FINAL YEAR PROJECT 2

MyAngel:
An Auditory Android Mobile Application for Emergency with Location-based Service

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15117

(Business Information System)

September 2013

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CERTIFICATION OF APPROVAL

An Auditory Android Mobile Application for Emergency with Location-based Service

by

Cheong Ai Leng

A project dissertation submitted to the
Information System Programme
Universiti Teknologi PETRONAS
in partial fulfilment of the requirement for the
BACHELOR OF TECHNOLOGY (Hons)
(Business Information System)

Approved by,

_____
(Ms. Foong Oi Mean)

UNIVERSITI TEKNOLOGI PETRONAS
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SEPTEMBER 2013

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.

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CHEONG AI LENG

ABSTRACT

This study is aimed to propose an emergency framework with the development of an auditory android mobile application with location-based service called MyAngel. MyAngel app serves the functionality as a location based notification tool and annoyance producer by the high frequency noise for attention distraction purpose by using only a single emergency alert button. Due to the steep increment of crime rate especially on the robberies, the outlook of the country is grim and the number of innocent victim is also increasing. Thus, this study is addressing the problem on difficulty in getting immediate assistance from the outsiders as well as the insufficient self-defense techniques of the robbery victim to fight against the robbers with or without firearms. To develop the MyAngel app, several methodologies have been conducted. The high frequency noise and location based services (LBS) related data have been collected through online sources and further analysis on the information gathered have been performed through literature survey. Besides, pre-survey questionnaires were conducted to the citizens in Selangor and Kuala Lumpur to understand their opinions on the robbery issues. The interview session was also being carried out with one of the robbery victim to understand the victim's needs during emergencies. In addition, another interview session was done with the Operational Inspector in Selangor to investigate if the noise criterion has been considered and proposed within the Royal Malaysian Police (PDRM). The results indicate that all the survey respondents and interviewed robbery victim agreed with the increase of robbery rate and they had showed their demand on the development of MyAngel mobile application. Moreover, the noise concept has not been adopted in PDRM yet. Thus, it will be included in MyAngel app as one of the main functions which will be integrated with the function of LBS to meet the requirement of the users.

ACKNOWLEDGEMENT

First of all, I am very grateful that my final year project has finally been completed within the time limit. In completing this project, there are a few people whom I would like to express my special thanks. Firstly, I would like express my gratitude to my Final Year Project supervisor, Ms. Foong Oi Mean who has patiently provided sufficient assistance in the steps involved for each section of this project as well as the knowledge required in order to conduct the necessary studies and allowed me to explore further on the possible improvement through different sources.

Secondly, I would like to express my appreciation to my parents who constantly concerns on the progress of my project as well as my body health. They have also driven me to the project study areas which are Selangor and Kuala Lumpur in order to allow me in conducting survey as well as the user testing on my project.

Last but not least, I would like to also thank my course mates who are willing to contribute some ideas and opinions in improving my project. Their feedbacks would certainly be taken into consideration for future enhancement so as to develop an even better version of MyAngel as a contribution to the society.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Nowadays, the daily newspapers' headlines, TV reported news and online sources were publishing the frequent occurrence of crime cases in Malaysia especially in the big cities such as Selangor and Kuala Lumpur which has caused anxiety among the citizens. One of the most frequent crime cases is robbery. The loss of properties was not the main issue to be highlighted, but the loss of the precious life or body injuries due to the cruel action committed by the criminals who were attacking violently with sharp weapons in hand to the innocent victims. Zappei (2012, Aug) reported that the fear caused by crimes had become viral to the Malaysians. Whether the people was at home or out of home, these cases could just happen to them anytime. Hence, people are feeling fearful most of the time due to the worry of becoming the next victim. As for the authority's side of measure, extra patrolling was launched in shopping malls and tips on crime awareness had also been published on the newspaper. Nevertheless, many people had still been expressing their anguish complaints in social network such as Facebook.

According to Sukumaran (2013, Aug)'s report from TheStarOnline, the recent crime statistic released by the Performance Management and Delivery Unit (Pemandu) had shown the increase of violent crime including gang robberies with firearms. Below are the statistics comparison between the rate of violent crime and rate of robberies from January-June 2012 and 2013.

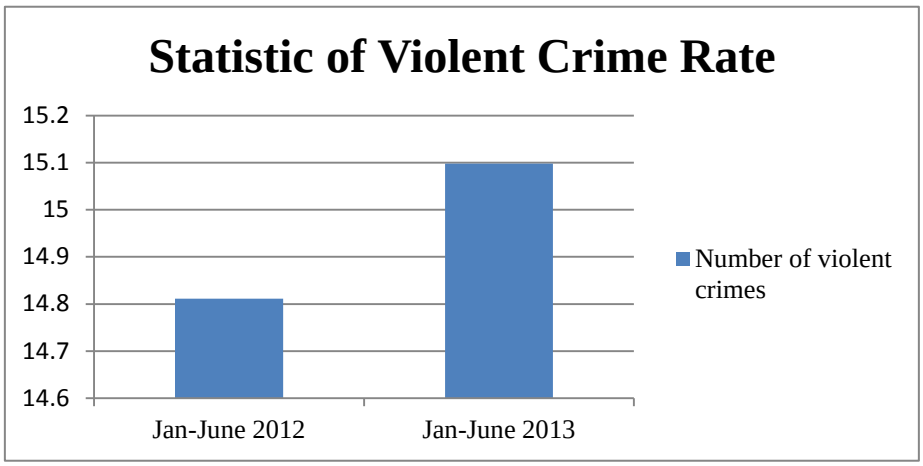


Figure 1.1: The comparison of violent crime rate

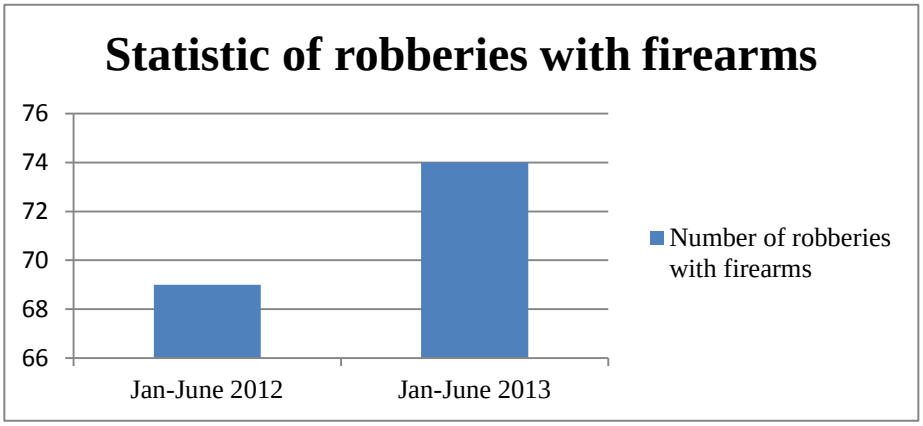


Figure 1.2: The comparison of robbery cases
from Jan-June 2012 and Jan-June 2013 in Malaysia

Figure 1.0 has clearly shown that the number of violent cases had been increased by 287 cases, 1.94% from 14811 to 15098 cases in the first half of 2012 whereas figure 2.0 shows the increase of 5 robbery cases, 7.25% from 69 to 74 cases at the same period in 2013. Sukumaran (2013, Aug) also reported that June 2013 was the worst-hit month whereby there were 3 robberies and 14 gang robberies committed with firearms. Hence, certain safety measures should be instilled to the public to reduce the number of victims.

To stop and prevent the robbery cases from happening frequently is something that is beyond the civilians' control. However, certain precautions can be taken by the people to stand a chance to escape from the life threatening situation. Staying in this high technology society whereby people have upgraded their age old mobile phone into

multi-functional smartphone, had indeed provided extra convenience to the users, not only in term of calling, messaging, surfing the internet, but the usability of having useful and effective applications which served different purposes for better quality of life. Since people are living so closely with their smartphones which also play the role ranging from being toys to "life companion", this paper is proposing to develop a location based services mobile application with the ability to produce high frequency noise to distract the robbers' attention with just a click of button– MyAngel mobile application.

MyAngel is a useful tool when robberies are happening and the victim's smartphone is still in hand. The purpose of having the noise emergency button for distracting the robbers is to provide a chance for the victim to escape from life threatening situations. As the high frequency noise would cause annoyance to people to the extent which they would probably consider leaving the noisy area as soon as possible. Thus, it would be possible that the robbers themselves would consider leaving the crime scene to avoid the annoyance which could cause dizziness on them.

1.2 Problem Statements

The problem statements for developing MyAngel mobile application are as below:

i) Difficulty in seeking immediate help during robbery.

- Normally, a person will be having difficulty in contacting the authority or emergency contacts to notify them during the critical moments. However, calling or sms-ing would probably be insufficient to describe what had actually happened due to the limitations of information that can be transferred using those tools. Moreover, sms-ing or calling will also carry the risk of being discovered by the robbers. Thus, MyAngel serves an important tool to the civilians whereby they could notify the emergency contacts and track the current location coordinates with just a single button.

ii) Insufficient of self-defense techniques and difficult to escape from the life-threatening situation.

- Self-defense techniques were not instilled in everyone. However, it would still be difficult for a martial artist to fight against the robbers as the recent robberies were all committed with firearms. Thus, a device or tool that serves the easier and more efficient method in activating the annoying sound to distract the robbers' focus and emergency notification is what the civilians need so that they would be granted a chance to run away from the robbers.

1.3 Objectives& Scopes

The MyAngel Mobile app is developed with the following objectives:

i) To propose an emergency framework for the life-threatening situation when robberies are committed.

ii) To design and implement a simple and quick notification tool – MyAngel, by activating the high frequency noise, tracking user's current location and sending auto message to the emergency contact with only **a SINGLE emergency button**.

The scope of this study covers the following parties, location and technology:

i) Robberies

ii) Selangor and Kuala Lumpur

iii) Location Based Service (LBS)

iv) High frequency noise

1.4 Project Relevancy

Due to the recent increase of robbery cases, it has caused the increase in level of insecurity of the civilians. None can predict when and where would be the next occurrence of robberies, and everyone has the potential to be facing this kind of critical situation. Thus, people should always bear in mind the safety measures to avoid being the next victim. However, robberies are unavoidable as it is the robbers' choice of targeting their prey. The normal thought is to seek help from the police by lodging a report when people are facing such critical situation. However, the possibility of contacting the police is low due to the possibility of being discovered by the robbers during the contacting process. Furthermore, the victims might also be difficult to speak up the details while calling to 999 or the police department due to the stressful situation. Hence, it is relevant that the civilians are required to have a more efficient emergency notification tool and the device that can distract the robbers' attention to assist them in saving their life. Therefore, MyAngel app is developed to assist the victims to notify the emergency contacts in an easier and faster way with the information on location coordinates included for location tracking purpose. Besides, the app would also provide a high frequency noise producer as a way to cause annoyance on the robbers.

1.5 Feasibility of the project within scope and time frame

This project is focused on the robbery cases whereby the robbery rate can be retrieved easily from the newspaper such as TheStar Online. The location to be focused for the project survey regarding the robbery issue will be in Selangor and Kuala Lumpur. Although the location of carrying out this project is about 200km from the location scope, the pre-survey questionnaires is still able to be done through online. Besides, MyAngel app is a Location Based Service (LBS) whereby it requires certain technical knowledge in retrieving and registering for the Google Application Programming Interface (API) key. However, there are some experts who have experiences in building mobile application with similarly related feature in Universiti Teknologi PETRONAS (UTP) which is also the place to conduct this project. Thus, it will be convenient to seek

further assistance from those experts. Another function of MyAngel app is to produce high frequency noise. The research on noise will be conducted thoroughly to examine the applicability of MyAngel through online sources such as Science Direct, Scopus and Google Scholar as well as the related topics written by some experts. When the prototype has been done, the system testing will need to be conducted in Selangor and Kuala Lumpur where the potential MyAngel' users are located. In this case, the transportation fee will be the expenditure for this project and it is then claimable from the project coordinator. In addition, the given duration of this project is about six months to complete all the phases which include the research phase as well as the prototyping phase. Therefore, this project is expected to be completed on time due to the sufficient time frame and the existence of useful sources that provide convenience in developing this project.

CHAPTER 2

LITERATURE REVIEW

As mentioned in the previous section, the proposed project is the development of a mobile application which can produce high frequency noise as well as the tracking of the user's location which will then be directed automatically to the emergency contacts. The noise research is motivated by similar noise idea that has earlier been introduced in UK in 2008. Based on the BBC news, Campbell (2008, Dec) reported that a mosquito device which is used to emit high frequency sound is designed to be set in those hotspots where the criminal would most probably commit crime. This device has been a hot selling product whereby people bought it to chase away the unwanted youth who loitered in certain area as well as to reduce potential crimes due to its extremely annoying sound which prevents anyone from hanging around. The sound audibility was specially designed for youths. However, Gall (2010, June) also reported that there were young people who made complaint to ban the implementation of mosquito device. This is due to the fact that the implementation of mosquito device shows discrimination towards the youngsters and causes extremely annoyance although the emitted sound showed no harm to hearing. On the other hand, there was also the successful case with noise application. Robert Gough (2008), a shopkeeper agreed that the mosquito device had reduced the congregation of potential criminals in his area and he would continue to use it since there was no other way to help him in this. Although the high frequency noise idea has some potential cons, it is still able to achieve its objective by chasing the unwanted people away with the distraction caused on them. Thus, further research will be done to examine if this high frequency noise application will cause health issue and how does the noise affect the human beings.

2.1 What is noise?

According to the study of Environmental Protection Department (2013, July) from Hong Kong, noise is the undesired sound of human beings that could be produced by a wide range of sources which cause annoyance to human beings. To differentiate the characteristics between different sources of sound or noise, it can be determined through the frequency and loudness of the sound. The sound frequency is measured in Hertz (Hz) which examines the number of sound vibration per second, whereas the sound loudness or the intensity of sound is measured in decibel (dB).

Kuttruff (2007) mentioned that the normal range of hearing for human is between 16Hz to 20000Hz. As compared to the higher level of and lower level of sound frequency, the sensitivity of human hearing is higher in the middle range of frequency (Moser, 2009). Davies (n. d) stated that the audible human sound range is divided into the 3 categories below:

Frequency (Hz)	**Levels**
20 - 500	Low
500 - 6000	Midrange
6000 - 20000	High

Table 2.1: The sound frequency categories

The sound frequency that is less than 20Hz is called infrasonic whereas those that are above 20 kHz is known as ultrasonic (Raichel, 2006). Both of these frequency levels are either too low or too high to be audible by human. Thus, in this project whereby the frequency of the annoying sound or noise that will be produced by the emergency button must stay within the range of 20Hz to 20kHz so that the noise produced can be audible by the human. Kuttruff (2007) also stated that the upper range of sound frequency will be shifted based on the increasing of age. Thus, it is not every human ear having the same frequency limit that can be heard.

2.2 Health issue caused by noise

Since this project is focused on the high frequency noise whereby it will be used to distract the robbers' attention while committing crime to the victim, the question regarding how high the level of frequency is suitable to be used for this purpose is being raised. Based on the research from Better Health Channel (2010) from the State Government of Victoria, the human hearing might be affected or damaged due to the high exposure of high frequency noise. This is especially true for the factory workers who perceived noise for long period of time. Other health problems which include the auditory and non-auditory effects will also be caused to human. According to the information collected from Canadian Centre for Occupational Health & Safety (CCOHS) (2008, Aug), the main auditory health effects caused would be the acoustic trauma, tinnitus, temporary and permanent hearing loss for the serious case whereas the non-auditory effect would be stress, physiological and behavioral effects. CCOHS (2008, Aug) also produced a statement that the hearing impairment problem caused is due to the occupational noise exposure whereby the human has been exposed to high frequency noise for many years. Hence, the possibility of causing hearing problem to a human is based on the accumulation and duration of exposure to these noises. Chang et al (2011) also agreed with the CCOHS's statement. The research proved that only occupational noise with the exposure of 80dBA for 4000Hz for certain number of years would cause health effect such as hypertension to the factory worker. Besides, based on the research done by Occupational Safety & Health Administration in United State department of Labor, the most common health issue caused by occupational noise is the noise-induced hearing loss. In other words, hearing problem would only be caused on human provided he or she is exposed to the high frequency noise for a long term. Thus, the mobile app, MyAngel proposed in this project which is used to produce this high frequency noise for only 2 minutes of emergency activation will not cause any long term negative hearing effect on the human ears.

