MYFood: Mobile Malaysian Food Journal

By

Fatin Ghazi

Dissertation submitted in partial fulfilment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information Systems)

Septemeber 2012

Universiti Teknologi PETRONAS
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CERTIFICATION OF APPROVAL

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Approved by,

_____

(Miss Ainol Rahmah Shazi binti Sharaani)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
September 2012

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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FATIN GHAZI

ABSTRACT

Food is a necessity for man. For many years, individuals have grown to appreciate and become more passionate for the ideal gastronomic experience. Malaysians, in particular, take their cuisines very seriously. Whether it is over local or abroad dining experiences, food journaling has been practiced for quite some time. From common methods of blogging, sharing on social networks and photography, individuals have learned to take technological opportunity in leveraging food journalism techniques. However, current existing mobile food journal applications in the market are not only limited in number, but also lack comprehensiveness. This study is focused on addressing the aforementioned concern, while aiming to improve mobile food journalism techniques with the aid of MYFood application. In doing so, prior researches on food journalism, Android technology and Malaysian food & culture were also conducted to give a better understanding on market situations as well as user requirements. Throughout the process of achieving the project's objectives, Rapid Application Development (RAD) methodology was used as it allowed for an iterative approach and integrates customer response for project implementation. MYFood is targeted at technologically inclined food-lovers of any ethnicity background, which offers documentation medium of texts, images and video, aside from added social network sharing as well as location navigation functions. Developed on Android OS, the application is hoped to cater to a wide audience, from within and outside of Malaysia. Findings of this study successfully validated the initial hypothesis: comprehensive mobile food journal applications help improve users' mobile food journalism techniques.

ACKNOWLEDGEMENT

First and foremost, I would like to express my greatest gratitude to the Almighty Allah S.W.T for bestowing upon me endurance and persistence to complete this Final Year Project. My deep appreciation and thanks I owe to my parents and family members for their endless support and encouragement.

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Endless thanks to my friends – Deena, Izzah and Hafsah – for helping me make it through. Could not have done it without the support and patience you provided. Not to forget, my thanks also goes out to everyone else who have helped me directly and indirectly until this project reached its end.

May Allah SWT repay all good deeds generously.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Food is a necessity to man - without food, man cannot survive. There are numerous types of delicacies suited for many kinds of cultures and taste buds. Some consume according to the climate, while several others depend on geographic location. It all relates to tradition and suitability. Consequently, over centuries, particular nations are identified with the food they eat; Italians with their pizza, Japanese with their sushi, Americans with their burgers and so on. Not only that, as cultures cross continents, fusion food is also created and simultaneously encourages diversity as well as unity between nations.

For many years, people have seen food for more than what it was. It is now an art, a passion. Culinary teachings have progressed, causing more detail and appreciation for what is served on a plate. Hence, some food-lovers take the liberty to document their consumption - just so that they can remember the taste and authenticity of a dish. From traditional to current methods of food journalism, man's craze has taught them to share their gastronomic experiences with one another.

MYFood: Mobile Malaysian Food Journal intends on documenting one's Malaysian food experiences via mobile application. Targeted at technologically inclined food-lovers of any ethnicity background, MYFood offers documentation medium of texts, images and video, aside from added social network sharing and location navigation functions. Developed on Android OS, MYFood is hoped to cater to a wide audience, from within and outside of Malaysia.

1.2 Problem Statement

As a country rich in cultural and ethnicity diversity, Malaysians are very proud of the food variety they have to offer. Very often, Malaysians are seen snapping photos of their meals at restaurants, blogging about food reviews, sharing new café locations via social networks, etc. However, existing mobile food journal applications in the market are limited not only in terms of function, but also quantity. This research raises the question of how can we provide a more comprehensive approach for improving mobile food journalism techniques?

1.3 Aim & Objectives

The objectives of this project are as follow:

1. To conduct research on existing mobile food journal applications in the market and food journalism requirements
2. To design and develop a comprehensive mobile food journal application
3. To evaluate user's perception on the developed application

1.4 Scope of Study

The study is focused on developing a mobile application which behaves as a Malaysian food journal for food-lovers in general. In doing so, several aspects of research need to be conducted.

1.4.1 Food Journalism

Since MYFood application is primarily focused on food journalism, therefore it is important to understand the behaviour and requirements of food journalists. When documenting food experiences, what do they take into account and how. Here, the identification of contents to be included into the application is crucial as it could potentially leverage one’s mobile food journalism techniques.

1.4.2 Android Technology

As the application is developed on Android platform, it is crucial to understand the workings of this technology – how to develop the application and what is suitable for the market. For MYFood application, there are two main aspects to be looked into: basic functions and added features. The former includes fundamental required functions of saving, editing and deleting journal entries. While, the latter is focused on incorporating multimedia integration, location sensor & navigation and social network sharing.

1.4.3 Malaysian Food and Culture

For providing an application to document Malaysian food experiences, the Malaysian food culture and heritage must first be understood. The racial diversity in the the country has created a mix of cuisines, ranging from multiple backgrounds and taste. Therefore, it is vital to include these authenticities and uniqueness in capturing the user's food experiences.

1.5 Relevancy of Project

In reference to section 1.2, MYFood: Mobile Malaysian Food Journal serves as a solution to the previously discussed problem – current mobile food journals in the market are not comprehensive enough. Hence, by researching this domain, mobile food journalism techniques can potentially be improved with reduced time and cost.

1.6 Feasibility

MYFood needs to be completed according to the budgeted time frame. It was provided that research and development of the system be completed in two semesters. During the first semester, the allocated time focused mainly on planning and research processes, where efforts were more towards research and writing the report. Studies on analysis and requirements for the application were to ensure that the designated scope is feasible to the users. While, throughout the second semester, activities of refining research, development and testing were conducted.

CHAPTER 2

LITERATURE REVIEW

2.1 Malaysian Food Culture

The Malaysian population is built on ethnic diversity; inheriting ancestral norms, culture native language and culinary heritage that is being practiced until today. In due course, the ethnic integration formed a unique Malaysian culture. The 'multiculturalism' among the different races produced a distinctive cuisine of Malaysia - described as "Asia's greatest cuisines meet and mingle" - that behaved as a basis to forming and shaping the dishes which are apparently accepted by people from all walks of life in the country (Hutton, 2005). Culinary practices had gradually changed over the years due to respect for each other's cultural and religious sensitivity. Consequently, intercultural culinary practices became evident. This can be seen in the usage of Malay and Indian spices in Chinese food and the creation of halal versions of Chinese food, which are consumable to all races. This also had significantly contributed to the variety of distinct cuisines in Malaysia (Leong, Q. L., et al). Malaysians take pride in sharing their food, whether with locals or foreigners. It is perceived as an act of hospitality and the need to impart satisfaction from the offerings to the receiver. In a study on relationships between Malaysian food image, tourist satisfaction and behavioural intention, it was found that responses on the dimension of satisfaction were positively skewed. Respondents, consisting of tourists, agreed that Malaysian food contributes to the quality of their visiting experience and enjoyment as well as eating pleasure. Based on the results, it can be derived that Malaysian food played an important role in conveying a memorable and positive image of Malaysia as a tourism destination.

2.2 Rise of Mobile Technology and Android Operating System

At present, the use of mobile devices is no longer restricted to voice communication. Instead, it now mobilizes a broad field of information and communication technologies, which were once only applicable for desktop computers. Instant messaging, social networking and classical information systems are made available almost everywhere at any time via more and more powerful devices (Höpfner, Pencke, Wiesner, & Schirmer, 2011). According to the International Data Corporation (IDC), 157.8 million smartphones were sold worldwide in the fourth quarter of 2011, bringing the total for the year to 491.4 million units. In addition, even from the previous year, sales of smartphones have already exceeded that of PCs, by 8.8 million units. Abundant statistics have shown that mobile devices are taking over the computer market with rapid growth in not only sales, but also technology.

Android, introduced by Google, is currently the leading smartphone operating system. Regarded as open-source, the original source code of an application is made freely available and may be redistributed with or without modification (Google Inc, 2011). Based on an analysis by Gartner, an information technology research and advisory company, in 2011 worldwide sales of Android smartphones dominated the market share with 50.9%, followed by iOs (23.8%), Symbian (11.7%), RIM (8.8%), Bada (2.1%), Microsoft (1.9%) and others (0.8%). Figure 1 illustrates Android as the world's leading mobile device operating system. Additionally, according to Andy Rubin of Google, there are over 850,000 Android devices activated every day, as of February 2012.

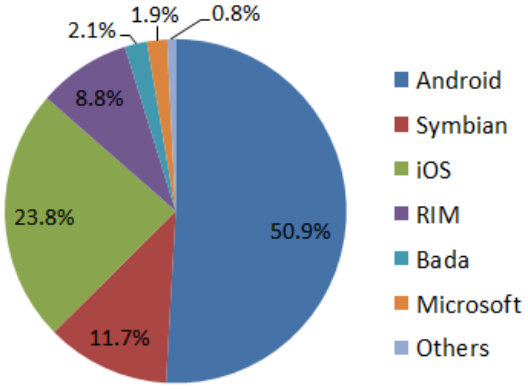


Figure 2.1: Global Smartphone Sales 2011 (Gartner, 2011)

2.3 Native Applications vs. Web Applications

A mobile application is software written for mobile devices that performs a specific task, such as a game, calendar, music player, etc. Currently, there are two types of mobile applications: Web app and native app. According to Global Intelligence Alliance (GIA), a Web app, or browser application is one in which all or some parts of the software are downloaded from the Web each time it is run. It is usually accessed from all Web-capable mobile devices. While a native app can be defined as one that is specifically designed to run on a device's operating system and machine firmware, and typically needs to be adapted for different devices (mobiThinking, n.d.).

