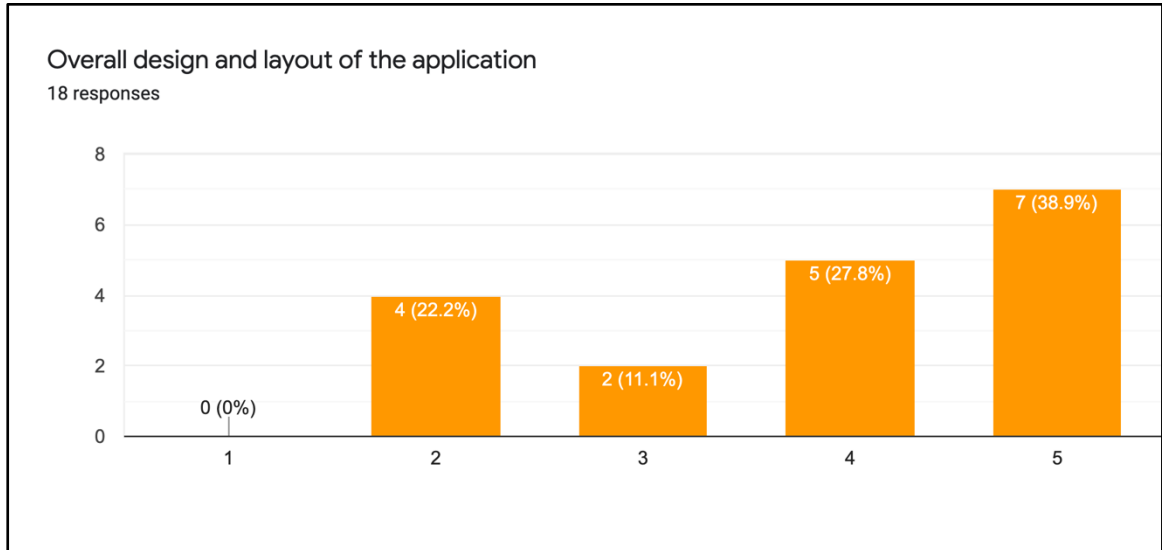


Figure 40: Overall design and layout of the application

Figure 43 depicts the overall grade for the created mobile application's design and layout. Seven of the 18 people that used the voting online platform rated the overall layout as exceptional on a five-point scale. They like the designs since they are simple and elegant. The remaining five people gave it a four-star rating, while two people gave it a three-star rating, and four people gave it a two-star rating. While the end result is good, there is always room for improvement in the future when creating a more user-friendly mobile app layout is very likely.

4.3.2 User Acceptance Testing

Following the usability testing, the targeted users are requested to complete a user acceptability testing survey.

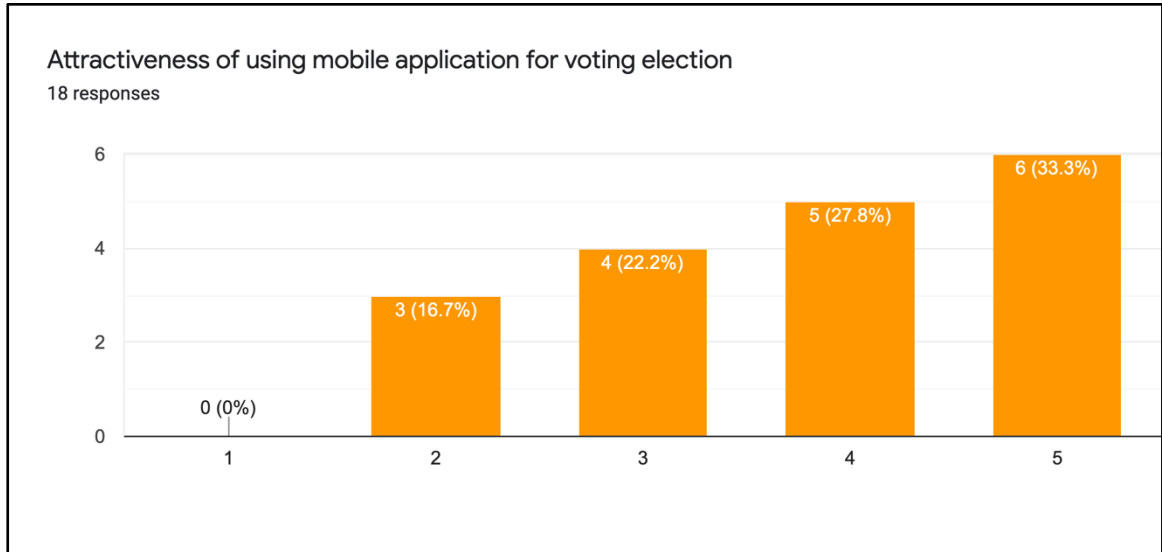


Figure 41: Attractiveness using mobile application for voting election

Figure 44 depicts the total grade for the generated mobile application's design and layout. Six out of 22 users assessed the voting system's overall architecture as excellent on a 5-point scale. The designs are exquisite and subtle, according to them. The remaining five customers gave it a 4-star rating, four gave it a 3-star rating, and three gave it a 2-star rating. While the end product is satisfactory, there is always potential for development in the future, especially when creating a more user-friendly mobile application layout is an option.