The effect of hearing impairment could not be relied on the level of sound frequency only. Moreover, sound level will also play a role in compounding the effect as well. Based on the information gathered from the Dangerous Decibels program conducted by

Oregon Health & Science University (2013), if a human perceived to the noise above 85dB, it would definitely cause damage on human hearing. The more the human listens to the sound effect with this level of sound intensity, the greater the damage it will cause. However, the noise level in MyAngel will be manually controlled by the users. Thus, the sound level of the high frequency noise chosen in this app will not be another negative health effect contributor.

2.3 How is the high frequency noise cause annoyance?

Davies (n. d) stated that the sound frequency from 20Hz to 20kHz is possible to cause psychological disturbance on human beings. Based on the study by Soeta et al (2012, Mar), the level of human responsiveness showed the constant increase in its amplitude with the increase of sound pressure level for low frequency sound of 250Hz to 1000Hz. However, the increase of amplitude of the level of responsiveness reduced with the similar sound pressure level for 4000Hz of sound frequency. Soeta et al (2012, Mar)'s study indicated that the higher the sound frequency perceived by the human, the level of responsiveness will tend to be decreased. Thus, the human responsiveness that is controlled by the auditory nerve will be activated differently in the brain auditory cortex as well. Sigalovsky (2006, April) has studied on the brain activity measurement based on the Functional magnetic resonance imaging (fMRI) associated with the blood flow in brain cerebral cortex perceived with the broadband noise. Cherry (2013) explained that brain cerebral cortex is part of a brain that controls the human thoughts, language, memory as well as consciousness. In brain cerebral cortex, there are four different lobes that control different functionalities of human body and the lobe that controls the auditory perception and emotional responses is called temporal lobe (Bailey, 2013). Thus, when high frequency noise is perceived by a human, the temporal lobe in brain cerebral cortex will be activated and caused annoyance that lead to dizziness, emotional and loss of focus (Soeta et al, 2012). Hence, MyAngel app is designed by using the noise concept in distracting the robbers' attention to ease the escape of the victims.

2.4 Location Based Service (LBS)

Rouse (2009, May) defined Location Based Service (LBS) as an application that allow location tracking on the position of the mobile device. By using LBS, it can provide valuable information to the end users. Besides, the reason why LBS is useful in daily life is due to its value-added service provided (Singhal & Shukla, 2012). Singhal & Shukla (2012, Jan) explained that it would be great if LBS could be applied in public safety and emergencies services. Since the smartphone nowadays such as Android based operating system is providing the location based application which can detect the mobile carriers' location, the end users can easily trace the particular location through Google Map by having sufficient location information. Apart from that, Aloudat et al (2009) also recommended the use of LBS for emergencies purpose which is consistent with the objective of this project. Moreover, LBS technologies also allow the users to make quick decision and lead them to a safety position during the sudden events occurrence (Aloudat et al, 2009). Due to the availability of Google Application Programming Interface (API) in LBS of current smart phone, the real time location of the mobile carrier will be easily detected (Barbeau, 2008). Thus, in this project, LBS with the integration of Google API will be used in getting Google map location as well as by using Geolocation function in capturing the location coordinates and address of the victim.

2.5 Existing Similar Mobile Application

Based on the information from Malaysian Wireless (2011, Sep), the Royal Malaysian Police (PDRM) has implemented a mobile application called myDistress to allow the Selangor Citizen in alerting the police during the occurrence of emergencies. myDistress has certain similarities and differences as compared to MyAngel. Camoens (2011, April) reported that myDistress had been used to fight crime and there were successful cases through its contribution. One of them was that a woman who is named Elaine (2011) had notified the police on the suspected armed robbers nearby her house in Petaling Jaya.

With the immediate response and assistance from the police, both robbers had leaved empty-handed.

Figure 2.1: The interface of "myDistress" mobile application

Mobile Application	Similarities	Differences
myDistress	✓ Location Based Services specially for emergencies	✓ Alert signal is sent to PDRM only ✓ High frequency noise concept is not included
MyAngel	✓ Location Based Services specially for emergencies	✓ Alert signal is sent to emergency contacts, PDRM can be included. ✓ High frequency noise is used to distract the robbers' attention.

Table 2.2: The similarities and differences between myDistress and MyAngel Mobile application

Based on the information from table 2.0, it can clearly be seen that the main difference between both the applications is the noise concept. This is due to the fact that MyAngel is designed not only for emergency notification purpose, but also to provide the possibility for the victim who is also the MyAngel user to rescue themselves from the crime scene by emitting the annoying sound to cause distractions to the robbers. There is also sound frequency emitter mobile application in the Android market. One of them is called High Pitch Blaster.

Figure 2.2: The interface of High Pitch Blaster interface

Based on the description from Google Play regarding the High Pitch Blaster application (2012, Mar), one of the purpose of implementing this mobile application is to cause annoyance to people that lead them from staying away the annoying sound with 10kHz to 20kHz. The study from MissionMode (n. d) which is a web-based system stated that an emergency alert system should be designed to be smart and easy to manage so that a quick notification can reach the emergency contacts to make informed decision. Thus, MyAngel app will be designed by using **ONLY ONE** emergency alert button to perform three valuable functions:

- ✓ Produce high frequency noise to cause disturbance
- ✓ Track users' current position
- ✓ Send the location information to the emergency contacts.

CHAPTER 3

RESEARCH METHODOLOGY

In order to develop MyAngel mobile application, several research methodologies have been carried out to map out the work plan by following the research procedures, strategies and conducting several approaches to the required knowledge.

3.1 Rapid Application Development (RAD)

The Rapid Application Development model below is used in developing MyAngel for this project.

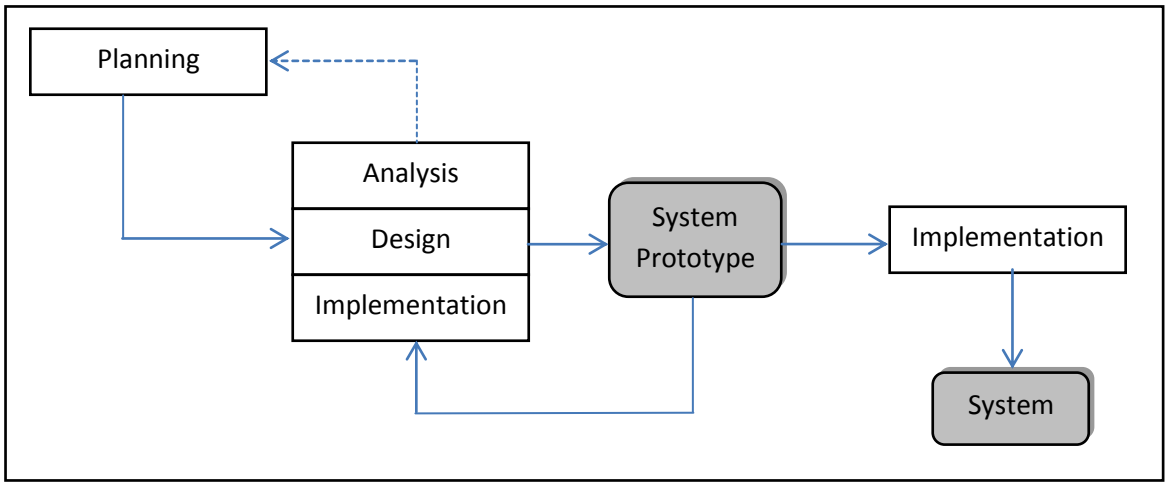


Figure 3.1: The Rapid Application Development model (MBeardOnline, 2011)

Basically RAD model is divided into four main processes:

3.1.1 Planning

Planning phase is the first process that a researcher will map out the necessary procedures and project activities to be conducted throughout the project's time frame.

Aim of Research Motivation

The research element of this project which is the high frequency noise concept is inspired by the similar application used in UK – Mosquito Device. Thus, before the project is going into depth, the functionality of high frequency noise will be investigated. Besides, the LBS concept suggested in this project is motivated by the PDRM mobile application called myDistress. Therefore, the study will also proceed with the investigation on the effectiveness of this concept.

Requirement Study

Since the focus of this project is on the high frequency noise and LBS concepts, several approaches have been carried out. The users of MyAngel include all the smart phone users who may need it during robberies. Thus, an interviewing session has been conducted to one of the robbery victim to understand the actual needed tools and assistance during robberies. This information will certainly enhance the design of feature in MyAngel app. Besides, another interview session has also been conducted with the Operational Inspector in Public Order department in Police Selangor to understand if noise concept has been adopted in their crime prevention criteria. To understand the opinions of robbery issues in the state of Selangor and Kuala Lumpur, the data collection method through online pre-survey questionnaires has been conducted.

3.1.2 Analysis

Based on the data collected through interview sessions and pre-survey questionnaires, the information has then be further analyzed to understand the majority feedbacks on the concept used in MyAngel and the criteria that should be included for better efficiency usage. On the other hand, literature survey has also been carried out on the high frequency noise and LBS to prove the validity of both the concepts to be used during

emergencies. This information is gathered through the online sources such as Science Direct, Scopus and Google Scholar. The printed topics on noise that are written by several researchers have also been referred to collect better and strong evidences in order to prove the stated concepts. Basically, the data analysis is performed on the required information which has been planned during the initial phase of this project.

3.1.3 Design

When the analysis phase has completed, a quick design on the system architecture of MyAngel is developed to determine the system flow and have a clearer view and structures on the system model.

The diagram below is the proposed system architecture of MyAngel.

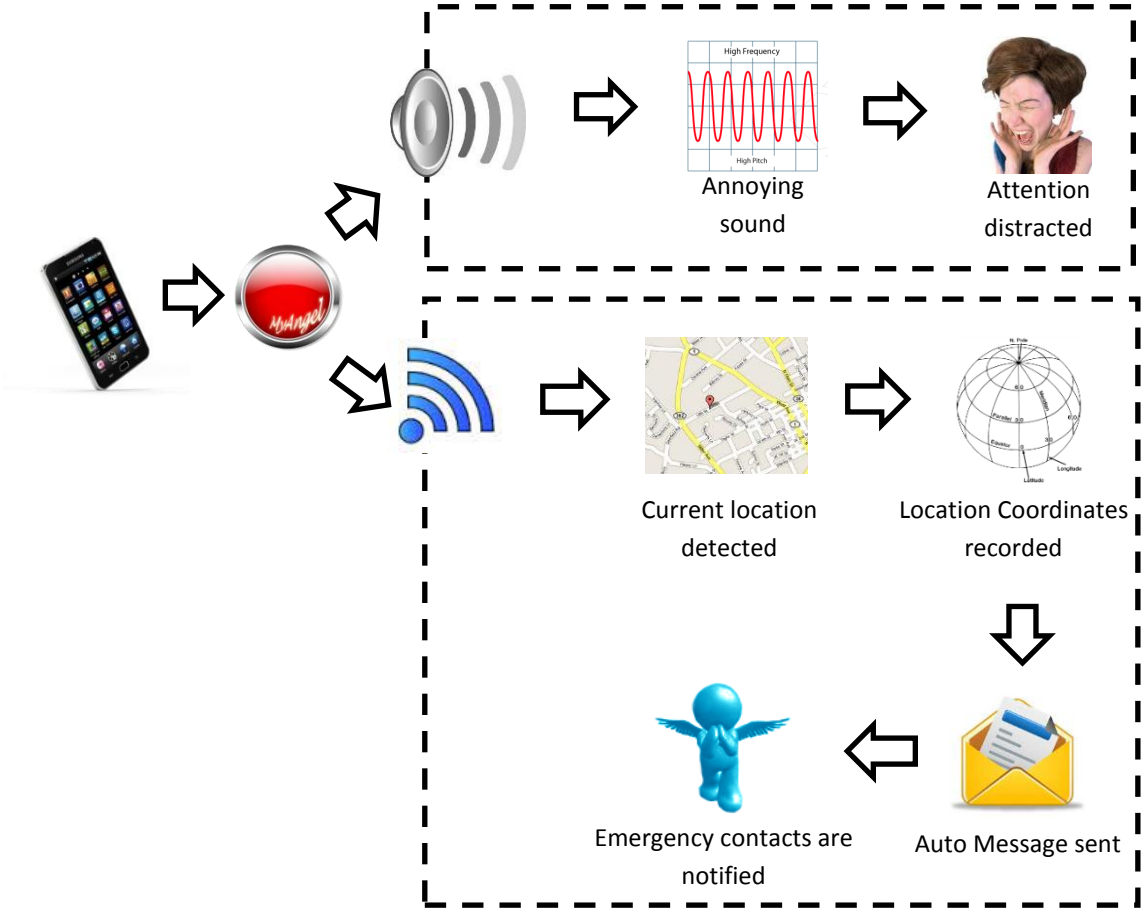


Figure 3.2: The proposed system architecture for MyAngel app

System flow of MyAngel

Click on the emergency alert button:

- High frequency noise will be produced
- Location coordinates will be tracked through location API
- Location information will be displayed in an auto message and sent it over to the pre-set emergency contacts.

Development of Prototype

The prototype of MyAngel is begun with the design of initial interface and functionalities. In order to develop MyAngel, certain tools are required such as Eclipse, an application builder software, Java platform and Google Map API. To ensure that the features constructed are working, the unit testing will be performed once each feature is completely built. This is to avoid the overload of debugging work during the overall features integration process.

System Testing

When all the features required have been developed, a complete prototype will be implemented to the users to perform the overall system testing. The purpose of conducting system testing is to examine the functionality and usability of MyAngel from the users' perspective. The users' feedbacks will be collected to further improve on the existing design of MyAngel until the amendment meets the requirement and desired model of the users. Thus, the design phase is a repetitive process whereby the constructed features will be examined by the users and any majority unfavorable features recommended will be considered to redesign on the existing works.

3.1.4 Implementation

This is the final phase of a RAD process. The completed system is built and officially implemented to the users for real life usage. The user training process would be conducted to ensure that the users understand each and every feature of the app to avoid unnecessary mistakes. The comments and feedback from the app users would be collected to enhance the current app into a more usable, efficient and effective version.