It is subjective as to whether Web apps or native apps impose more benefits. . In a study conducted by mobiThinking on businesses which had created both Web apps and native apps, it can be derived that Web applications primarily offer advantages to developers. In terms of cost, it was found that over half of the survey respondents stated that Web apps are both cheaper and faster to develop and maintain. While 23% claimed cost savings of more than 100% compared to native apps and 40% say that development of a Web app will be weeks quicker. Since Web technology has long been introduced to the market, there are far more skilled Web developers readily available as compared to native language developers, i.e iPhone's Objective-C. Web apps also run on common browsers. Unlike native apps which are specialized for significant mobile operating systems, Web apps provide a standardized platform that is available and accessible to all Web-enabled smartphones.

Native apps on the other hand, also have its advantages. In the same study conducted by mobiThinking, findings have proven that twice as many publishers saw higher user adoption, usage volume and user engagement (i.e. duration of usage per session) over native apps. In particular 30% of these publishers actually saw over 100% higher usage volume and engagement on native apps as compared to Web apps. The study also found that native apps deliver a higher click-through rate (CTR) among the ad-serving publishers, although experiences can vary by company and content category.

On a consumer's perspective however, it was found that Web apps restrict usage. Provided that application access constantly requires internet connection, issues of cost and availability become a concern. Although Web apps promote ample benefits for developers, it is fundamental to prioritize on the end user's needs. As seen in Figure 2, developers are focused on largely building native apps.

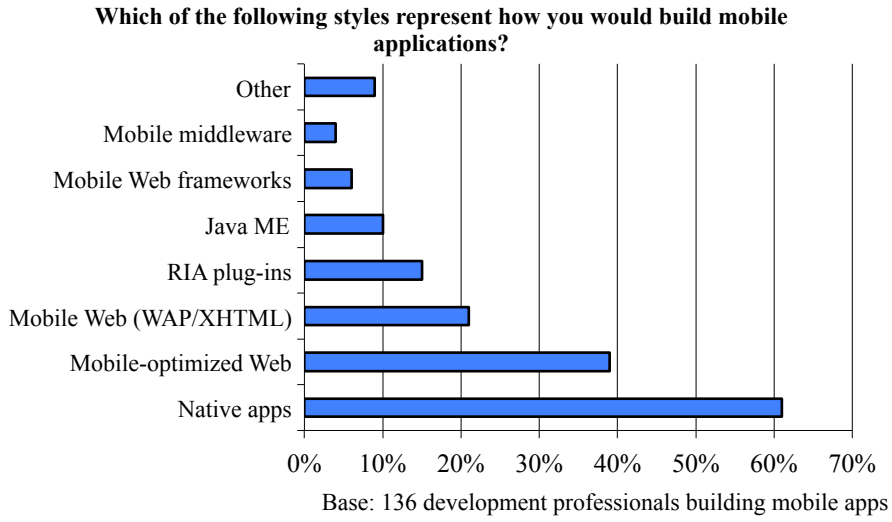


Figure 2.2: Styles of Building Mobile Applications (Forrester, 2010)

Currently, there are also more and more development tools which simplify native app development. It can be countered that only web app development is advantageous for developers. Now, not only are existing native app builders suited for amateur programmers, but also non-programmers - advantage also for developers in building native apps. With ready templates or drag and drop functions, it saves developers the trouble of mastering programming languages.

App Inventor is a new tool in Google Labs that makes it easy for anyone - programmers and non-programmers, professionals and students - to create mobile applications for Android-powered devices. As the leading current app builder, App Inventor has stirred up the mobile app market. Since developers can now range from just about anyone, total number of Android apps in the market has also greatly increased.

2.4 Social Media Growth, Advantages and Disadvantages

Social media can be defined as interactive forms of media that allow users to interact with and publish to each other, generally by means of the Internet (Wiktionary, n.d.). As more and more users convert to mobile device usage, the numbers of social network communities begin to expand. Current popular forms of social media include twitter, facebook, tumblr, instagram and pintrest, with twitter leading the pack (Hepburn, A. 2012). It was also found that on average in one year, individuals will share 415 pieces of content on Facebook, spend an average of about 23 minutes a day on Twitter, tweeting a total of around 15,795 tweets, check in 563 times on Foursquare, upload 196 hours of video on YouTube, and send countless of emails (Pring, C. 2012).

With such rapid and wide expansion, social media also imposes several advantages and disadvantages. On the plus side, lower costs are incurred – for personal and business purposes. While personal use is rather simple, business functions can be much leveraged too. For this intention, expenditures can be trimmed by advertising and identifying potential customer on social networks as well as performing market analysis on their preferences. Benefits also include building credibility via gaining the customers' confidence, applicable by connecting with customers on both a personal and professional level. In addition, connections are undeniably achievable with social media. However, disadvantages include lack of anonymity, scams and harassment, and time consumption. By displaying personal information over the internet, anonymity is very much condensed. With that, the probability of being exposed to scams and harassments also escalate as your private records are easily accessible by others. Security measures and precaution should seriously be taken in overcoming the concern. Furthermore, a lot of time is taken up by constantly being on social media. With large social circles and multiple functions, users tend to get addicted for long durations (everyday-wisdom.org, n.d.).

2.5 Technologies and Food Documenting

In 1825, the French philosopher and gourmand Jean Anthelme Brillat-Savarin wrote, “Tell me what you eat, and I will tell you what you are.” Today, people are often sharing their food experiences with the world, revealing more about themselves merely by doing so. Kathryn Zerbe, a psychiatrist who specializes in eating disorders and food fixations at Oregon Health and Science University in Portland, also stated that “In the unconscious mind, food equals love because food is our deepest and earliest connection with our caretaker. So it makes sense that people would want to capture, collect, catalogue, brag about and show off their food.” (Murphy, K. 2010).

For a long time, man’s passion and interest towards food has taught them to document their eating experiences. From traditional conducts of collecting wrappers to handwriting into journals, food documenting methods too have greatly progressed. Technological opportunity has provided individuals with a platform to leverage and expand their initial methods, while staying true to the major purpose. Keeping a photographic food diary is a growing phenomenon (Murphy, K. 2010). According to Tara Kirchner, marketing director of Flickr, the number of pictures tagged “food” on the photo-sharing website has increased tenfold to more than six million in the last two years. One of the largest and most active Flickr groups, called “I Ate This,” includes more than 300,000 photos, contributed by more than 19,000 members. The same phenomena can be found on other sites like Twitter, Facebook, MySpace, Foodspotting, Shutterfly, Chowhound and FoodCandy. While in October 2012, #food on twitter was ranked at 33rd position in twitter’s Top 100 Tags with 13,175,897 photos, validating the popularity of posts on food.

Within the last four years, manufacturers, Nikon, Olympus, Sony and Fuji have released cameras with special “food” or “cuisine” modes, costing approximately $200 to $600. Terry Sullivan, associate editor of digital imaging technologies at Consumer Reports, stated that “These functions enable close-up shots with enhanced sharpness and saturation so the food colours and textures really pop.”

2.6 Existing Food Journal Applications in the Market

Existing food journal applications in the market are largely focused on improving health. Method of consumption documenting assists in keeping track of calorie intake, identifying suitable diets and monitoring general health. Aside from that, added functions of exercise schedule and health consultation also enable users to maintain their fitness. As of 11th October 2012, it was found that 12,320 health and lifestyle applications existed in the market, with fair average ratings of 3.8/5.0 (AppBrain, 2012). One of the leading health food journal applications, Calorie Counter, assists in weight-loss by calculating calorie intakes according to the user's food diary. The application was also awarded PC Magazine Editor's Choice Selection and Wired Magazine's Editor's Pick for Lifestyle Apps. Several food journals specifically for food-lovers also exist in the market. These applications enable users to rate their food experiences and share them via social networks. Ranking 5th in the Android market category, lifestyle applications, totalling 34,895, have an average rating of 4.0/5.0 (AppBrain, 2012). Food, a leading food journaling application, enables foodies to keep track of their tasting notes and ratings as well as "sharing" them online. Another form of food journaling application is for babies - focused on recording baby's intake, daily activities, health checks, etc. For this category, MomnMom baby is one of the leading applications. Further comparisons between existing leisure based food journal applications in the market will be discussed in section 4.3 of this report.

CHAPTER 3

METHODOLOGY

Research methodology refers to a set of procedures used to conduct a research project. The following sections will discuss the development of MYFood according to phases of the System Development Life Cycle (SDLC).

3.1 System Development Methodology

MYFood was developed using Rapid Application Development (RAD) as minimal planning was required in favour of rapid prototyping. Planning activities of the software were interleaved with writing the software itself. The lack of extensive pre-planning also generally saved time and allowed the software to be written much faster, making it easier to change requirements.

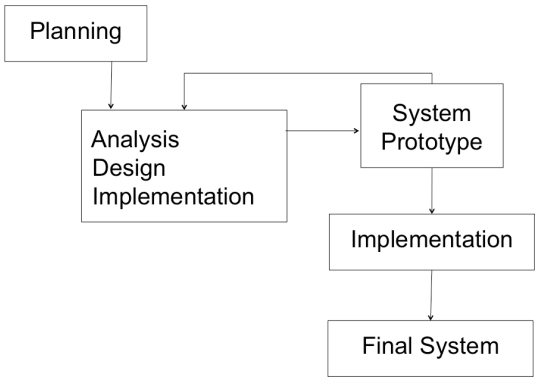


Figure 3.1: Rapid Application Development (RAD) Model

RAD was also selected for the development of MYFood as it promotes dynamic gathering of requirements and very strong collaborative atmosphere. Users, in this case journaling food-lovers, were involved in the development and assisted in ensuring that the application was catered to their needs. Participation of user was

essential as RAD may require the prototype to be revised from time to time. Phases in this project were be planning, analysis, design and implementation.