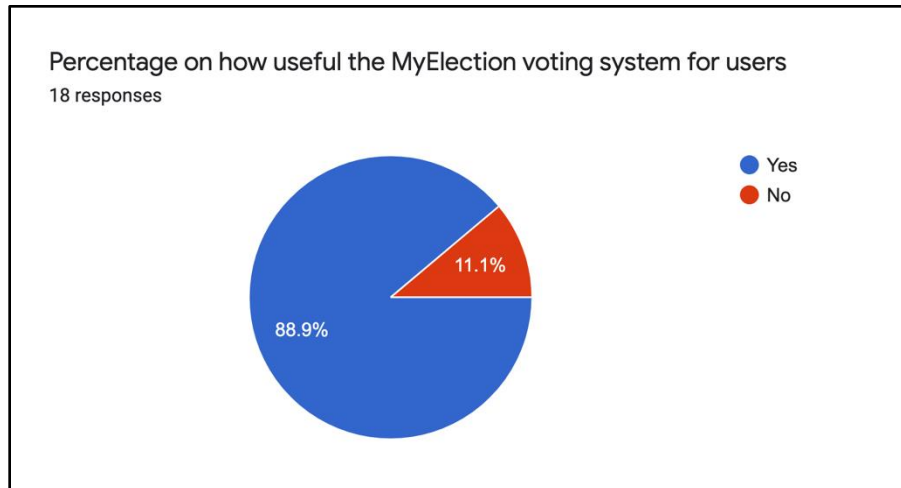


Figure 42: Percentage of how useful the MyElection voting system for users

The percentage of users who feel this mobile application is valuable is depicted in Figure 45's pie chart. According to the statistics, 88.9% of users believe that the MyElection mobile application would revolutionise and streamline the voting process for all elections. However, around 11.1 percent of users say this product is useless. This is largely due to their comfort with the old method of voting in elections.

4.4 Future Enhancement

In the future, the MyElection mobile application may be extended in a variety of ways. One of the elements that may be improved in the future is compatibility with multiple operating systems or devices. Because this programme is currently only accessible on iPhone (iOS), enhancements have been made to assure compatibility with Android OS, Mac (macOS), and a secure website in the future. This is critical in order to improve the user experience and expand the amount of individuals that can use the app.

The following enhancements to the MyElection mobile application can help to speed processes. While MyElection guarantees that people may vote efficiently, it has to

have built-in features that allow for operational effectiveness, automated upgrades, and compliance with standards.

Finally, researchers are urged to conduct more study in order to minimise application loading times. Several users reported this problem throughout the testing time, indicating that it will be a serious issue during app development. This problem might be caused by your computer's hardware, the system's backend, or the software you're running. As a result, the author recommends that readers perform in-depth research on the subject and give ideas for future improvements.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

In conclusion, the MyElection Mobile Application is still in development at the moment. This project is on track to meet its goal of developing a mobile application that can cover the project's objectives, which include avoiding physical interactions with large groups of people in one location, as well as methods or steps that can aid in reducing close contact and the spread of COVID-19 cases in Malaysia. Which will also give a simple and user-friendly mobile application, particularly on election day. Lastly, as stated in the scope of research instruments, to meet the aims of providing a secure system. Furthermore, this mobile application enables Malaysians to obtain more information about current events in the country and spend less time queuing for voting at the election centres.

5.2 Recommendation

Based on previous experience after completing the first session and second session of the Final Year Project, which to developed all to become a fully great functionality in the making application is quite taking time. In primary recommendation for this application might include:

- Improve the advancements of security provided such as bot detection;
- Develop greater functionality of the numerous features that will be created such as for Pilihan Raya Negeri (PRN) election;
- Enhance from existing methods, which all Malaysians, particularly for the youth generation, will be more inspired to vote in elections;

- Get to learn and understand more about Malaysian elections with creating news feed for upcoming and details before or after or during elections;
- Generate Statistic for the election for better view in every election in state.
- Make sure the app works on a range of operating systems and devices;
- Generate a results of the election process;
- Improve the application's functionality and user satisfaction; and
- Explore methods for minimising the time required for an application to load.

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