3.2 Gantt Chart

The timeline of this project is shown in the Gantt chart below:

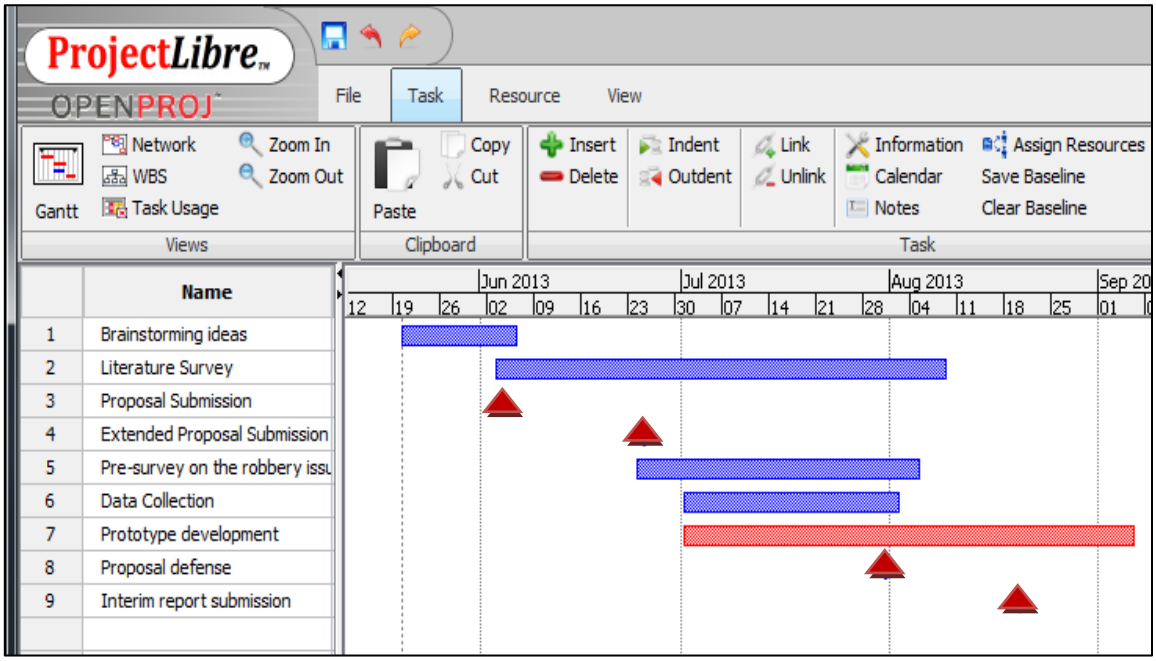


Figure 3.3: The Gantt chart of FYP1

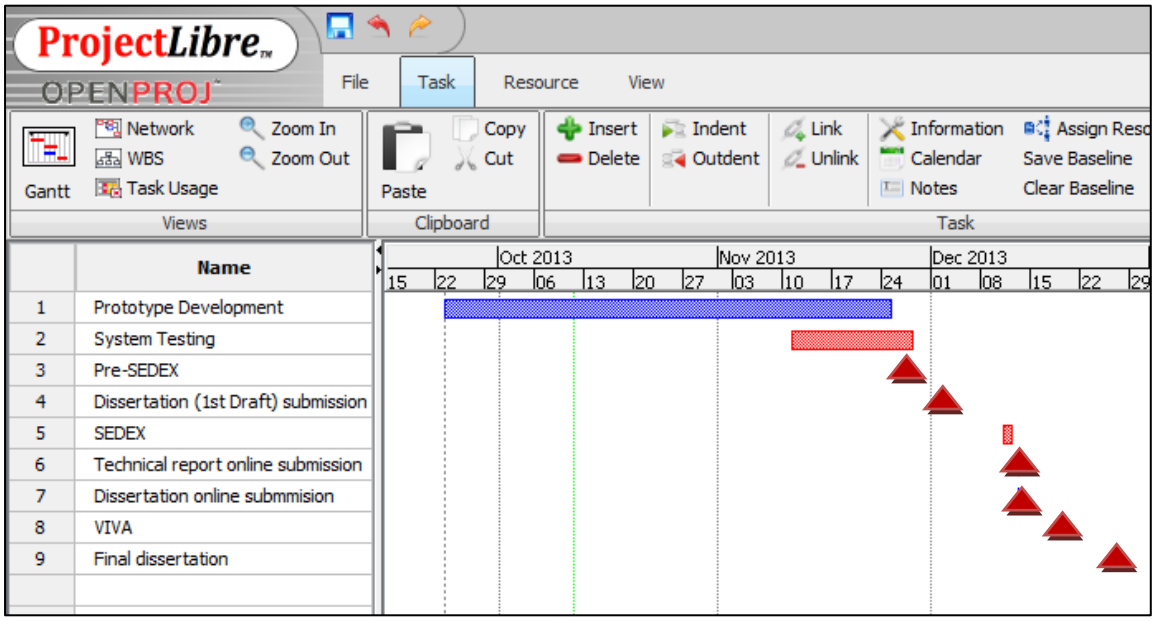


Figure 3.4: The Gantt chart of FYP2

Key milestone *

3.3 Project Activities & Key Milestones

The table below shows the activities that have been conducted during the project development phase as well as the deadline of the reports' submission.

Project Activities	Key Milestones
• Brainstorming ideas • Literature Survey • Construction of Questionnaires • Interview robbery victims • Interview the Operational Inspector of Selangor State Police's headquarters. • Data analysis	• Proposal Submission (4 June 2013) • Extended Proposal Submission (25 June 2013) • Proposal defense (31 July 2013) • Interim report submission (20 August 2013)

Table 3.1: The project activities and key milestones for FYP 1

Project Activities	Key Milestones
• Prototype development • System Testing	• Progress report submission (14 October 2013) • Pre-SEDEX (27 November 2013) • Dissertation submission (Draft) (2 December 2013) • SEDEX (11&12 December 2013) • Online submission of technical report and dissertation (13 December 2013) • VIVA (19 December 2013) • Final dissertation (hard bound) (27 December 2013)

Table 3.2: The project activities and key milestones for FYP 2

CHAPTER 4

RESULTS & DISCUSSION

4.1 Pilot Study

4.1.1 Pre-survey Questionnaires

The pre-survey Questionnaires have been conducted to 78 respondents whom mostly stayed in Kuala Lumpur and Selangor area, with different sex, age groups and job status.

The figures below show the number of survey respondents with different backgrounds.

Section A: Demography Profile

i)

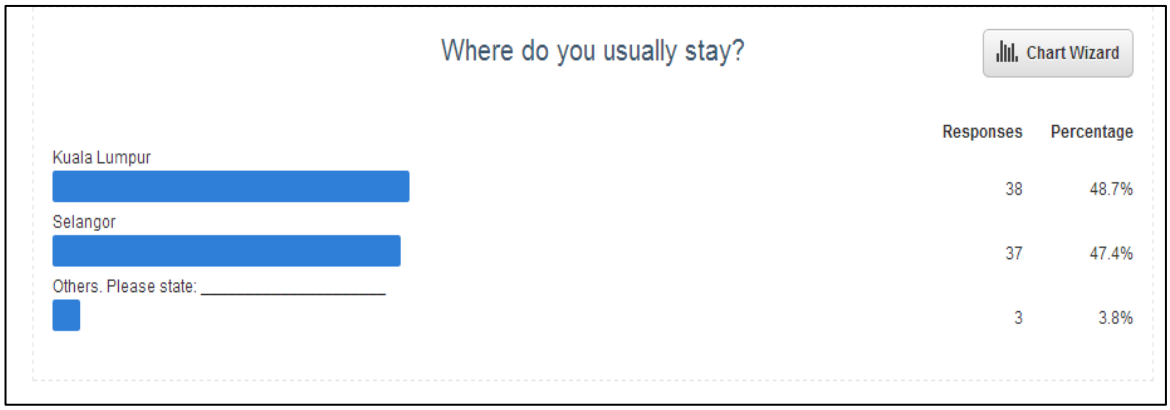


Figure 4.1: The staying places of the 78 respondents in this survey.

Out of the 78 respondents, there are 38 of them, 48.7% staying in Kuala Lumpur area and 37 of them, 47.4% in Selangor, and the rest are not staying in either of this area.

ii)

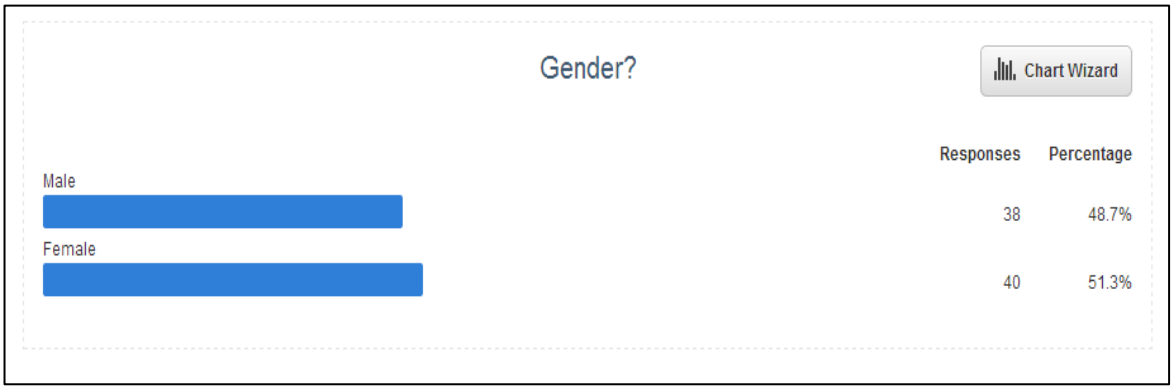


Figure 4.2: The number of male and female respondents in this survey.

Based on the data collected, there are a total of 38 male and 40 female respondents in this survey.

iii)

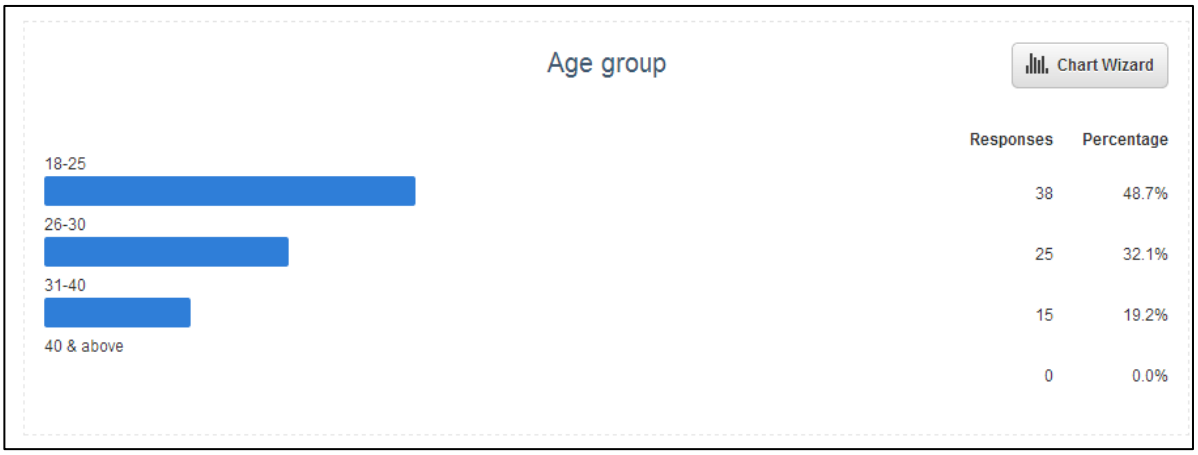


Figure 4.3: The different age groups of the 78 respondents in this survey.

In this survey, there are 38 respondents, 48.7 from the age group of 18-25 and 25 of them, 32.1% from 26-30 years old. The rest of the 15 respondents, 19.2% are aged from 31-40.

iv)

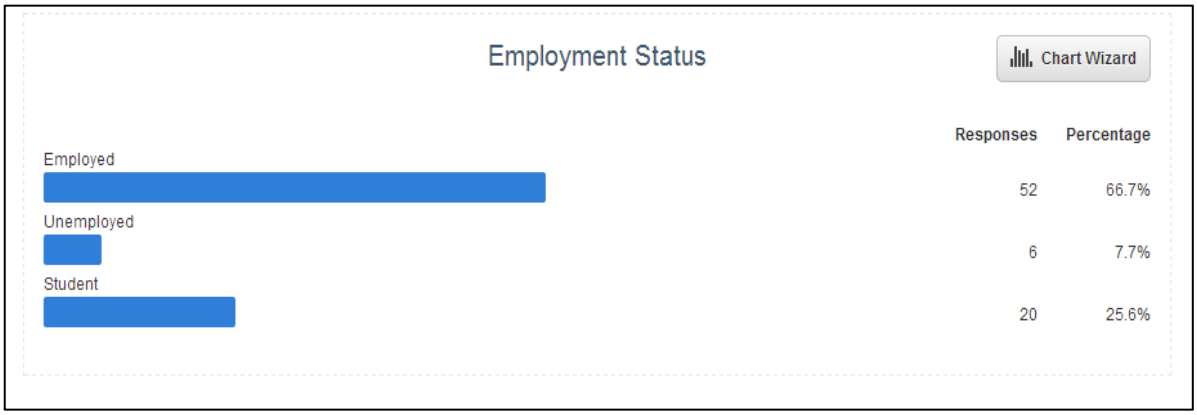


Figure 4.4: The employment status of these 78 respondents in this survey.

There are 52 respondents, 66.7% are employed with salaried job, 6 of them, 7.7% are still in unemployed status and the rest of the 20 respondents, 25.6% are still the students who have not started their working life.

Section B: Robbery issues

This section is conducted to understand the respondents' robbery experiences.

v, vi, vii)