3.1.1 Planning

Planning phase establishes a high-level view of the intended project and determines its goals. This phase aims at giving a better understanding on the current market and technologies. In doing so, qualitative research was conducted. Reviews from journals, research papers and internet sites were done in strengthening the knowledge on the subject matter. The main resources of journals and research papers came from ACM, provided by UTP Information Resource Centre (IRC), and IEEE website www.IEEE.org. Once the fundamental research activities were done, a Gantt chart was developed to align tasks with the project timeline. This was to ensure sufficient allocation of time was given for specific task and that the project could be completed within the prearranged duration.

In obtaining further food journaling information, informal interviews were carried out on food-lovers. Basic requirements on methods of documentation were identified, which also gave insight on the fundamental requirements for MYFood application. Research on existing food journal applications in the market was conducted as well. Further comparisons will be discussed in Section 4.3 of this report.

While, for the development of MYFood application, interviews were conducted to get better understanding and familiarization with the Android environment. Interviewees comprised of experienced software developers Daniel Burtscher and Peter Treitler from University of Technology, Graz, Austria. Interviews were conducted by means of instant messenger and e-mail.

3.1.2 Analysis

Post to planning activities, analysis was conducted in order to validate each activity and improve areas which require so. During the analysis phase, several steps were taken into consideration.

- Interview and surveys were done and distributed to gather information on food-lover journaling requirements.

- User reviews on existing applications in the market were taken into consideration prior to defining requirements.
- Comparisons between available functions on travel and food journal applications were conducted.
- Reviews on existing journal application interfaces were analyzed for improvement of implementation.

3.1.3 Design

Design phase translates previously implemented phases of planning and analysis into graphical user interface (GUI), conceptual design and system architecture representation. This phase is crucial as it has to be in accordance to user requirements.

Graphical User Interface (GUI)

GUI behaves as a medium of communication between the application and user. Therefore, it is fundamental that the GUI of MYFood application not only fulfils aesthetic aspects, but also practicality concerns. For this purpose, the paper-based GUI prototype was developed and evaluated by end users. Feedbacks were then retrieved and continually improved for design purposes.

Conceptual Design

Conceptual design refers to application logic creation via means of UML diagrams. For the development of MYFood application, use case diagrams and flowcharts were constructed. Use cases served to illustrate the functionality of the software system, while flowcharts depicted the logic and action sequence of the application. Microsoft Powerpoint 2007 was used for developing the UML diagrams.

System Architecture

MYFood is a standalone application with integration of a database. The database is used to store and retrieve food journals as input from users. TinyDB is used on AppInventor to ensure that data is securely stored even after exiting the application. This is depicted in Figure 3.2.

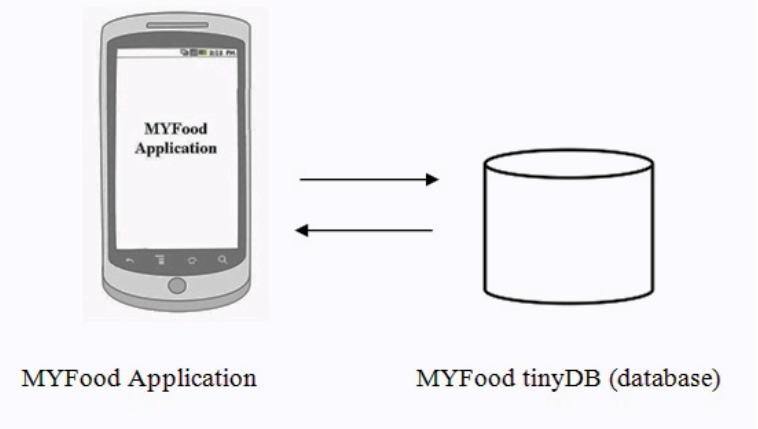


Figure 3.2: MYFood system architecture

3.1.4 Implementation

The implementation phase involves activities of physically developing and testing the application before delivery to users. Once delivered, feedbacks were taken into account for improvement on enhancing the prototype into the completed version. This phase largely involved the technical aspect of coding with AppInventor. Tools required were Adobe Photoshop, AppInventor, Chrome browser, personal computer and Android supported device.

3.2 Project Activities

Preliminary stages of project development were mainly focused on research and data acquisition activities. These comprised of two forms: quantitative and qualitative methods. For the former, research was conducted in order to get a better understanding on the current market situation via journals, research papers and internet sites. Interviews with Android developers were also done to get a clearer idea on the Android development environment. Additionally, in attaining the basic views of food-lovers in today's journaling methods, informal interviews or conversations were also carried out. While, for the latter, surveys and questionnaires were performed in determining the feasibility of the concept and user expected functionalities. Once sufficient data and research were obtained, application development commenced.

3.2.1 Literature review

Literature review was done in order to get a clearer understanding on the current market situation. Findings from journals, research papers and internet sites signified elements to be identified and improved. Reviews were in accordance to the research element and derived findings behaved as a solution contributor to the identified problem. For MYFood application, related literature was focused on Android mobile applications, journaling and Malaysian heritage.

3.2.2 Survey and Questionnaire

A survey was conducted for the purpose of supporting the initial hypothesis set out for the project – it is to validate the accuracy of an intended outcome. Outcomes from the survey then contributed greatly to the general development of the application. Questionnaires were created and distributed to 30 respondents over a week.

3.2.3 Interview and Discussion

Interviews are carried out to get first-hand input from those more experienced in their respective fields. For the development of Android applications, the author was fortunate to obtain input from experienced software developers Daniel Burtscher and Peter Treitler from University of Technology, Graz, Austria. Whereas, as an introduction to getting basic understanding on food-lovers' journaling behaviours, informal interviews were also carried out. This is especially important in identifying preliminary system requirements.

3.2.4 Android Application Development

After sufficient groundwork on MYFood application, the final phase was implementation. Development of MYFood was done using AppInventor, an Android application builder based on building blocks. Although the author had no previous experience with this software, with the existence of online developer forums and tutorials, processes were much leveraged. Possible alternative methods may also include development using eclipse IDE or other existing non-Google application builders.

3.3 Key Milestone

Final Year Project I

Milestone		Week
Project Proposal	0%	3
Extended Proposal	10%	6
Proposal Defence	40%	9
Interim Report	50%	12

Final Year Project II

Milestone		Week
Progress Report	10%	4
Pre-EDX	10%	10
Dissertation	40%	11
VIVA	30%	12
Technical Report	10%	14

3.4 Gantt Chart

PROJECT ACTIVITIES		WEEK													
		1	2	3	4	5	6	7		8	9	10	11	12	13	14
Planning	Discussion with supervisor								Mid-Semester Break							
	Prepare/edit Gantt Chart															
Data Collection	Conduct literature review															
	Interview with software developer & targeted user															
	Distribute survey questions															
Data Analysis	Data compilation and result identification															
	Data documentation															
System Analysis	Reviewed existing similar applications															
	Evaluate feasibility of proposed system															
Design and Development	Draft system flow and functions															
	Design user interface															
	Develop prototype															
	System testing															
	Evaluate system															
Documentation	Complete report															
Important Dates	Progress report				*											
	Pre-EDX											*				
	Dissertation												*			
	VIVA													*		
	Technical report															*

The symbol * indicates key milestones for this project

3.5 Tools Required

3.5.1 Software

- Google AppInventor
- Google Chrome browser
- Adobe Photoshop
- Microsoft Powerpoint

3.5.2 Hardware

- Android device

CHAPTER 4

RESULT AND DISCUSSION

4.1 Pre-Implementation Survey

Data gathering is essential for supporting the previously identified hypothesis. It validates the purpose of the project and helps in the holistic development of the application. For gathering data, a questionnaire survey was conducted.

4.1.1 Survey Objective

Before developing questionnaires, it is fundamental to identify the objective of a particular survey. This will certify that all findings contribute to the initial goal of the application. For this purpose, the objective of the survey was to ensure feasibility and identify requirements of a comprehensive mobile Malaysian food journal.

4.1.2 Data Collection Process

The survey was conducted on 30 respondents of different demographical backgrounds. Method of conduct was done online, via Google Docs file which enabled reach towards a larger demographic background. The sample of the pre-implementation survey can be found in Appendix 1 at the end of this paper

4.1.3 Findings

Each questionnaire was divided into four parts: personal information, food documentation information, Android application acceptance and particularly on MYFood: Mobile Malaysian Food Journal Application. All 30 respondents had participated actively in the survey and findings will be further discussed in the following sections of this report.

Part 1: Personal Information

This part of the survey behaves as the preliminary stage and focuses on the type of audience which completed the survey. Aspects of gender, age and profession as well as Smartphone ownership were taken into account.