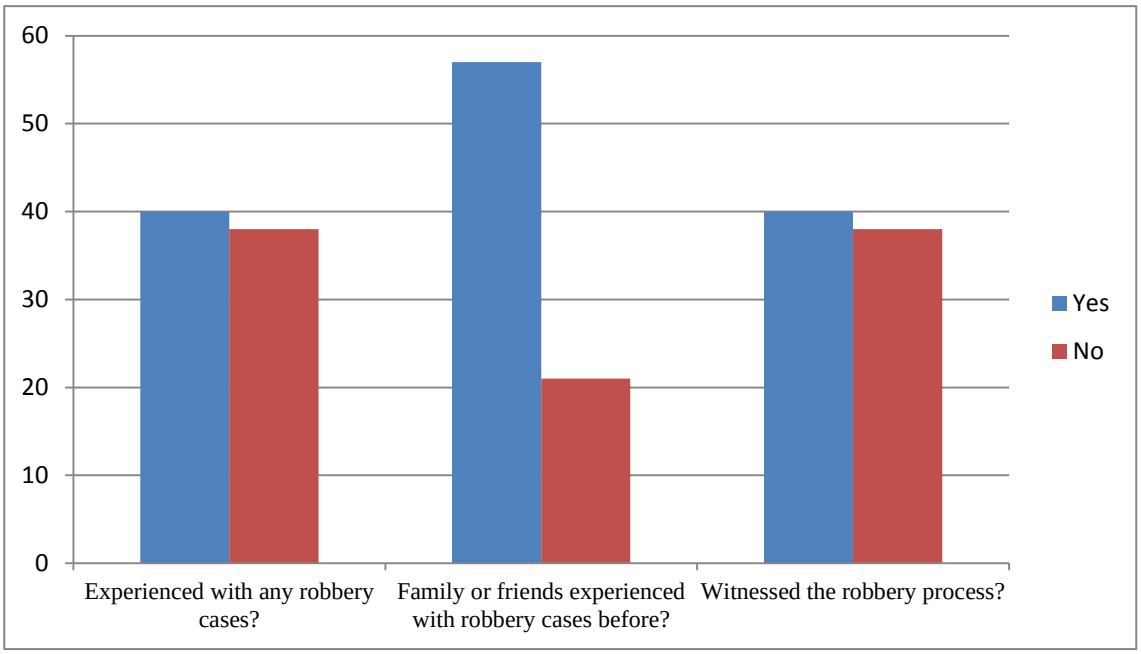


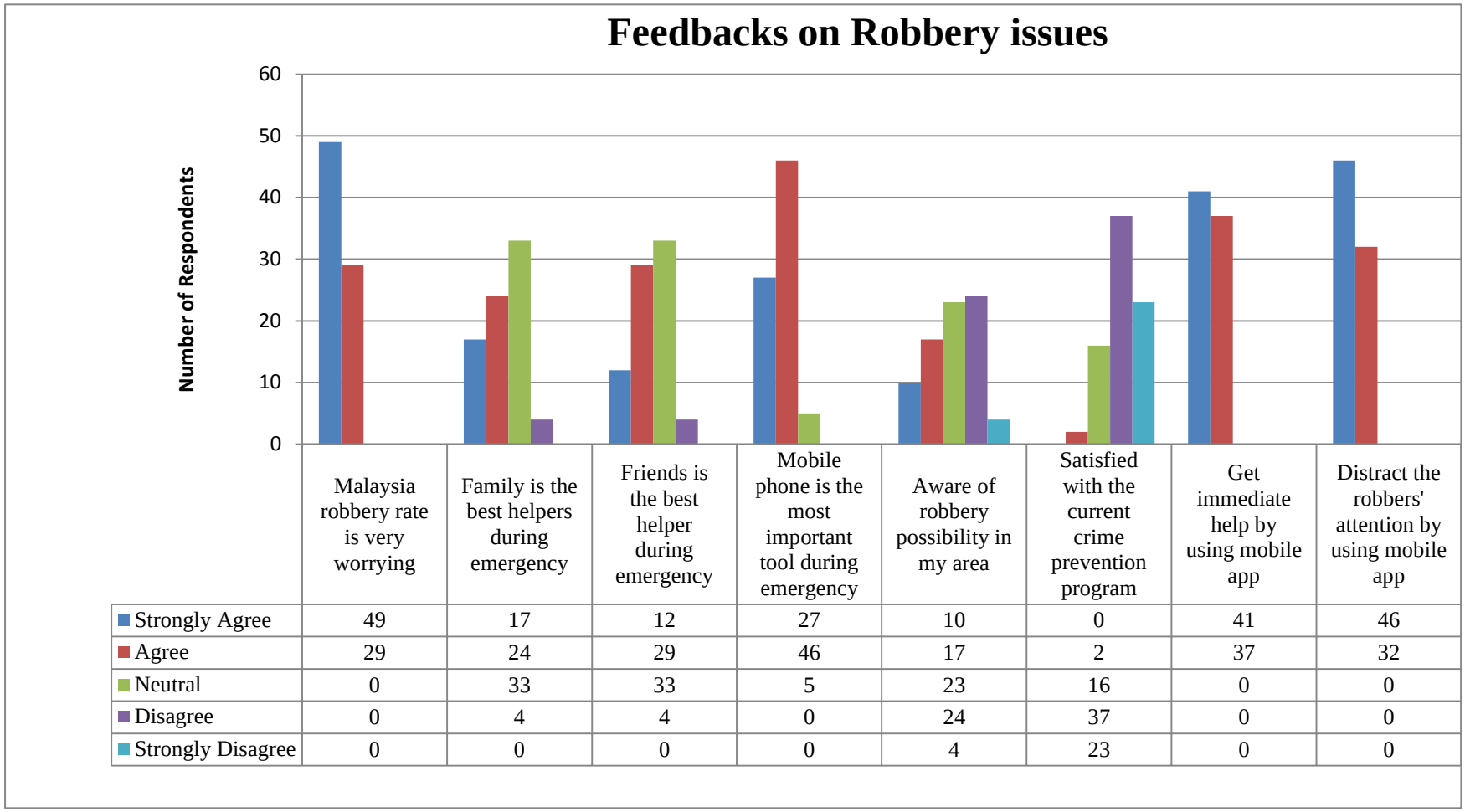
Figure 4.5: The percentage of respondents regarding the robbery experiences.

Out of 78 respondents, there are 40 of them, 51.3% who had actually suffered from robberies before whereas 38 of them, 48.7% had not been facing the similar situation. This analysis shows that the robbery rate for the respondent in only this survey has already achieved more than 50% which is considered an insecure level.

This analysis shows an even serious robbery rate as the family and friends of the respondents is seems to be much higher than the rate counted on only the respondents themselves. There are a total of 57 respondents, 73.1% who have family and friends that experienced with robberies and 21 of them, 26.9% have no such victimization experiences so far.

On the other hand, 40 of them, 51.3% have actually witnessed the process of robberies whereas the rest of the 38 of them have none of the witness experiences. This statistics also indicates that more than half of the respondents had witnessed robberies incidents which show the high robbery rate in Selangor and Kuala Lumpur.

viii)



	Malaysia robbery rate is very worrying	Family is the best helpers during emergency	Friends is the best helper during emergency	Mobile phone is the most important tool during emergency	Aware of robbery possibility in my area	Satisfied with the current crime prevention program	Get immediate help by using mobile app	Distract the robbers' attention by using mobile app
Strongly Agree	49	17	12	27	10	0	41	46
Agree	29	24	29	46	17	2	37	32
Neutral	0	33	33	5	23	16	0	0
Disagree	0	4	4	0	24	37	0	0
Strongly Disagree	0	0	0	0	4	23	0	0

Figure 4.6: The respondents' rating on the statement regarding the opinions on robbery rate, potential helpers, awareness, satisfaction on current program and proposed solution.

Based on the data collected, all the respondents agree that the robberies in Malaysia have reached at a very worrying level. This indicates that the civilians behave fearful on these cases and worry that if this issue would be continually increasing without any alternatives taken for solutions, the civilians would not be living in a peaceful country.

Out of the 78 respondents, there are 33 of them, 42.31% who remain neutral on whether family members are the most suitable helper during the critical situation. Another 17 of them, 21.79% strongly agree and 24 respondents, 30.77% agree that family members are the best assistance in times of emergency, whereas there are only 4 respondents, 5.13% who disagree to seek for family's help. From this analysis, Most of the respondents which include 33 of them, 42.3%, remain undecided if they should contact their family for help. This can be due to the fact that, if their families are being notified with the emergency cases, it would probably cause unnecessary trouble the family and for the most serious case, extra victims might be involved.

Similarly, 33 of them, 42.3% also remain undecided on whether to contact their friends for emergency assistance. Another 12 of them, 15.4%, strongly agree that friends are their potential helpers and 29 of them, 37.2% also agree with the statement. The rest of the 4 respondents, 5.13%, remain disagree to get help from friends. Those who agree with the statement would probably think that friends are those that they trusted and would definitely provide assistance to them in times of need. However, for those who remain neutral, this would also probably due to the unclear decision on whether to contact directly to the police or seek for friend's helps during emergency.

Besides, majority of the respondents, 58.97% agree and 34.62% strongly agree that their mobile phone especially the smartphone is their best helpers when they are falling into the life- threatening situation. Due to the fact that smartphone carries a variety of functions including the mobile application which could easily assist them in contacting or reaching their emergency contact or the police, this might be the reason that the respondents choose smartphone as their best potential helpers. There is only 5 of them, 6.41% remain neutral with the usage of mobile application during emergencies.

The next statement would be whether the respondents are aware with the robbery possibilities in their surrounding area. 24 of them, 30.77% disagree and 4 of them, 5.13% strongly disagree that they are aware with the possibility of the occurrence of robberies. This shows that all these 28 respondents are unaware that they might be the next victim. On the other hand, 10 of them and 17 of them strongly agree that they are aware of the possibilities of getting robbed anytime, and the rest of them, 23 respondents, 29.49% remain neutral with the statement. The reason why they remain neutral is that, they do not even realize if their awareness level is high or low. Due to the fact that having high awareness do not indicate the chance of getting robbed would be low, similarly, those with low level of awareness would not indicate the higher possibilities of becoming the next victim. Thus, these respondents remain unsure with the level of awareness towards the robbery issue.

Regarding the current robbery prevention program in Malaysia, majority of the respondents show their disagreement towards the statement. 37 of them, 47.44% and 23 of them, 29.49% are unsatisfied and strongly unsatisfied with the current prevention program. 16 of them, 20.51% remain neutral with what the government has conducted to fight for robberies and only 2 of them, 2.56% show their satisfaction with the current prevention program. This analysis indicates that most of the respondents are unsatisfied with the methods of preventing robberies which also lead to the increase of worrying level in citizen. Thus, a better and more effective robbery preventive program should be carried out to ensure the peacefulness of the country.

According to the pre-survey result, all the respondents show their demand in having a mobile application which could serve the life-saving purpose and easy emergency notification tool. 41 of the respondents, 52.56% strongly agree and 37 of them 47.44% agree to have the mobile application which designed to get immediate help from the emergency contacts. This shows that all these respondents need a simple, fast and efficient notification method during the occurrence of robbery to reach those that they want to contact including the police. Instead of having the conventional method of calling 999, an informing method by just a click of button could save a lot of precious time without worrying of wrong giving information. Moreover, 46 of the respondents,

58.97% also strongly agree and 32 of them, 41.03% agree for the design of mobile application with the function as distracting tool to the robbers so as to provide a chance for the victim to escape from the dangerous crime scene.

Since the respondents agree with the implementation of this life-saving mobile application and the pre-survey result shows there is needs in having such emergency usage tool, this project is proposing a mobile application called MyAngel which includes both the function of emergency notification and distracting tool by having a high frequency noise producer in this mobile application.

4.1.2 Interview Result

Robbery Victim – Cheah Huei Ying

Based on the interview result with one of the robbery victim, Cheah (2013, July), currently 23 years old, she had been a robbery victim for three times in her life. Fortunately, there was no injury happened although the latest case was committed by four of the armed robbers. However, in her opinion, robbery cases are happening frequently in our country. The location that she experienced with robbery was in her hometown, Teluk Intan, and her neighbors were having the similar terrified experience where they could no longer stay peacefully. Cheah (2013, July) also mentioned that she has now started working in Kuala Lumpur and her insecurity level has become worse due to the even higher crime rate in this big city. In her opinion, protective tools such as pepper spray, umbrella or keys should always be brought along wherever a person is located and she is still looking for other more efficient alternatives that could assist her in case of robbery case happen on her again. Thus, the idea of MyAngel app had been introduced and she had shown her support towards the development of this mobile app due to its life-saving functionality. Cheah (2013, July) also mentioned that she would definitely install MyAngel once it is officially implemented to the Android market.

Operational Inspector in Police Headquarter Selangor – Inspector Cheah

The interview session with Inspector Cheah, from the department of Public Order in Police Headquarter Selangor had been conducted through phone. This is due to the packed schedule of Inspector Cheah and the phone interview could only be done in just 10 minutes. According to Inspector Cheah (2013, August), myDistress mobile application is currently being used as the main tool for the civilians to contact the police in the most efficient way with location information. Since MyAngel is an app to produce high frequency noise as a new criterion to disturb the robbers' focus, the main focus of MyAngel had been explained to Inspector Cheah to verify if this idea had been considered during the development of myDistress. Based on the knowledge regarding the criterion for myDistress from Inspector Cheah, the high frequency noise concept have not been considered in myDistress for the time being. The current functionality for mydistress is focused on the click of 'On Help' button to notify the police with the extreme situation at the users' pre-set location. This app is implemented based on the need of emergency due to the stressful and fearful situation where the victim might not be able to speak up the details and exact location to the 999 operator. For future recommendation to enhance the current myDistress, Inspector Cheah (2013, Aug) mentioned that myDistress would most probably be added with camera, video, and audio functionalities. However, these ideas are still being considered and discussed among the committees and developers and the enhancement is still in planning phase. Hence, high frequency noise is still not being considered to be included in myDistress as a criterion for emergency usage and Inspector Cheah had motivated the developer of MyAngel to proceed with the current idea which could be a great contribution to the society.

4.1.3 Initial Interface Design for MyAngel

The screenshots below show the initial interface design for MyAngel:

Figure 4.7: The loading page of MyAngel

Figure 4.8: The emergency alert button of MyAngel

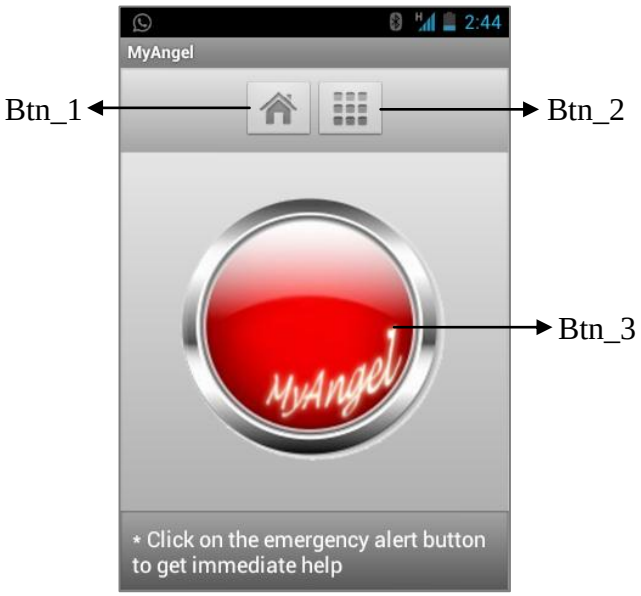
Figure 4.9: The interface once the alert button is activated.

Figure 4.10: The menu page of MyAngel

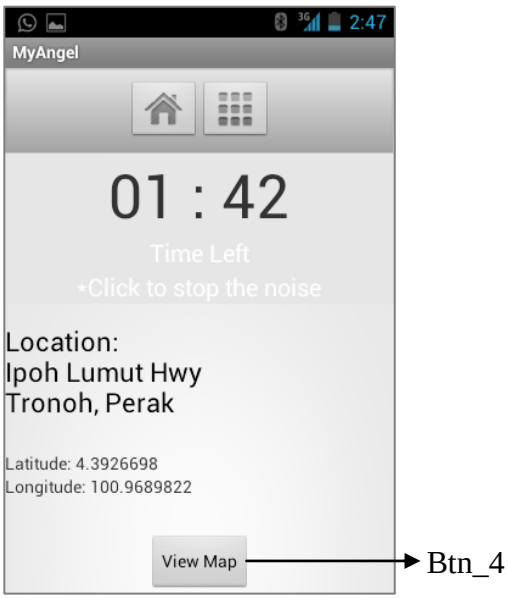
4.1.4 Application Screenshots

The initial interfaces of MyAngel that have been majorly changed to a new design version. Basically, there are **TWO** main buttons in the new design: **Home button and Menu button**. Home button is used to link to an alert page whereby the clicking on the alert red button will perform the three main important functions of MyAngel. On the other hand, the menu button consists of four tabs. Each tab carries different role and information. These tabs are representing ‘helplines’, ‘emergency contact’, ‘history’ and ‘about’ page.

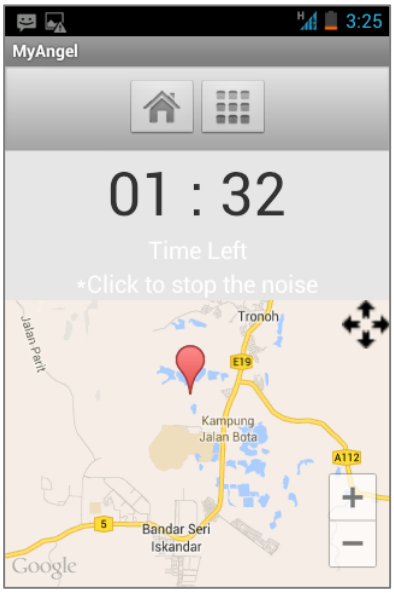
The following screenshots are the completed interfaces of MyAngel



Screenshot 1: Emergency Alert



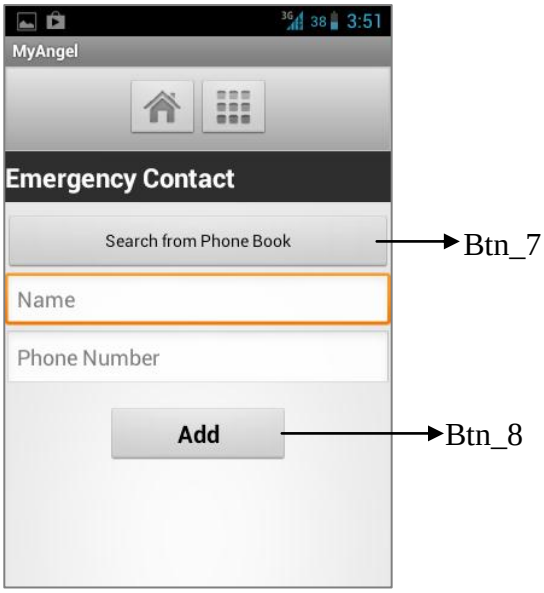
Screenshot 2: Noise player and location details



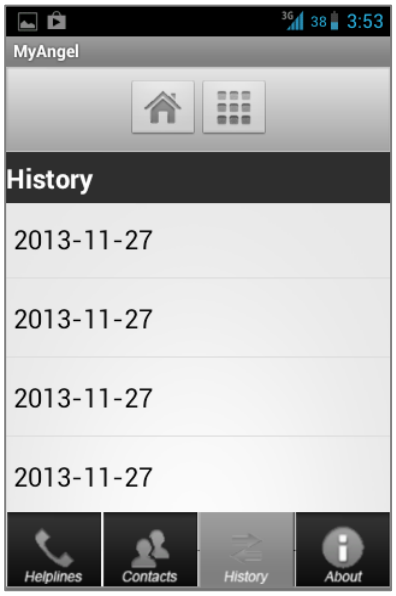
Screenshot 3: Google map

Screenshot 4: Police Contact information

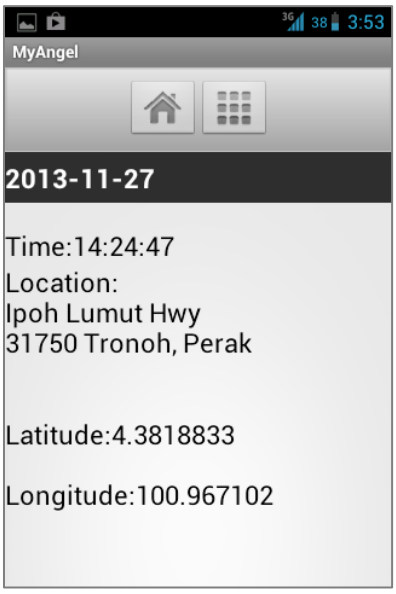
Screenshot 5: Emergency contact information



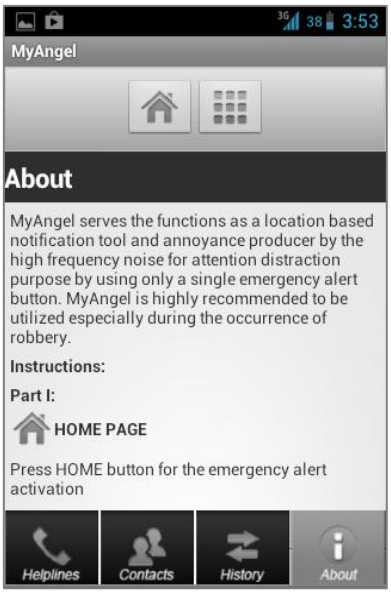
Screenshot 6: Add emergency contact



Screenshot 7: History



Screenshot 8: History details



Screenshot 9: About page

Buttons/Tabs	Indications
Btn_1	Home page
Btn_2	Menu page
Btn_3	Alert button
Btn_4	View map
Btn_5	Add contact
Btn_6	Delete contact
Btn_7	Search from phonebook
Btn_8	Add contact with complete details
Tab_1	Helplines
Tab_2	Emergency contacts
Tab_3	History
Tab_4	About

Table 4.1: The indications of the buttons/tabs in MyAngel

Screen shots	Indications	Descriptions
Screenshots 1 (Home button)	Emergency Alert	This is the main page of MyAngel as the alert button is carrying the main functions of the app. Once the alert button is clicked, the app will • play high frequency noise • detect current location • send alert message to the emergency contacts

Screenshots 2 (Home button)	Noise player and location details	After clicking on the alert button in screenshot 1, the page will then link to screenshot 2. This is the page where the time left for playing the noise will be shown (2 minutes), the location coordinates and address will also be displayed here.
Screenshots 3 (Home button)	Google map	The users can also click on the 'view map' button in screenshot 2 in order to view their current location map so as to guide them in escaping.
Screenshots 4 (Menu button)	Police Contact information	In order to provide the contact alternative for the users, this page which represented by the helplines tab will display the police contacts in the area of Selangor and Kuala Lumpur.
Screenshots 5 (Menu Button)	Emergency contact information	The page of emergency contact tab is showing the emergency contacts' names which have been selected by the users and these contacts can be deleted by clicking on the delete button
Screenshots 6 (Menu button)	Add Emergency contact	The users can add the emergency contacts in this page by searching from the phonebook. The user has to click on the add button in screen shots 6 in order to fill up the contact's information. A maximum of ten persons

		can be filled in the list as emergency contacts
Screenshots 7 (Menu button)	History	By clicking on the history tab, the page will be displaying the dates where the users have activated the alert button.
Screenshots 8 (Menu button)	History details	When the date in history tab is clicked, the details of the history will be displayed. The details will be including the alert activation time, as well as the location of the users.
Screenshots 9 (Menu button)	About page	The about page is showing the instructions of using MyAngel app. The users can view the application's information by just a simple clicking on the about tab.

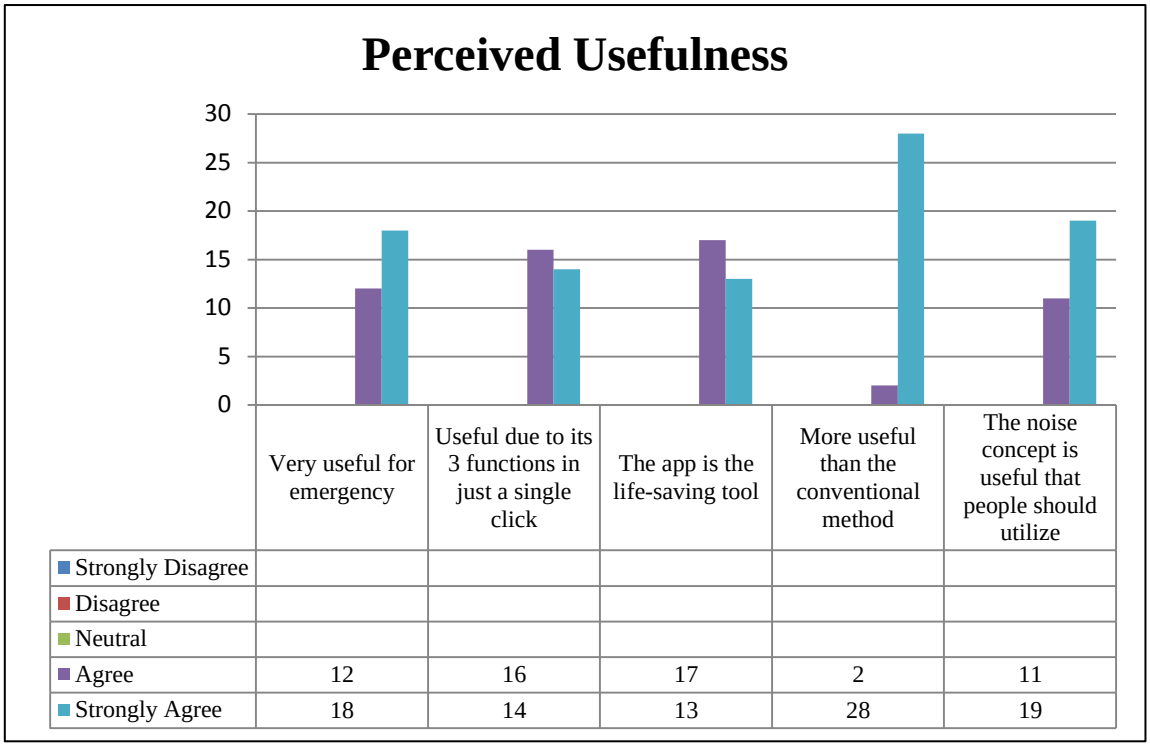
Table 4.2: The description of the screenshot pages of MyAngel app

4.2 User Acceptance Testing (UAT)

The aim of conducting user acceptance testing is to allow the targeted users to evaluate and examine the prototype of MyAngel based on self-perception. This UAT will be targeting 30 users from different age groups including both the genders of male and female who are all smartphone users and data plan subscribers. The users' evaluation will be based on 5 categories with 11 criteria. The categories include social factors, technological factors, online system acceptance, customer satisfaction and selection of noise frequency.

4.2.1 Social Factors

In this section, the respondents are required to examine the statements based on the criteria of perceived usefulness, perceived user-friendliness, perceived usability, perceived navigation and perceived ease of time.



	Very useful for emergency	Useful due to its 3 functions in just a single click	The app is the life-saving tool	More useful than the conventional method	The noise concept is useful that people should utilize
Strongly Disagree					
Disagree					
Neutral					
Agree	12	16	17	2	11
Strongly Agree	18	14	13	28	19

Figure 4.11: The UAT on perceived usefulness

Based on the result collected for perceived usefulness, it shows that all the 30 respondents find MyAngel app is very useful due to its functions and suitable to be used by everyone during emergency.

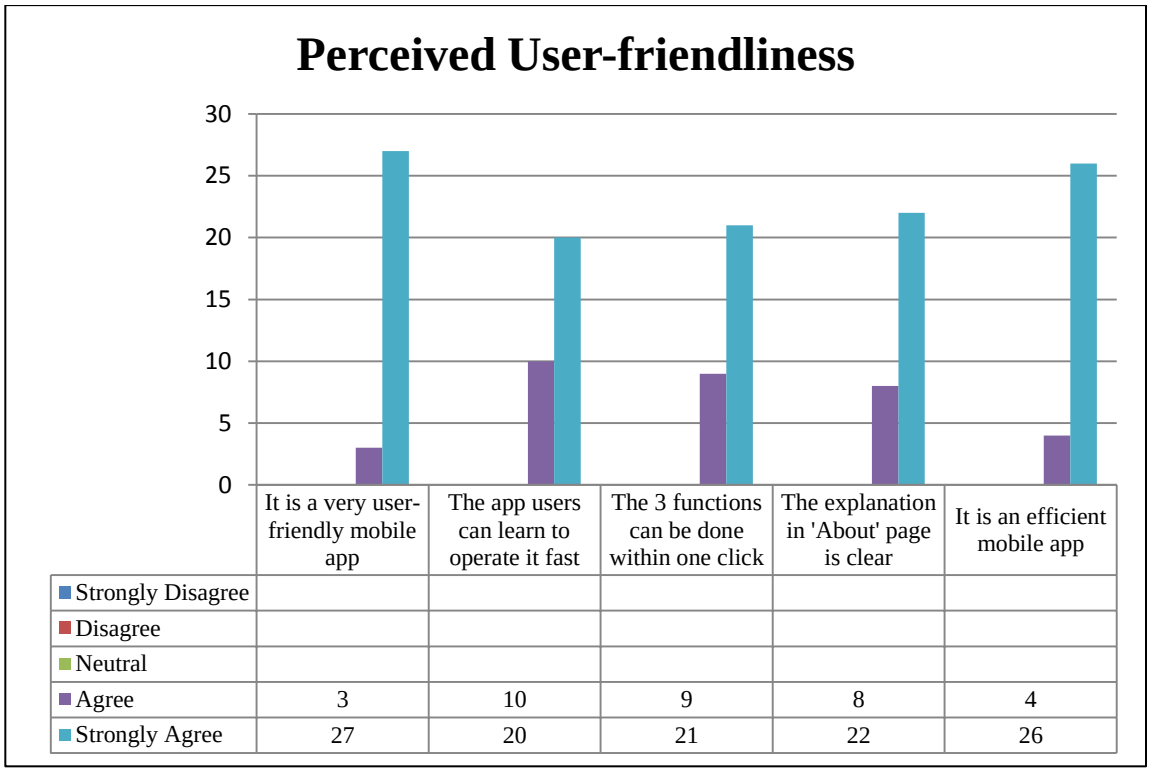
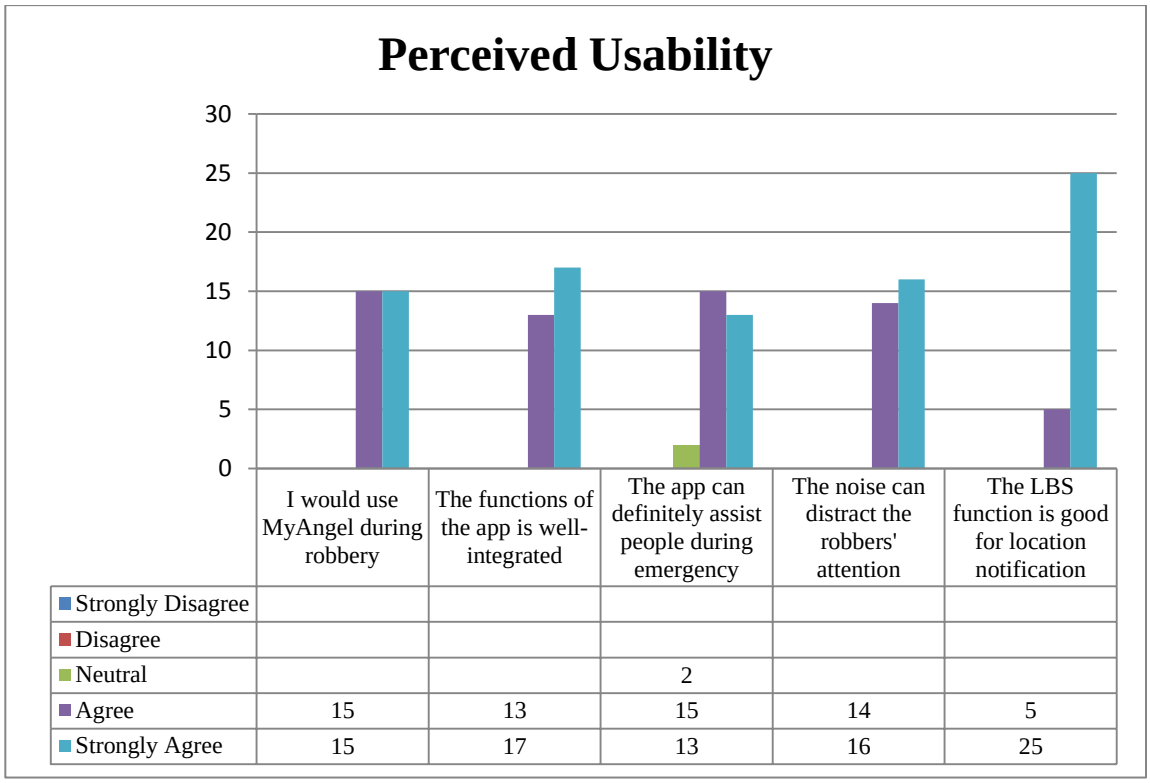


Figure 4.12: The UAT on perceived user-friendliness

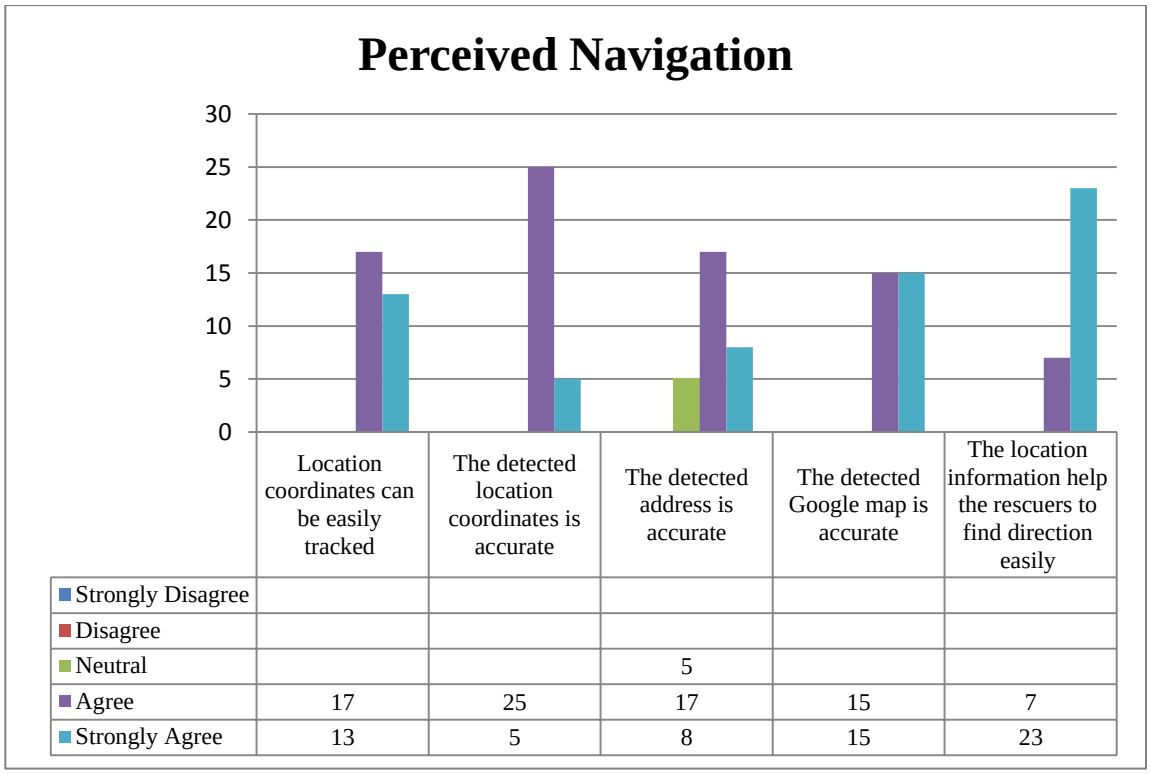
In the criterion on perceived user-friendliness, the result shows that all the respondents had given a high ratings and it proves that the users felt MyAngel is a user-friendly and efficient app with a clear explanation on the steps to operate it and thus, the users can learn to operate it in a short time.