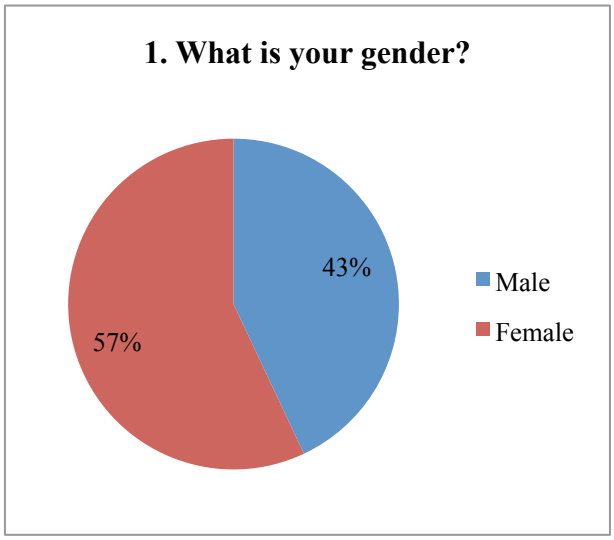


Figure 4.1: Gender

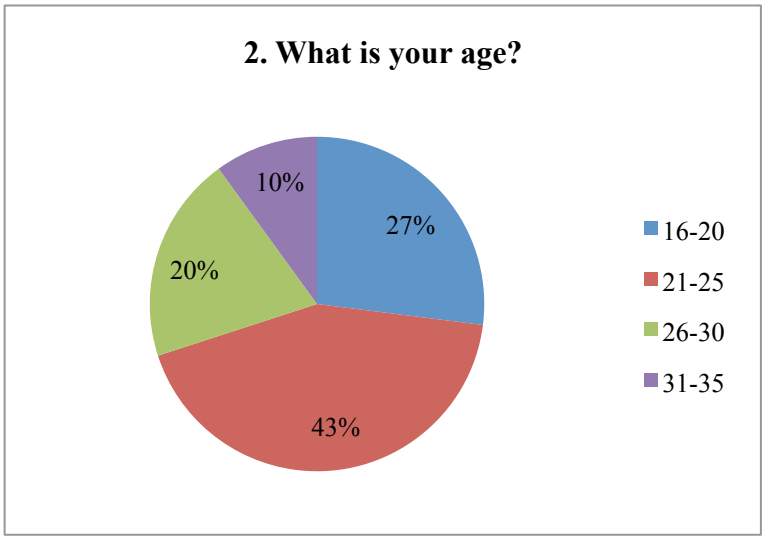


Figure 4.2: Age

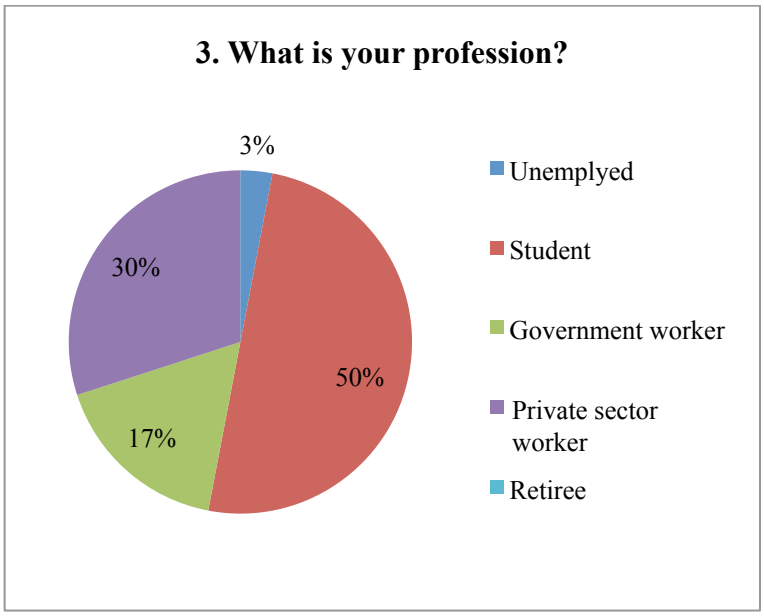


Figure 4.3: Profession

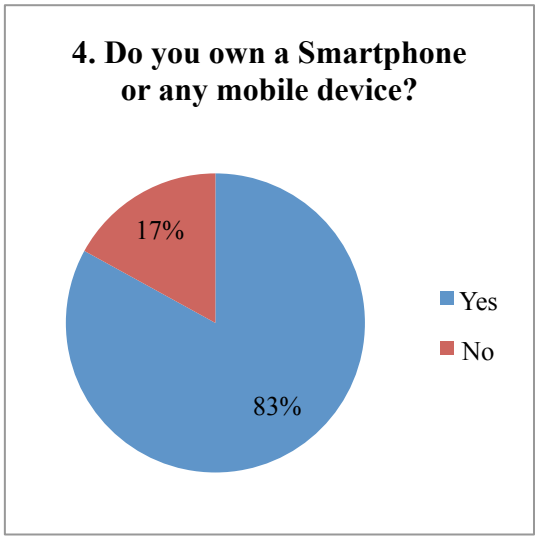


Figure 4.4: Smartphone ownership

Part 2: Food Documentation Information

This part of the survey is aimed at identifying the respondents' behaviours towards food and their methods of documenting it.

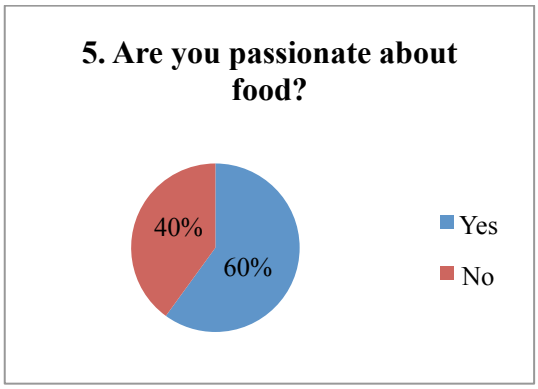


Figure 4.5: Passion for food

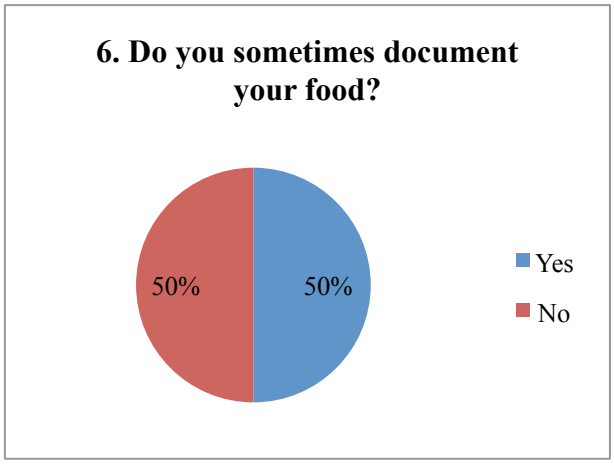


Figure 4.6: Food documentation

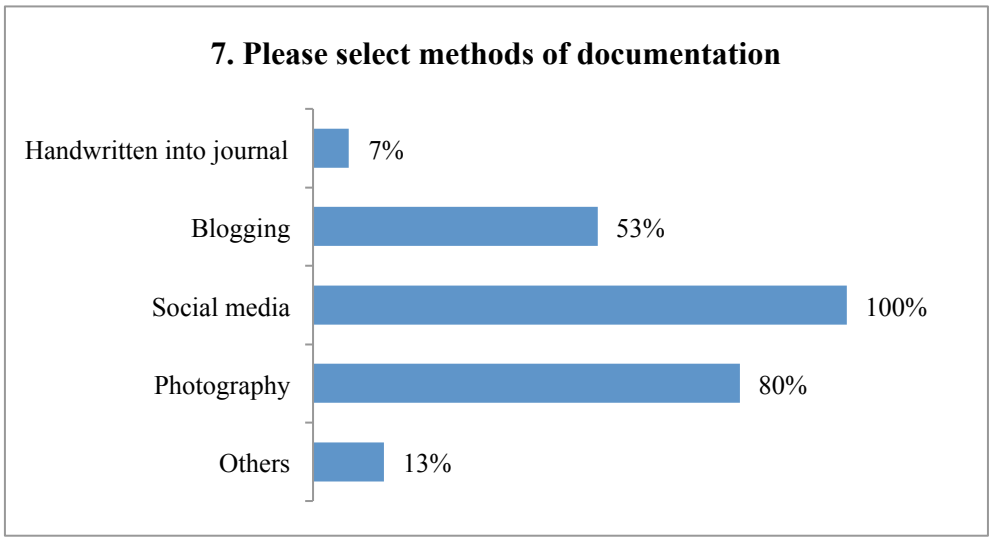


Figure 4.7: Method of documentation

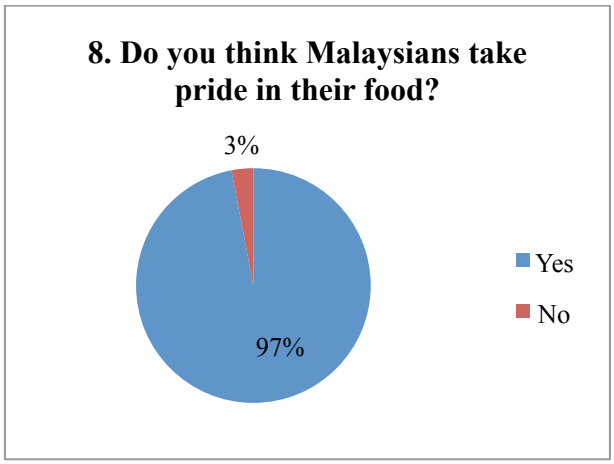


Figure 4.8: Malaysian's pride for food

It was found that half of the 30 respondents occasionally document their food and out of this 15 of them, 11 respondents were females. All 15 also agreed that they are passionate about food. Here, it can be derived that gender too is a contributing factor to food journaling. Additionally, most common methods of food documentation from this sample included social media (100%), photography (80%) and blogging (53%). Findings can conclude that respondents take technological opportunity in recording their food experiences and that social media is a current craze. While, more traditional methods of physically writing into journals and others (collecting business cards, food wrappers, etc) are becoming less popular. Furthermore, 97% of the respondents concurred that Malaysians take pride in their food. Although 9 respondents out of this percentage are not passionate about food, they still agreed to the aforementioned statement.

Part 3: Android Application Acceptance

This part of the survey portrays the connection between developments of the application to the user's acceptance towards it. Besides that, further findings on user's requirements are also obtained from this section.