	I would use MyAngel during robbery	The functions of the app is well-integrated	The app can definitely assist people during emergency	The noise can distract the robbers' attention	The LBS function is good for location notification
Strongly Disagree					
Disagree					
Neutral			2		
Agree	15	13	15	14	5
Strongly Agree	15	17	13	16	25

Figure 4.13: The UAT on perceived usability

As for perceived usability, all the users have agreed that they would use MyAngel app and it would definitely help out during emergency. The 30 respondents also find the functions in MyAngel app well-integrated and the noise frequency and location-based service are usable for respective purpose, distract the robbers' attention and emergency notification with location information. There are only 6.7% of them being neutral on the statement that MyAngel can definitely assist the victim during emergency.



	Location coordinates can be easily tracked	The detected location coordinates is accurate	The detected address is accurate	The detected Google map is accurate	The location information help the rescuers to find direction easily
Strongly Disagree					
Disagree					
Neutral			5		
Agree	17	25	17	15	7
Strongly Agree	13	5	8	15	23

Figure 4.14: The UAT on perceived navigation

In term of navigation, all the respondents agreed that the detected location coordinates and Google map location are accurate, however, there were only 5 of them remain neutral on the accuracy of location address as the detected address is not specifically pointed at the exact place. Nevertheless, the collected location information is still able to provide the rescuers with the direction to locate the victim.

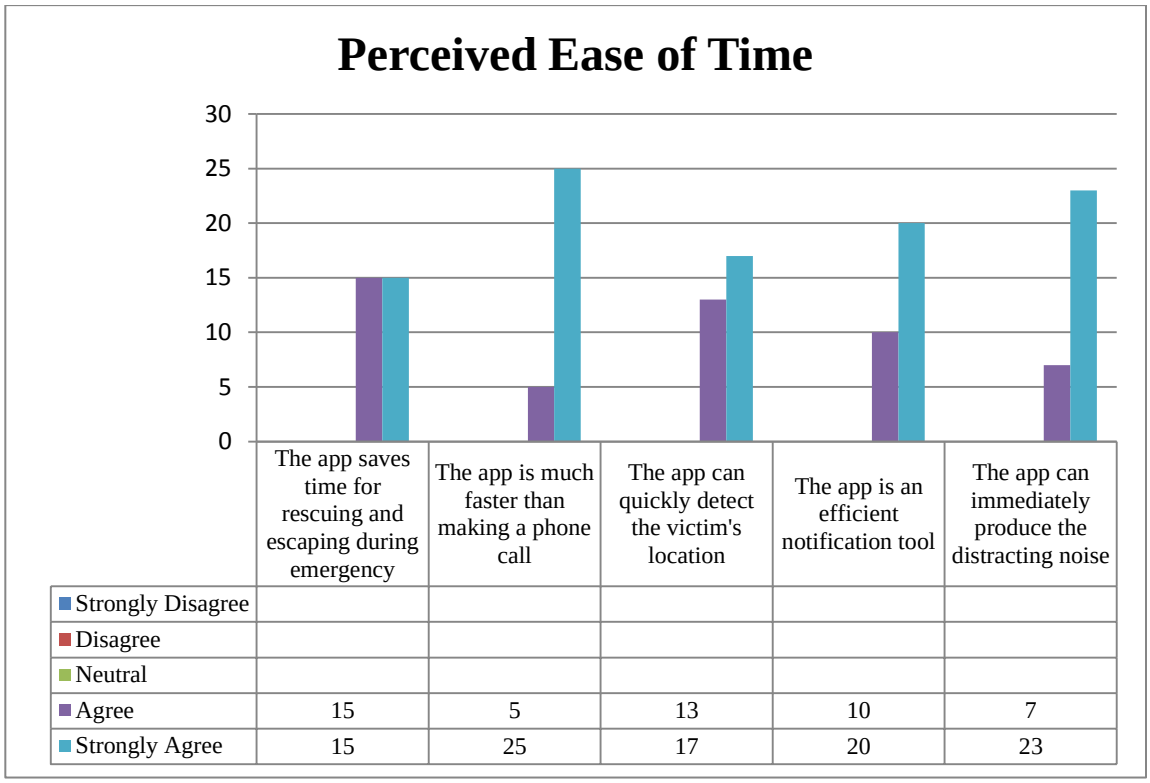
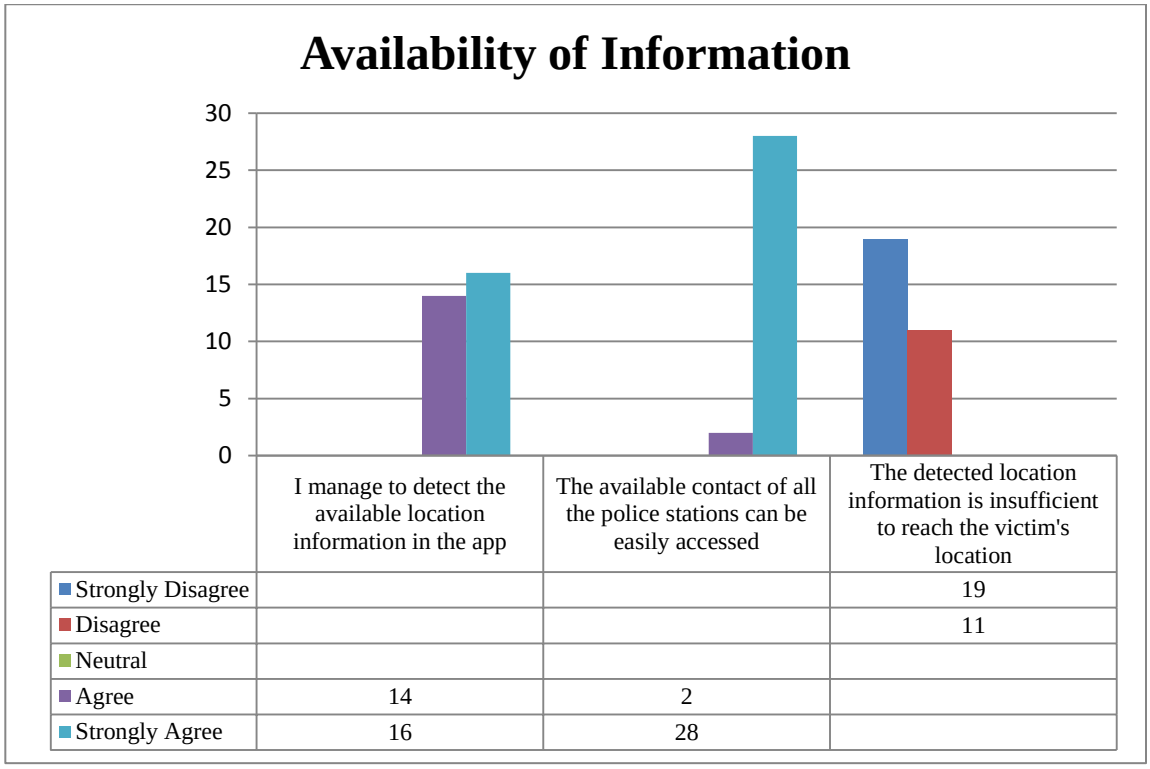


Figure 4.15: The UAT on perceived ease of time

For the testing on perceived ease of time, the result shows that all the respondents believe that by using MyAngel app, it could definitely save some time in rescuing and escaping instead of using the conventional method such as making a phone call to seek for help. Besides, the respondents also gave high ratings on the performance of the 3 functions of MyAngel app whereby it can quickly detect the victim's location, play the role as an efficient notification tool as well as to produce immediate noise to cause disturbance to the suspects.

4.2.2 Technological Factors

For the technological factors, the respondents are required to examine the statements based on the criteria of availability of information and quality of internet connection.



	I manage to detect the available location information in the app	The available contact of all the police stations can be easily accessed	The detected location information is insufficient to reach the victim's location
Strongly Disagree			19
Disagree			11
Neutral			
Agree	14	2	
Strongly Agree	16	28	

Figure 4.16: The UAT on the available of information

According to the 30 respondents, all of them manage to detect the location information by using MyAngel app and they find that the displayed information is sufficient to get the direction of the victim's location. Besides, the available contact of all the police station in Selangor and Kuala Lumpur can also be easily accessed by using MyAngel app.

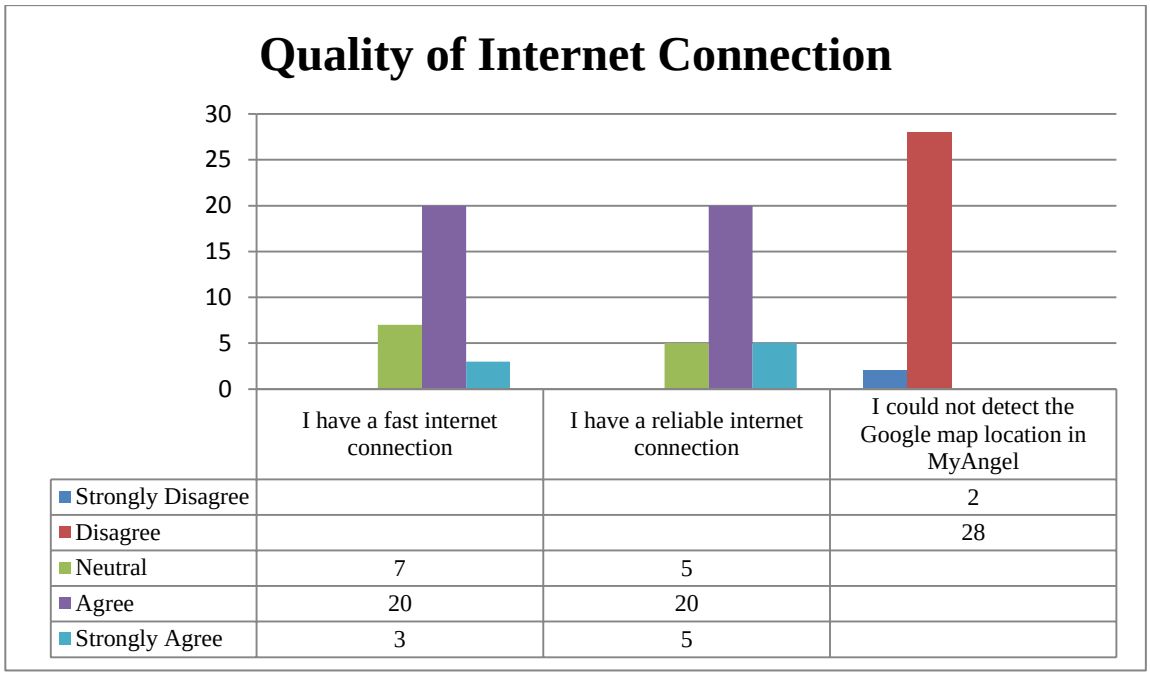
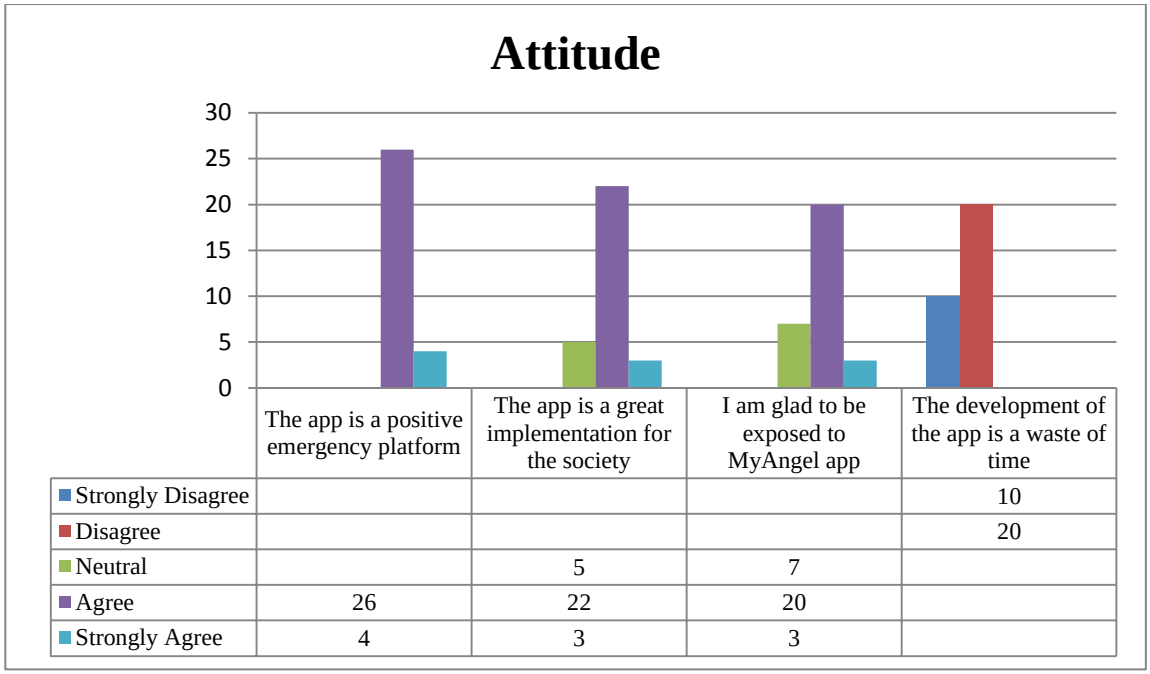


Figure 4.17: The UAT on the quality of internet connection

Most of the respondents are having fast and reliable internet connection, and they are also able to detect the Google map location displayed on the app. Thus, it proves the detection of the location information can be done easily in MyAngel app. However, there are only part of them, 23% and 16.7% who remain neutral on the internet speed and reliability respectively.