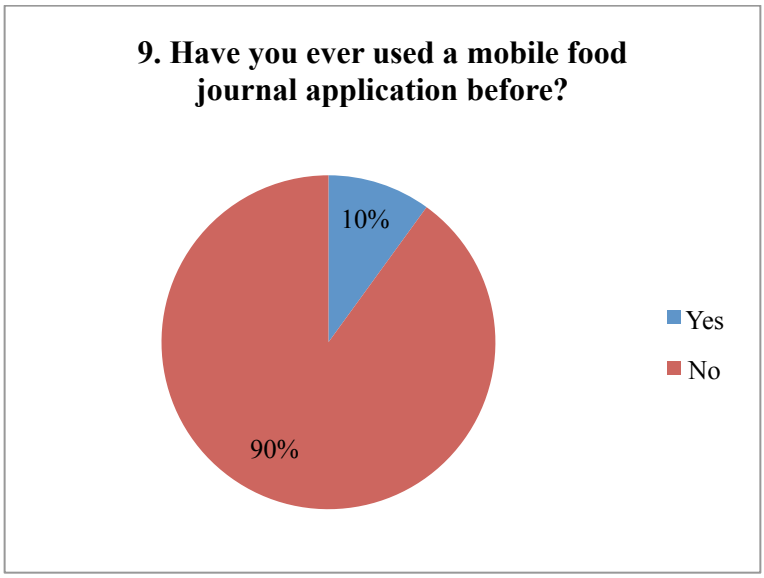


Figure 4.9: Prior usage of mobile food journal application

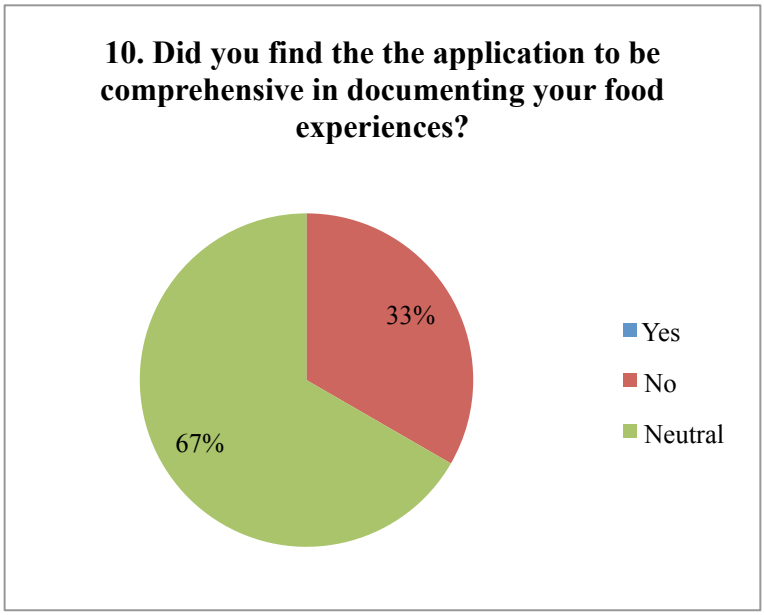


Figure 4.10: Comprehensiveness of mobile food journal application

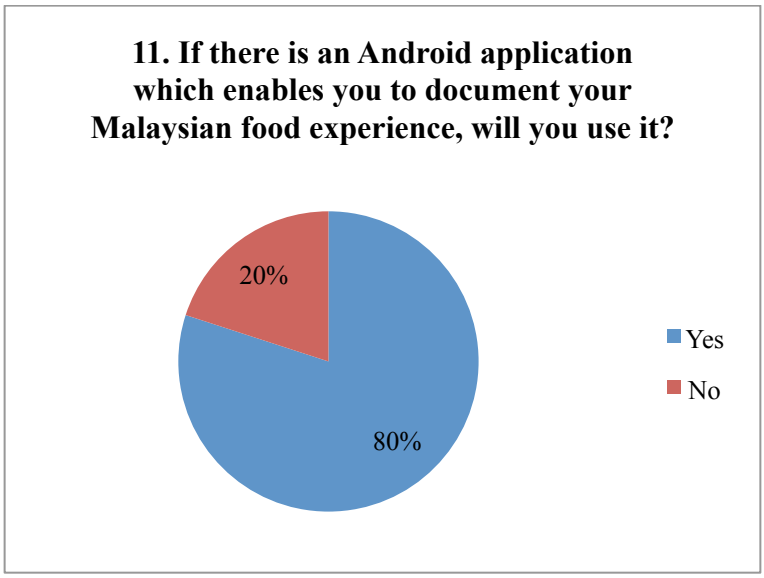


Figure 4.11: User acceptance

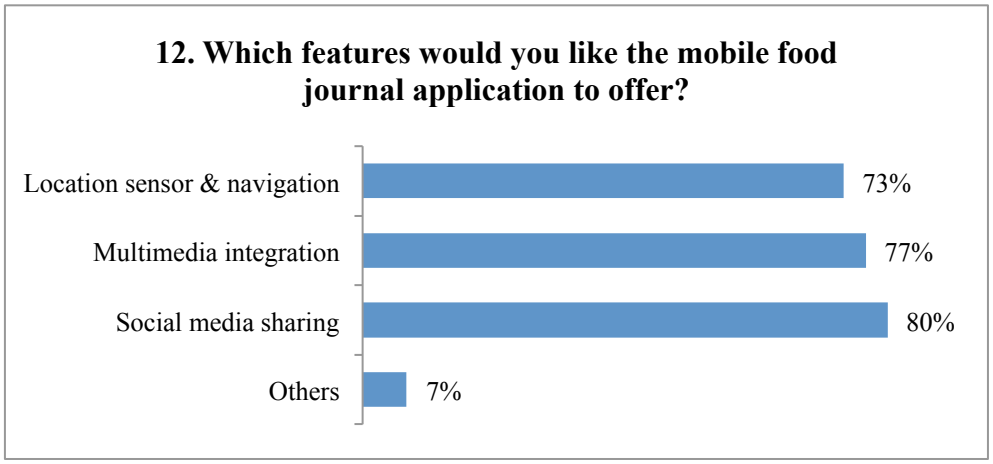


Figure 4.12: Expected features

Based on this section of the survey, it was found that a mere 3% of the respondents had used a mobile food journal application before. However, out of this 3%, none of them agreed that the application used was comprehensive in documenting their food experiences – 33% disagreed and 27% remained indifferent. Additionally, from this part of the survey, it was found that 80% answered yes to using an application for documenting their Malaysian food journals. Out of this percentage, it was found that 8 of the respondents previously disclosed that they do not perform occasional food documenting activities. Besides that, respondents comprising this 80% mainly consisted of female students of ages 20-25. This part of the survey gives further assurance that MYFood application is marketable and has commercial value. While

for features, a great number of the sample would like social media sharing (80%), multimedia integration (77%) and location sensor & navigation (73%) for features in the application. This part of the survey helps in identfying the user requirements.

Part 4: MYFood: Mobile Malaysian Food Journal

Part 4 aims at validating the concept of the proposed application, MYFood. Views and perceptions from the respondents are collected to ensure validity of product value and assurance of potential features.