4.2.3 Online System Acceptance

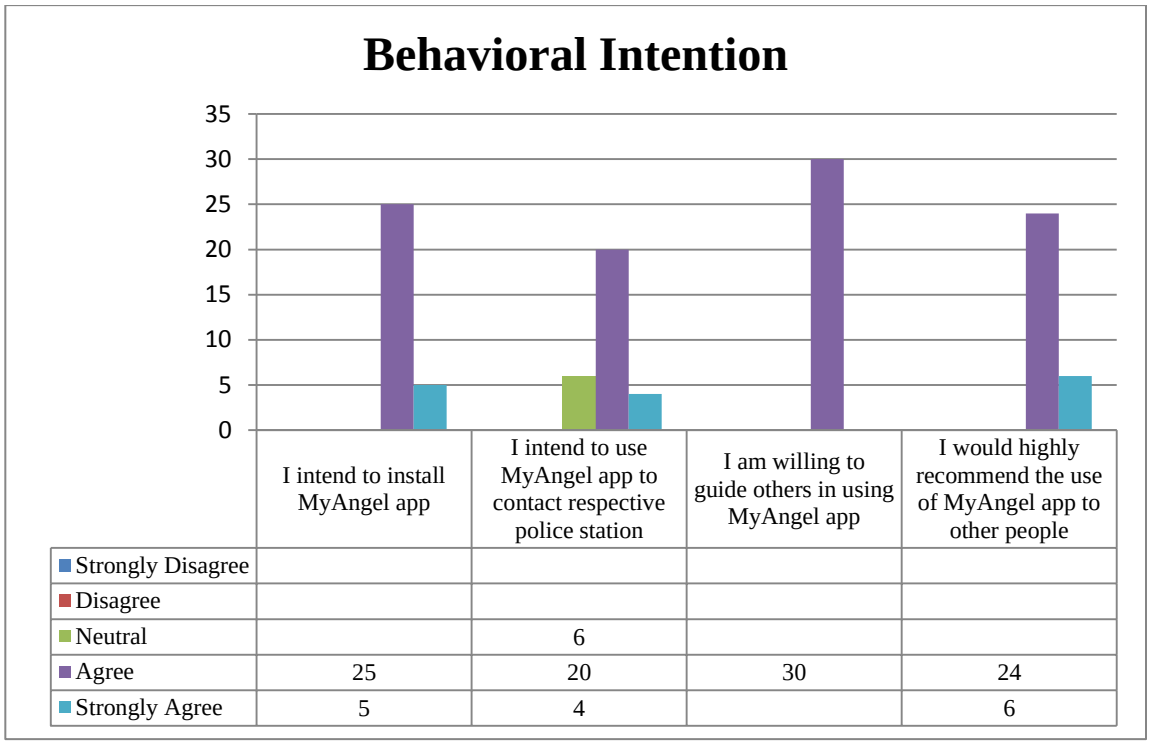
As for this section, the respondents are required to evaluate the statements based on the criteria of attitude and behavioral intention.



	The app is a positive emergency platform	The app is a great implementation for the society	I am glad to be exposed to MyAngel app	The development of the app is a waste of time
Strongly Disagree				10
Disagree				20
Neutral		5	7	
Agree	26	22	20	
Strongly Agree	4	3	3	

Figure 4.18: The UAT on the users' attitude

All the respondents find MyAngel app is a positive emergency platform and 83% of them agree that the app is a great implementation for the society, and the rest of them remain neutral to the statement. Besides, 76.7% of them are glad to be exposed to MyAngel app and the rest of them remain neutral as well. On the other hand, all of the respondents believe that the development of MyAngel app is definitely not a waste time. Thus, the result proves that MyAngel app is definitely an acceptable app for the users.



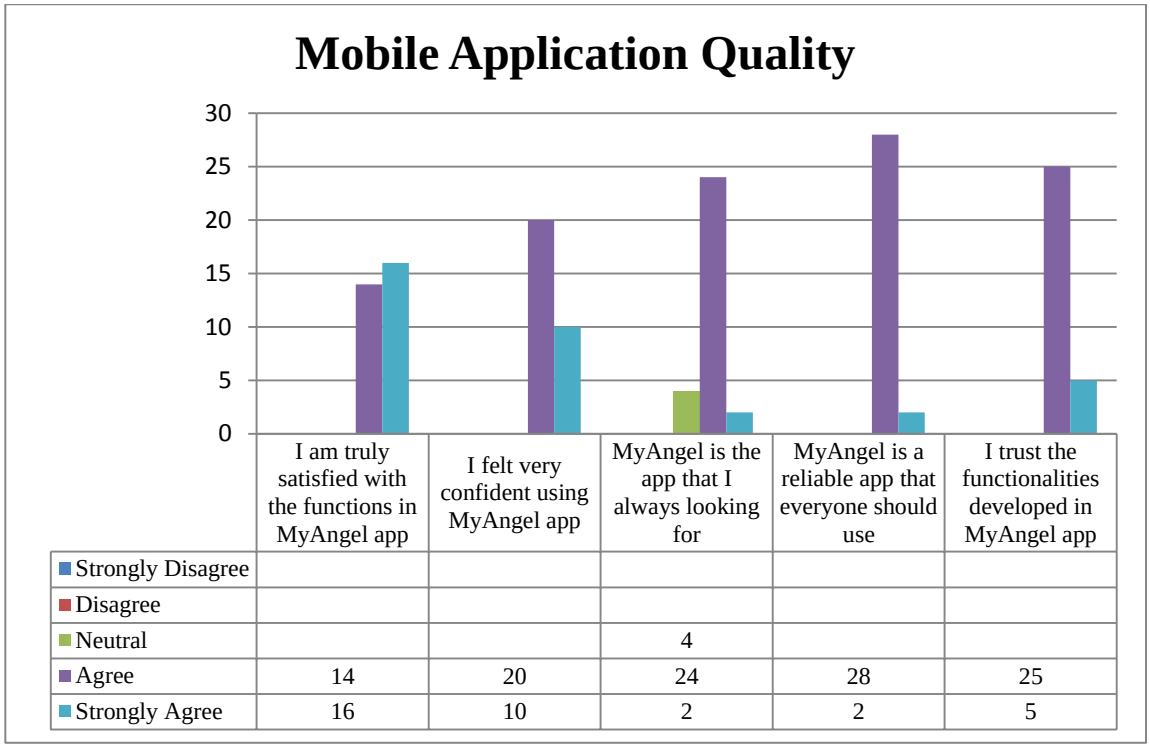
	I intend to install MyAngel app	I intend to use MyAngel app to contact respective police station	I am willing to guide others in using MyAngel app	I would highly recommend the use of MyAngel app to other people
Strongly Disagree				
Disagree				
Neutral		6		
Agree	25	20	30	24
Strongly Agree	5	4		6

Figure 4.19: The UAT on the users' behavioral intention

Based on the result above, all the respondents agree to install MyAngel app in their phone and would recommend and guide people in using it. 80% of them claim that they would utilize MyAngel in contacting the respective police station for reporting cases whereas the rest remain neutral on the statement.

4.2.4 Customer Satisfaction

In his section, the respondents will be performing testing on the mobile application quality which reflects the satisfactory level of the users towards MyAngel app.



	I am truly satisfied with the functions in MyAngel app	I felt very confident using MyAngel app	MyAngel is the app that I always looking for	MyAngel is a reliable app that everyone should use	I trust the functionalities developed in MyAngel app
Strongly Disagree					
Disagree					
Neutral			4		
Agree	14	20	24	28	25
Strongly Agree	16	10	2	2	5

Figure 4.20: The UAT on the mobile application quality

Based on the testing of mobile application quality, all the respondents are truly satisfied and felt confident in using MyAngel app. They also find MyAngel is a reliable app and trust the functionalities in it. 86.7% of them agree that MyAngel is the app that they always look for whereas the rest of them remain neutral to the statement.

4.2.5 Selection of Noise Frequency

In this last section of UAT, the respondents are required to determine the most suitable noise frequency to be produced by MyAngel app. As the over-high frequency might not be audible by all the humans, therefore, 8kHz, 10kHz and 12kHz which belongs to the middle range of high category are being chosen to be tested by the respondents to examine the acceptability of each sound frequency. A sound frequency generator app has been downloaded for playing the noise in this testing.

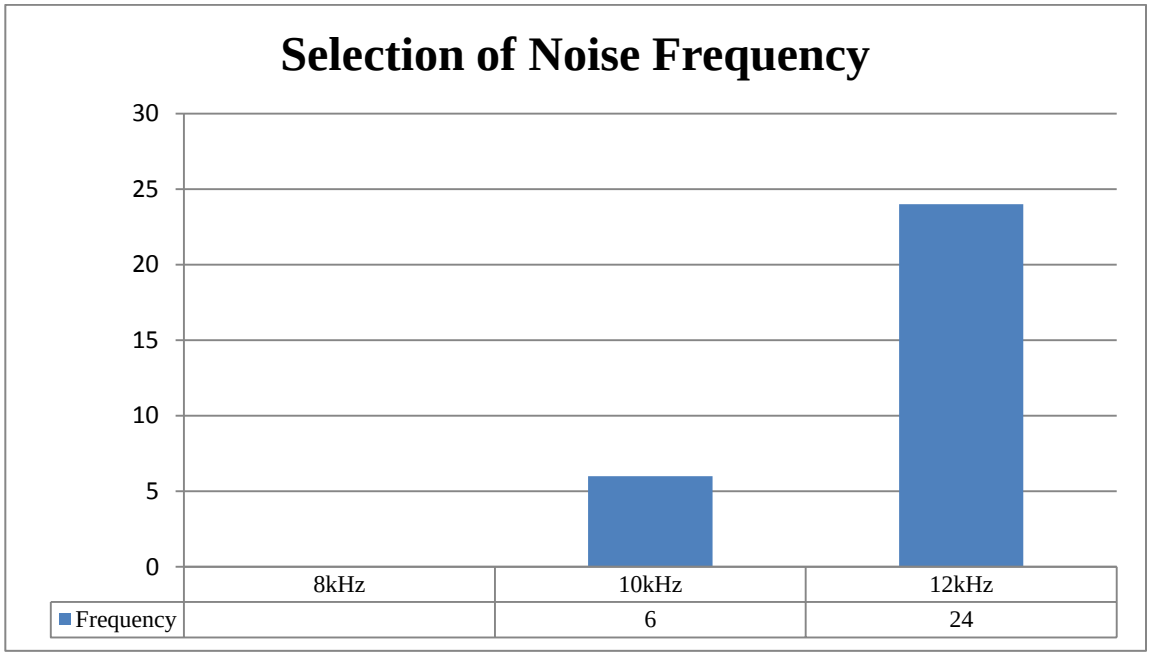


Figure 4.21: The selection of noise frequency by the respondents

Based on the above result, 80% of the respondents have chosen 12kHz as the appropriate noise frequency to be included in MyAngel app whereas 20% of them preferred 10kHz. The difference between the acceptability of noise frequency is based on the respondents' age groups. The higher the frequency, the more difficult it is to be audible by the elderly. Thus, by following the choice from majority, the noise frequency that will be used in MyAngel app is 12kHz.

CHAPTER 5

CONCLUSION & RECOMMENDATION

In conclusion, MyAngel mobile application is proposed in this project to serve the emergency situation especially during the robberies. It carries the valuable functionalities whereby a single-clicked on the emergency button in the app is able to produce high frequency noise to cause annoyance to the robbers, at the same time; the location of the users can be detected and sent over to the pre-set emergency contacts with the recorded location information. Clicking on a button is an easy task to be done. Thus, by using this easy action to perform three significant functions with just a single-clicked, a simple, quick and easy notification method can be achieved. Besides, MyAngel app is also a good assistant in life-saving situation. It is either the robbers will be distracted and probably leave the crime scene or the victims will grab the chance to leave the life-threatening situation before the robbers do so. According to the UAT result from the selected 30 respondents, they have mostly satisfied with the MyAngel's features and functions which can be a life-saving tool to every human. Thus, the developer will be proceeding with the further improvement on the app to achieve better outcome from the implementation.

There are some improvements can be done for future enhancement. The functions of photo taking and video recording are suggested to be included in MyAngel in future. The camera feature is used for snapping the picture of the criminals or crime scene while the video can record the process of committing crime at the allowed situation. Besides, another recommendation to be added in MyAngel is the integration with the house alarm system whereby MyAngel is served as a remote alarm control. Once the activation button is on, the house alarm will be activated and this function is able to scare the

criminals away from the crime scene as the loud sound produced has already grabbed the attention of people nearby. Therefore, the implementation of MyAngel can contribute for personal safety and helps lower the likelihood of injury. Last but not least, the users have also recommended to allowing them in selecting the noise frequency based on self-preference and also to notify the emergency contacts that are only staying within a short distance from them instead of all the ten contacts are being informed with the dangerous situation. This is to avoid extra inconvenience caused as the rescuers from miles away would not be able to provide immediate help during the life-threatening situation.

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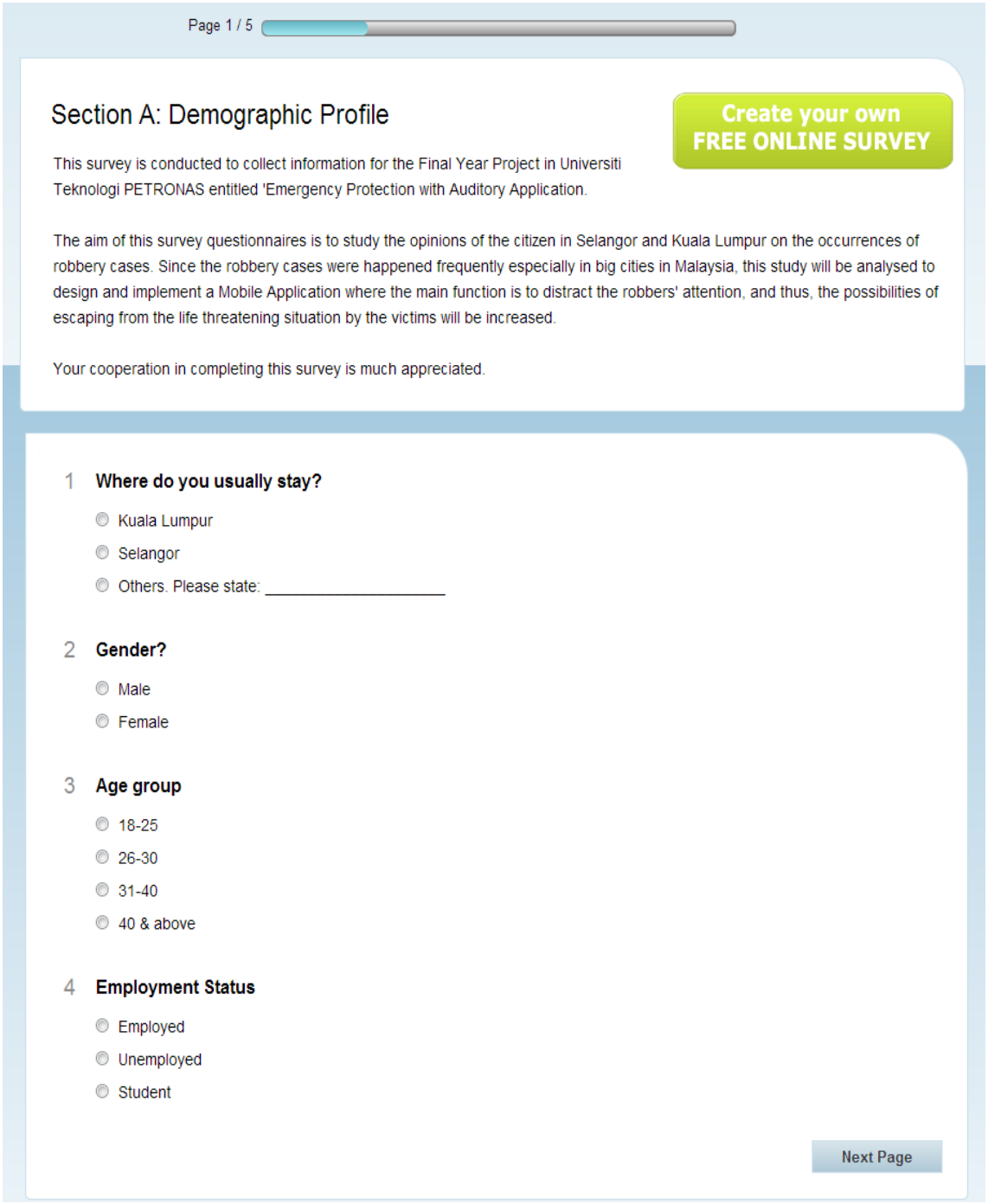
APPENDIX A

Pre-survey Questionnaires



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Section A: Demographic Profile

This survey is conducted to collect information for the Final Year Project in Universiti Teknologi PETRONAS entitled 'Emergency Protection with Auditory Application.

The aim of this survey questionnaires is to study the opinions of the citizen in Selangor and Kuala Lumpur on the occurrences of robbery cases. Since the robbery cases were happened frequently especially in big cities in Malaysia, this study will be analysed to design and implement a Mobile Application where the main function is to distract the robbers' attention, and thus, the possibilities of escaping from the life threatening situation by the victims will be increased.

Your cooperation in completing this survey is much appreciated.

1 **Where do you usually stay?**

- Kuala Lumpur
- Selangor
- Others. Please state: _____

2 **Gender?**

- Male
- Female

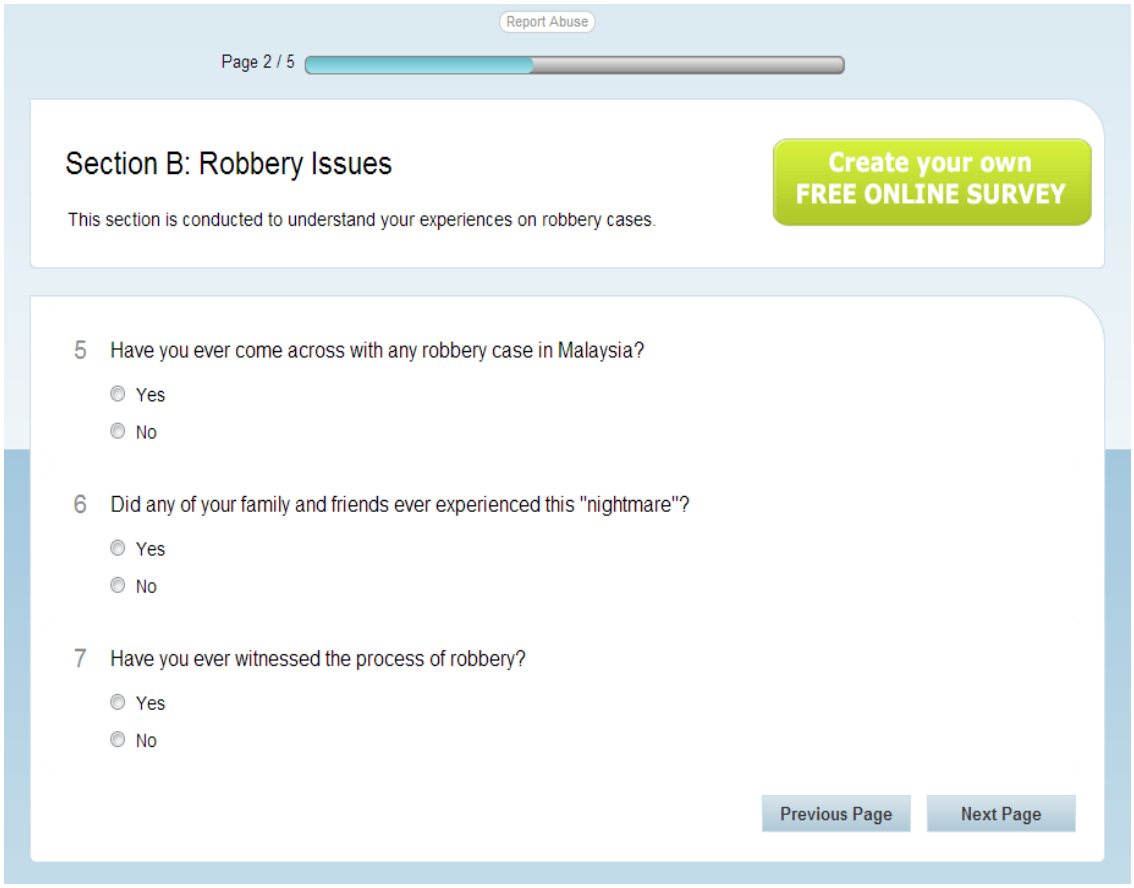
3 **Age group**

- 18-25
- 26-30
- 31-40
- 40 & above

4 **Employment Status**

- Employed
- Unemployed
- Student

Next Page


Report Abuse
Page 2 / 5
Section B: Robbery Issues
This section is conducted to understand your experiences on robbery cases.
Create your own
FREE ONLINE SURVEY
5 Have you ever come across with any robbery case in Malaysia?
Yes
No
6 Did any of your family and friends ever experienced this "nightmare"?
Yes
No
7 Have you ever witnessed the process of robbery?
Yes
No
Previous Page
Next Page

Report Abuse

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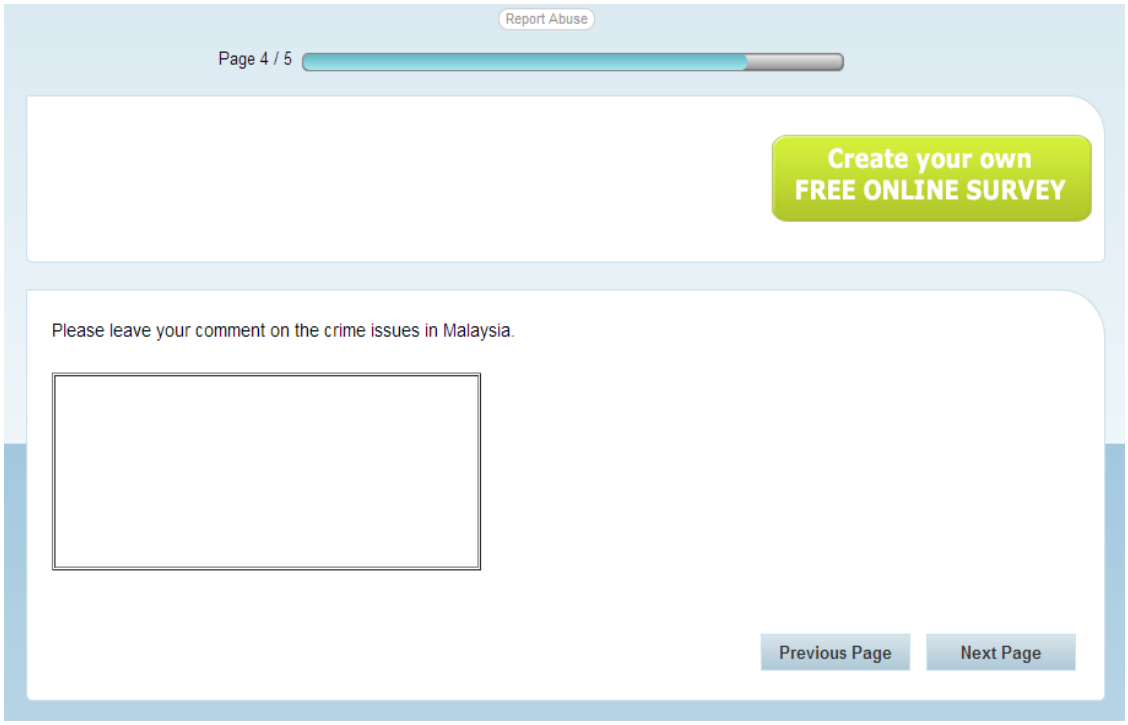
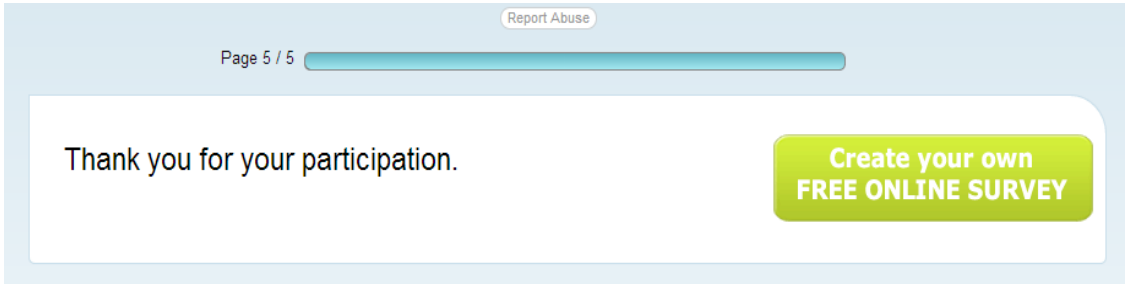
8 Based on your opinions, please state the extent to which you agree with the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Malaysia's robbery cases has reached at very worrying level	○	○	○	○	○
In my opinion, during the critical emergency moment, family members are my potential helpers whom I will seek for help.	○	○	○	○	○
In my opinion, during the critical emergency moment, friends are my potential helpers whom I will seek for help.	○	○	○	○	○
In my opinion, during the critical emergency moment, mobile phone (smartphone) can be the most important tool to protect myself from danger.	○	○	○	○	○
I am aware of robbery possibilities in my surrounding area.	○	○	○	○	○
I am satisfied with the current crime prevention program in Malaysia.	○	○	○	○	○
I would be glad if there is a mobile application designed for getting immediate help during the occurrence of robbery.	○	○	○	○	○
I would be glad if there is a mobile application designed for distracting the robbers' attention so as to protect myself from danger.	○	○	○	○	○

Previous Page Next Page


Report Abuse
Page 4 / 5
Create your own
FREE ONLINE SURVEY
Please leave your comment on the crime issues in Malaysia.
Previous Page
Next Page


Report Abuse
Page 5 / 5
Thank you for your participation.
Create your own
FREE ONLINE SURVEY

APPENDIX B

User Acceptance Testing (UAT) Questionnaires

Questionnaire ID #_____

Respected Sir/Madam,

This survey is conducted to collect information for the Final Year Project in Universiti Teknologi PETRONAS entitled 'An Auditory Mobile Application with Location-based Service for emergency.

The aim of these survey questionnaires is to investigate the robbery issues in Selangor and Kuala Lumpur. Since the robbery cases were happened frequently especially in big cities in Malaysia, it will help us to design, analyzed and implement a Mobile Application called MyAngel where the main function is to distract the robbers' attention by producing high frequency noise. Thus, the possibilities of escaping from the life threatening situation by the victims will be increased. Besides, the location of the victims will also be tracked and displayed in an emergency message which will be sent to the pre-set emergency contact number.

Therefore, a mobile application prototype of MyAngel will be demonstrated to examine the system performance.

Your cooperation in completing this survey is much appreciated.

Yours truly,
Undergraduate Student
Universiti Teknologi PETRONAS
Bandar Seri Iskandar, 31750 Tronoh, Perak.

Respondent General Questions:

Please fill/tick (√) the following with appropriate answer.		
Gender	□ Male	□ Female
Age	□ Under 20 years □ 20-25 years □ 26-30 years	□ 31-35 years □ 36-40 years □ Above 40 years
State	□ Selangor	□ Kuala Lumpur
Employment Status	□ Employed □ Student	□ Unemployed

Have you ever experienced with any robbery case in Malaysia?	□ Yes	□ No
Did any of your family and friends ever experience this "nightmare"?	□ Yes	□ No
Malaysia's robbery cases have reached at very worrying level	□ Yes	□ No
In my opinion, during the critical emergency moment, mobile phone (smartphone) can be the most important tool to protect myself from danger.	□ Yes	□ No
I am satisfied with the current crime prevention program in Malaysia.	□ Yes	□ No
I would be glad if there is a mobile application designed for getting immediate help during the occurrence of robbery.	□ Yes	□ No
I would be glad if there is a mobile application designed for distracting the robbers' attention so as to protect myself from danger.	□ Yes	□ No

A. Social Factors:

In this section, the respondents are required to examine the statements below based on the self-perception on the demonstrated mobile application prototype. Please indicate and mark at the boxes with appropriate number on the level of agreement based on the given scale:

1) Perceived Usefulness:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I think this MyAngel is a very useful tool to be used during emergency such as robbery.					
I like MyAngel is because of its single click action which can perform three important functions					
MyAngel is the life-saving tool that I am looking forward to install.					
MyAngel is more useful than the conventional notification method.					

The concept of noise in MyAngel is a useful mechanism that people should utilize it during emergency.					

2) Perceived User-friendliness:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I think MyAngel is a very user-friendly mobile application.					
I could imagine that the users of MyAngel would learn to operate it in a very short time.					
I believe MyAngel can achieve its intended function within three clicks away.					
The 'about' page in MyAngel is able to explain clearly regarding the various functionalities and steps to use it.					
I find the functions provided in MyAngel are very efficient to be used during emergency.					

3) Perceived Usability:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I foresee I would use MyAngel during emergency such as robbery.					
I find the various functions in MyAngel were well-integrated.					
I feel MyAngel could definitely assist people during robbery.					
I perceive the noise concept in MyAngel could distract the robbers' attention and provide the escaping chances for the victims.					
I believe the location-based service in MyAngel is a very good function where the emergency contact would know the place to save the victims.					

4) Perceived Navigation:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I feel the location information displayed in MyAngel app could easily track the location of the victim(s).					
I believe the current location coordinates detected by MyAngel is accurate.					
I find the current location address detected by MyAngel is accurate.					
I believe the current Google map location detected by MyAngel is accurate.					
I find the integration of location coordinates; address and map in MyAngel app would effectively assist the victim(s) and the rescuer(s) for finding directions easily.					

5) Perceived Ease of Time:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
By using MyAngel app, I find it has effectively saved some times in escaping and rescuing during the occurrence of robbery.					
MyAngel app is much faster to be used as compared to the conventional method of making a telephone call.					
MyAngel is an emergency device that can quickly detect the location of the victim.					
MyAngel is a notification tool that can quickly inform the saver about the location of the life-threatening situation.					
MyAngel is a high frequency noise player whereby the noise can be quickly produced.					

B. Technological Factors:

1. Availability of Information:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I manage to detect the available location information in MyAngel app.					
I can easily access the available contact information on all the police stations in Selangor and Kuala Lumpur in MyAngel app.					
The location information detected by MyAngel app is insufficient for the rescuer(s) to reach the victim(s)' exact location.					

2. Quality of internet connection:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I am having a fast internet connection.					
I am having a reliable internet connection					
The internet connection I am using could not detect the Google map location in MyAngel app.					

C. Online System Acceptance:

1. Attitude:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
MyAngel app is a positive emergency platform for all the users.					
I believe MyAngel app is a great implementation for the society.					
I am glad to be exposed to MyAngel app.					

I feel the development of MyAngel app is a waste of time.					

2. Behavioral Intention:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I intend to install MyAngel app in my mobile phone and use it during emergency.					
I intend to use MyAngel app to contact the respective police station for reporting cases.					
I am willing to guide other people in using MyAngel.					
I would highly recommend the use of MyAngel to other people.					

D. Customer Satisfaction:

1. User Satisfaction:

Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Overall, I am truly satisfied with the functions provided in MyAngel app					
I felt very confident using MyAngel app.					
MyAngel is the mobile application that I am always looking for.					
I think MyAngel is a reliable mobile application that everyone should have one.					
I trust the functionalities developed in MyAngel.					

E. Selection of Noise Frequency:

In this section, the respondents are required to determine the most suitable noise frequency to be produced by MyAngel. Therefore, three types of frequency, 8000Hz, 10000Hz and 12000Hz will be played one after another for allowing the respondents to examine the acceptability of each frequency.

Please tick (√) the following frequency based on self- decision.			
Frequency	□ 8000Hz	□ 10000Hz	□ 12000Hz