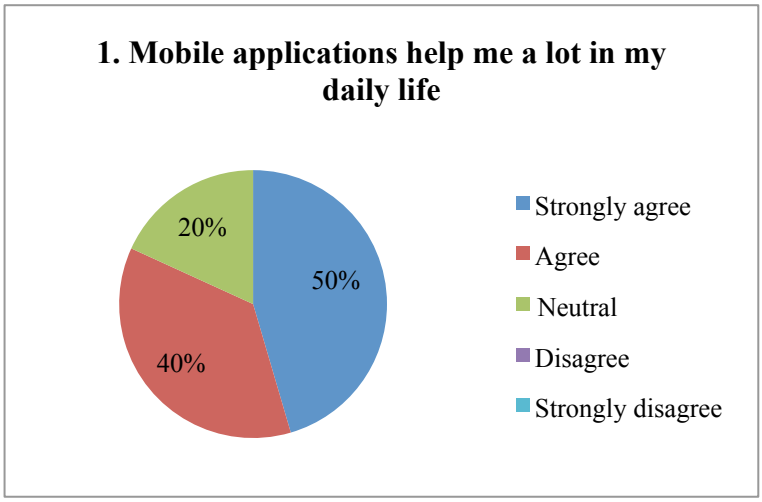


Figure 4.13: Importance of using mobile applications

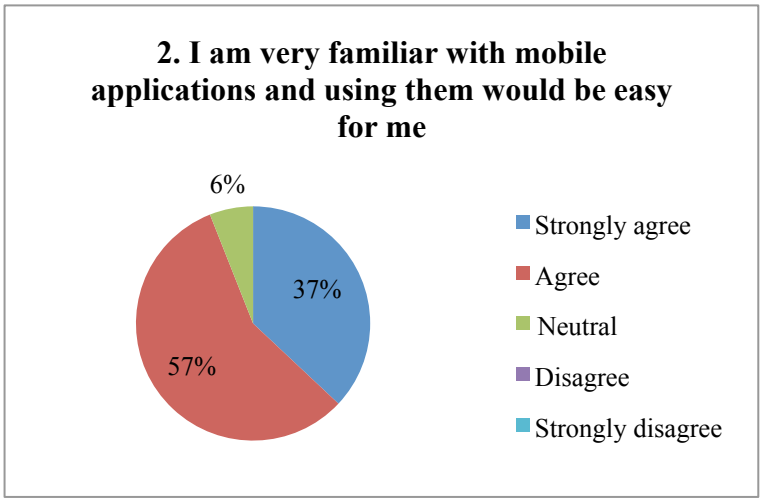


Figure 4.14: Familiarity with using mobile applications

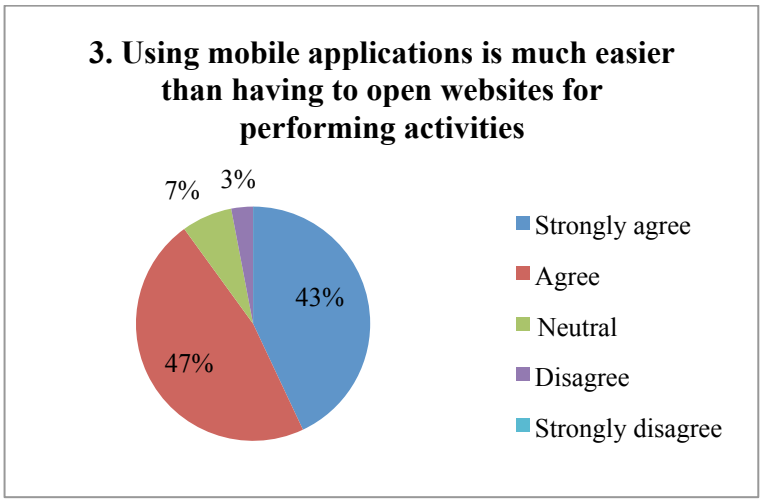


Figure 4.15: Familiarity with mobile applications in performing activities

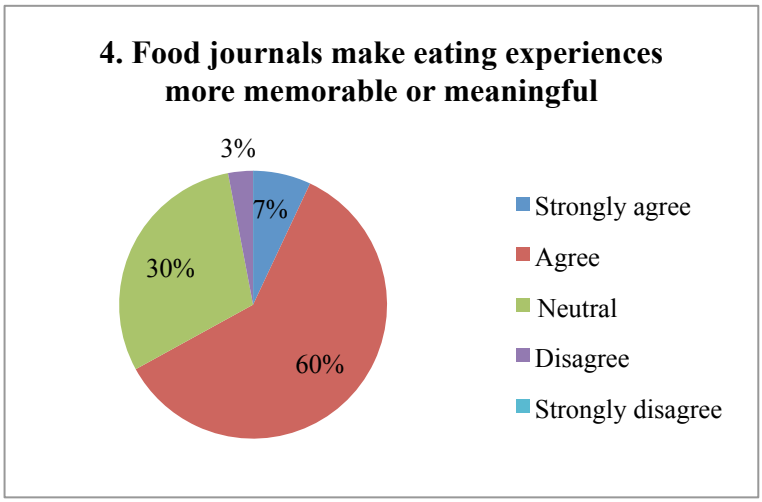


Figure 4.16: Effects of food journaling

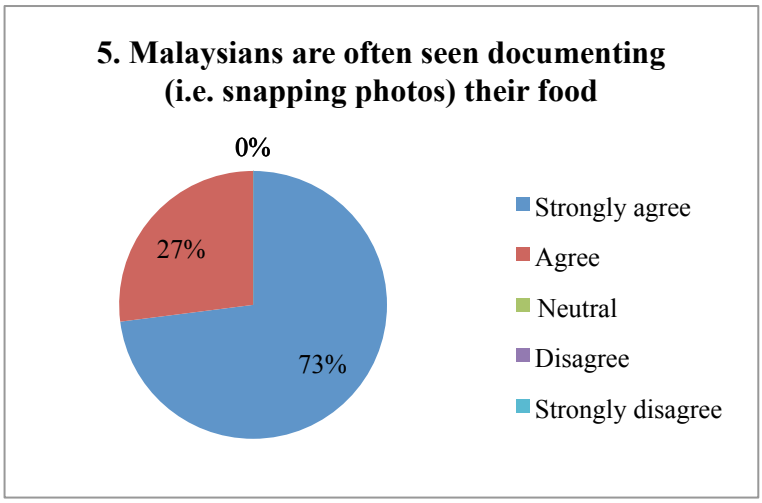


Figure 4.17: Malaysian behaviour in food documenting

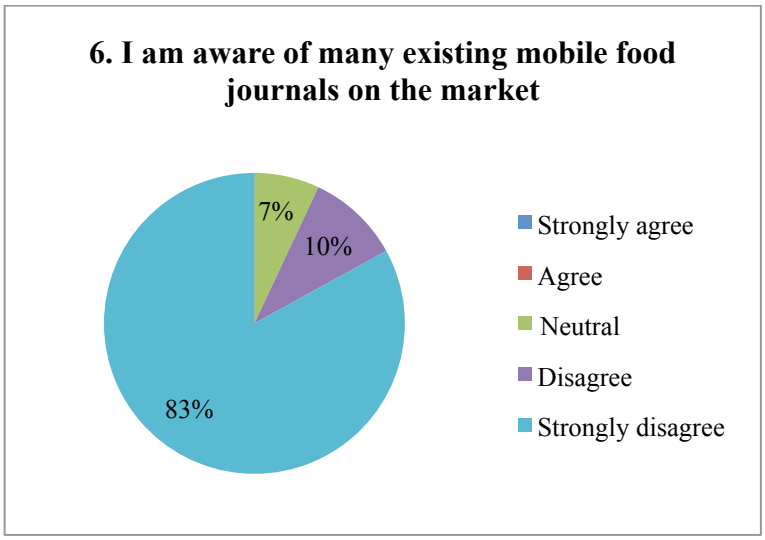


Figure 4.18: Awareness on existing mobile food journal applications

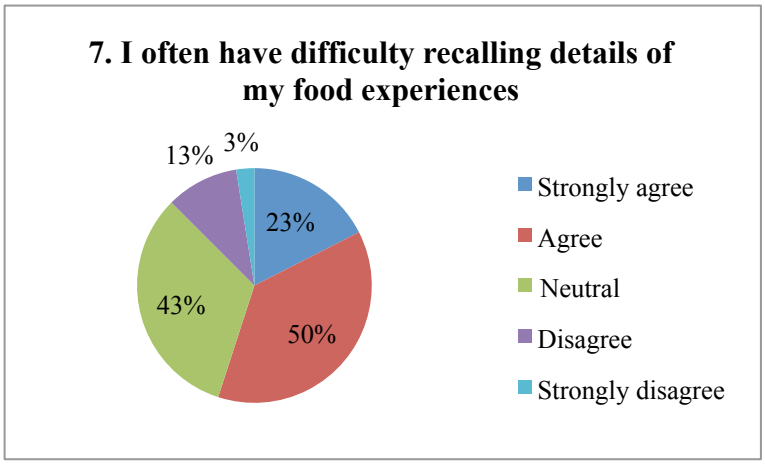


Figure 4.19: Memory on food experiences

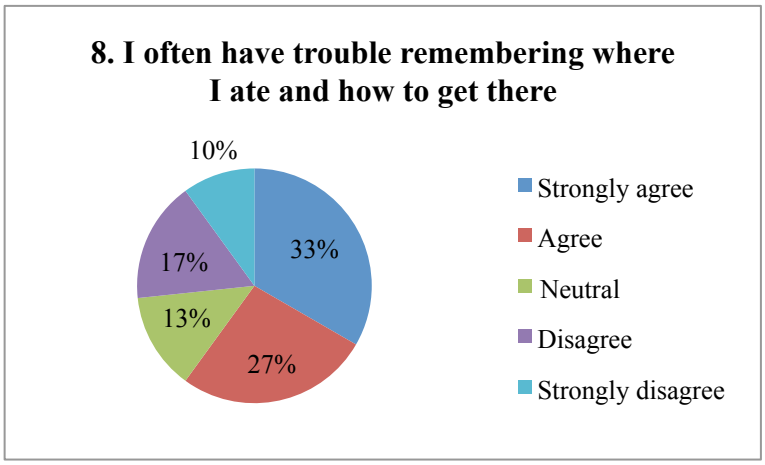


Figure 4.20: Location concerns

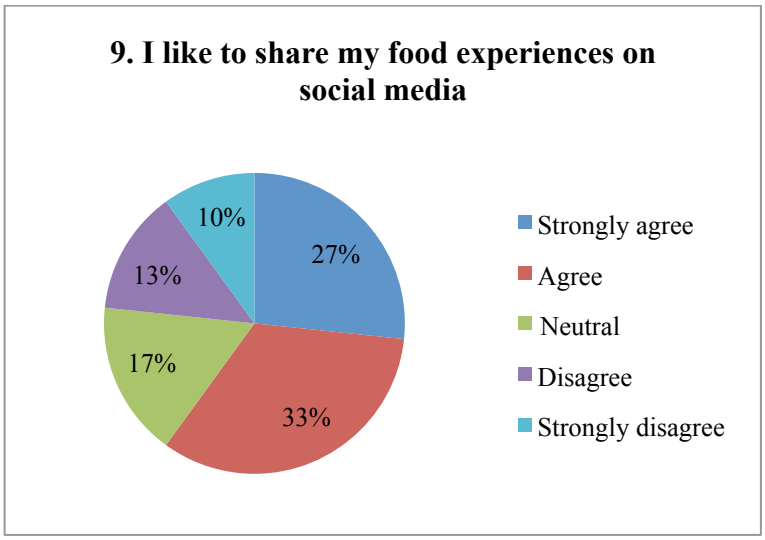


Figure 4.21: Social media sharing

Statements 1 to 3 from this part of the survey depict the usage of mobile applications. Responses were found to be positive as respondents are familiar with and find mobile applications to be very useful. While, statement 4 finds 60% of respondents agree that food journals makes eating experiences more memorable and meaningful. Here, it can be implied that respondents understand and are knowledgeable on the importance as well as advantages of documenting experiences. Statement 5 validates Malaysians' interest towards food. It was agreed that respondents often see Malaysians snapping photos of their food and sharing them via social networks and else alike. Whereas, statement 6 finds a high 83% of respondents strongly disagreeing to their awareness of many existing mobile food journals on the market. This proves that currently many individuals are unaware of competitor applications on the market and therefore, gives MYFood a feasible opportunity for market entry. For statement 7, many respondents agreed (50%) and remained neutral (43%) on recalling details of their food experiences. Statement 8 finds that 33% and 27% of the respondents repectively strongly agree and agree that they often have issues with eating locations. Out of this collective 60%, it was also found that 15 of the 18 respondents were females. While, statement 9 authenticates respondents' inclination towards social network usage with 27% strongly agreeing and 33% agreeing.

4.2 Prototype

4.2.1 Prototype Features

The prototype serves as an extension to existing mobile food journals. In terms of features, MYFood consists of the basic requirements as well as those which gives added value. The following sections will discuss this in greater detail.

- **Basic functions** – fundamental functions which allow journal entries to be created.
    - Save
        - On "NEW" and "EDIT" screen, journal entries can be saved. Journal entries are stored in the Tiny DB, making them available even after exiting the application.
    - Edit
        - An entry can only be edited on "VIEW" screen. Once the entry has been edited and saved, the initial journal entry will be overridden.
    - Delete
        - An entry can only be deleted on "VIEW" screen. After doing so, the entry is removed from the Tiny DB.
    - View
        - Once an item is saved, then it is viewable. To view previous journal entries, press "VIEW" button and a list picker will appear – allowing the user to select the intended entry. This mode is Read-Only and allows users to perform other activities discussed in the next section.

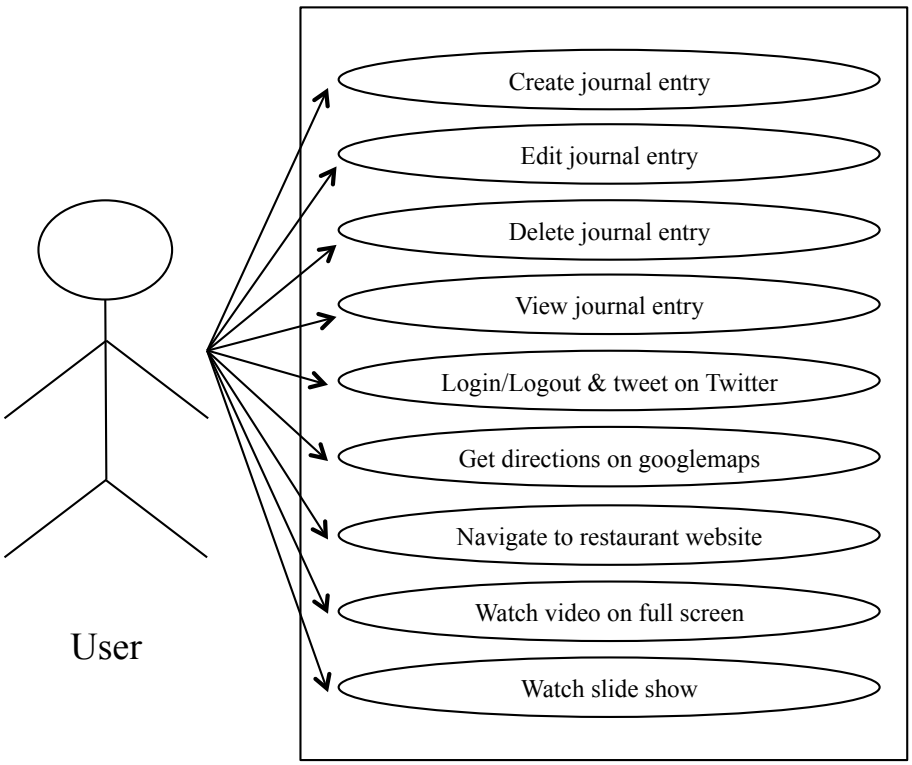
- **Added features** – features which promote the comprehensiveness of MYFood application.
    - Holistic content creation
        - Unlike other mobile food journals in the market, MYFood is detailed in documenting user's food experiences. Specific fields are designated for particular contents. By doing so, details are

better recorded, allowing users to better recall their food experiences.

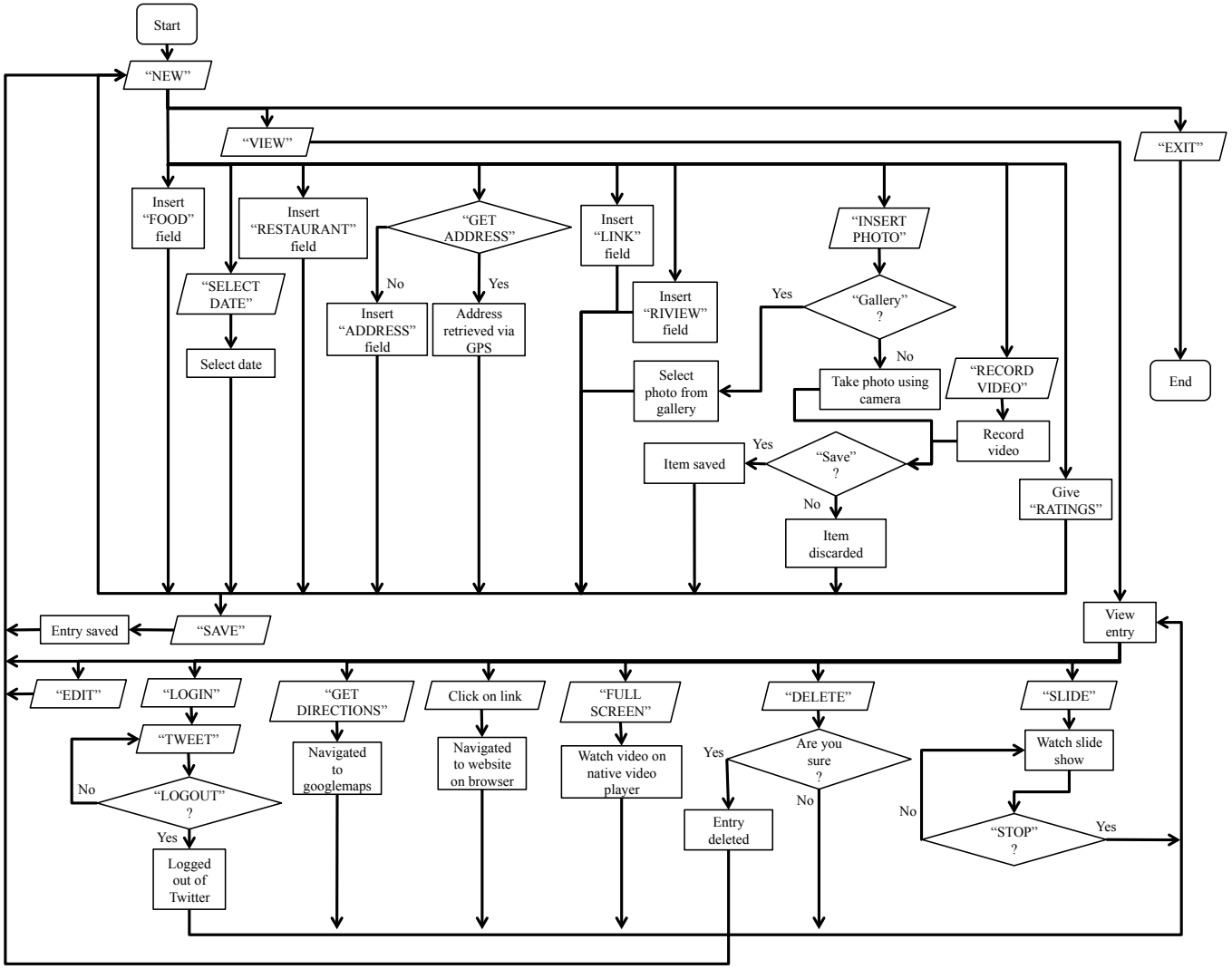
- Location sensor and navigation
  - Based on the pre-implementation survey conducted, it was found that many users have difficulty with their food locations. MYFood integrates with global positioning system (GPS) and internet connectivity to enable users to record their current food location and get directions (via googlemaps) with mere clicks of buttons.
  - Users can get their current location on "NEW" or "EDIT" screen, when creating journal entries. Simply click "GET ADDRESS" button and the user's current location address will appear in the "ADDRESS" field.
  - While, navigation is applicable on "VIEW" screen. When user clicks "GET DIRECTION" button, googlemaps will direct the user towards the intended address.
- Multimedia integration
  - MYFood also allows users to record their food experiences using mediums of photo and video. In addition to recording user's review in text form, these medium further help users in capturing other graphical details. Users can also watch a slide show of the food images previously captured.
  - Users can insert photo either on "NEW" or "EDIT" screen. Unlike other mobile food journals, MYFood also allows users to insert photos from the gallery and not just directly from the camera.
  - Videos can be directly recorded on "NEW" or "EDIT" screen. Once recorded, users can directly watch the video from the thumbnail on "VIEW" screen or click "FULL SCREEN" button and watch on the device's native video player.
  - In order to play slide show, users have to click on "SLIDE" button on "VIEW" screen and images of previous food entries will appear. To end slide show, simply click on the "STOP" button.

- Social network sharing
    - In today's world, individuals have made the social network part of their daily lives. Every action is being posted across the internet among friends and family members. Therefore, it makes sense that users would also want to share their food experiences online. MYFood allows users to do just that. However, at the moment, for prototype purposes, MYFood is only integrated to Twitter. Other networks (i.e. facebook, instagram) will be proposed for future implementation.
    - To log into Twitter, click on "LOGIN" button on "VIEW" screen. The twitter site will require the user's authorization. Once allowed, the user is logged into twitter and click the "TWEET" button for direct tweeting. This will then show in the user's Twitter timeline.
    - To log out, user can either click on the "LOGOUT" button or simply navigate to other screens.

4.2.2 Use Case Diagram



4.2.3 System Flowchart



4.2.4 Sample screenshots

Figure 4.22: Start

When starting the application, user will see the start screen, as seen in Figure 4.22. As required, in oder to start the application, users will have to first tap on the logo.

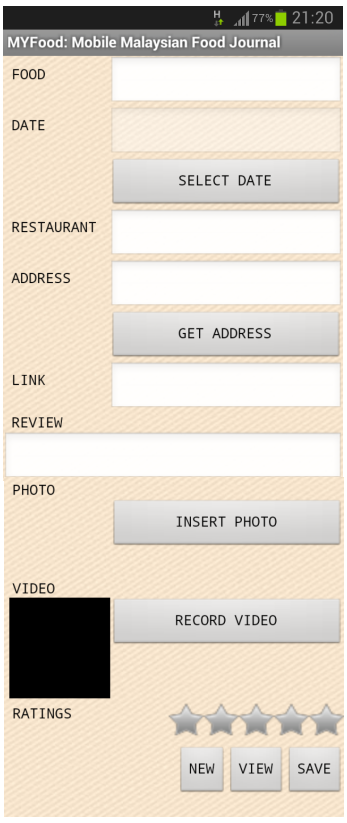


Figure 4.23: "NEW"

Figure 4.23 shows the "NEW" screen immediately after startup for creating journal entries. Apart from inserting contents into the required fields, journalism techniques are also further leveraged with clicks of buttons. This way, more accuracy can be attained. "SELECT DATE" button will call a date picker, enabling users to select the date of the entry. While, "GET ADDRESS" button retrieves the location address via internet connectivity or global positioning system (GPS). By doing so, users are spared the trouble of identifying their current eating locations. "INSERT PHOTO" button allows users to either select an image from the gallery or directly capture a photo from the device camera. As the name suggests, "RECORD VIDEO" allows users to directly insert video from the device videocam. Users can give ratings by clicking the stars – none, half or full stars. From this screen, users can either clear fields via "NEW" button, view previous entries via "VIEW" button or save the current entry via "SAVE" button.

Figure 4.24: "VIEW"

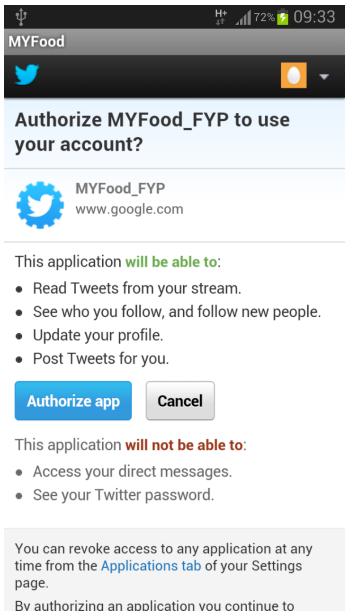


Figure 4.25: Twitter authorization

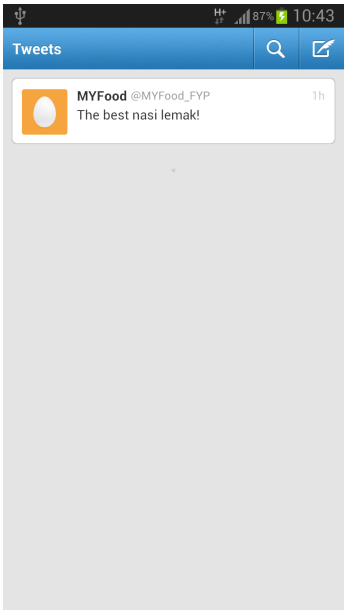


Figure 4.26: Twitter timeline

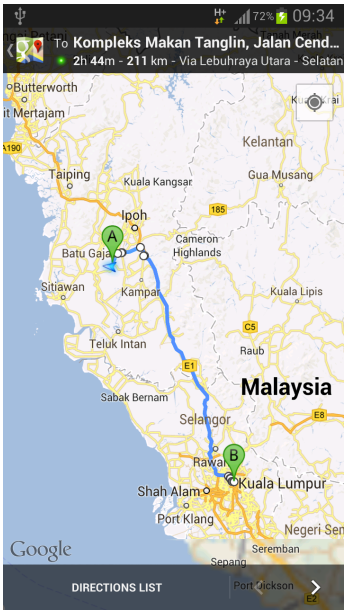


Figure 4.27: Googlemaps

Figure 4.24 shows the read-only "VIEW" screen. Users can view their previous journal entries on this screen. While, the buttons on this screen enable users to perform respective functions.

MYFood enables users to directly tweet their food experiences on Twitter. By default, users are logged out and in order to login, simply click the "LOGIN" button. After doing so, users will be navigated to authorize tweeting activities as seen in Figure 4.25. Then, once authorized, users are officially logged in and the "TWEET" button appears, as shown in Figure 4.24. To tweet, simply click the "TWEET" button and posts will appear in the user's Twitter timeline, as seen in Figure 4.26. To logout out of Twitter, click "LOGOUT" button.

When user clicks on the "GET DIRECTION" button on "VIEW" screen, they will be navigated to googlemaps as seen in Figure 4.27.

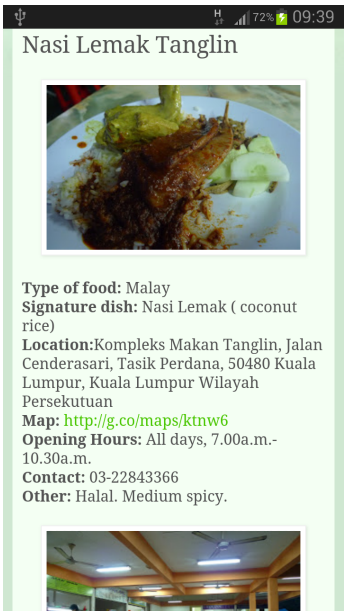


Figure 4.28: Nasi lemak Tanglin website

Figure 4.29: Watch video on full screen

When user clicks on the link on "VIEW" screen, they will be navigated to the restaurant's website, as seen in Figure 4.28. While, users can also watch their video journals on full screen by clicking the "FULL SCREEN" button. Then, the device's native video player will perform the action. This is depicted in Figure 4.29 on the left.

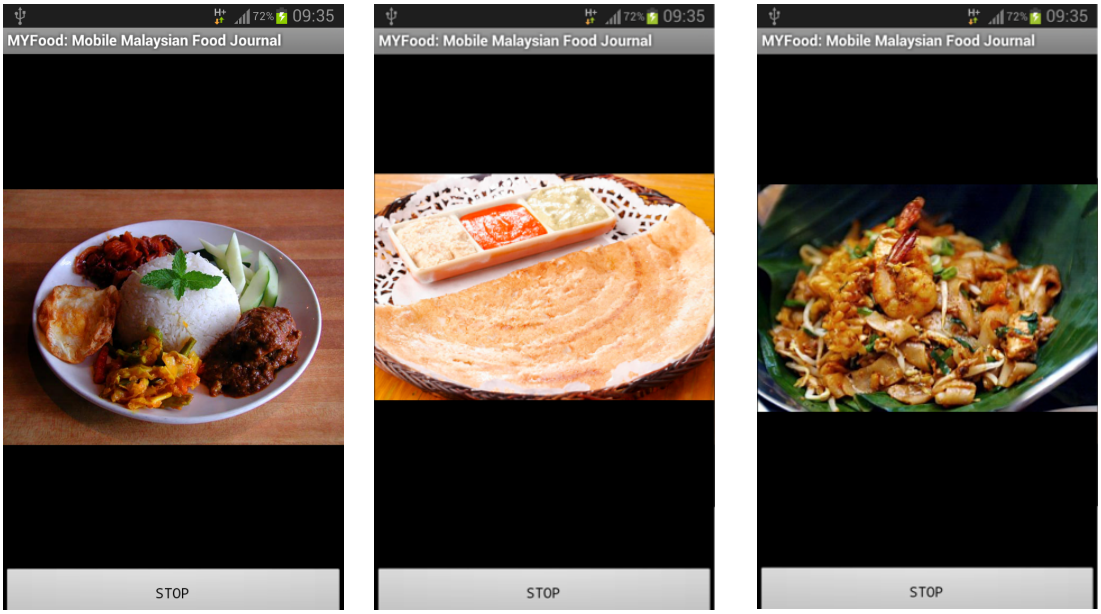


Figure 4.30: Slideshow

Figure 4.30 shows the slideshow of food images from previous journal entries that will play when user clicks on "SLIDE" on "VIEW" screen. To stop the slideshow, users are required to click on "STOP" button as seen above and users will then return to the previous "VIEW" screen.

Figure 4.31: "EDIT"

Similar to "NEW" screen, "EDIT" screen also has the same functions and features. However, in contrast to "NEW" screen, this screen only permits saving and cancelling actions as seen in Figure 4.31. Once the user has saved or cancels changes, the system will update the database and returns to the "NEW" screen.

4.3 Comparison of MYFood with Current Available Mobile Application

It was found that a majority number of food journal applications were focused on health purposes, different from the intent of MYFood. Figure 4.32 shows screenshots of My Diet Journal and MealLogger applications. Both these applications, serving also as a representation of other health-focused food journals applications, are primarily for keeping track of calorie intake, ensuring good diets and monitoring exercise schedules. When searched on Google Play with keywords "food journal application" or "food diary application", top results consisted of the afrorementioned category.

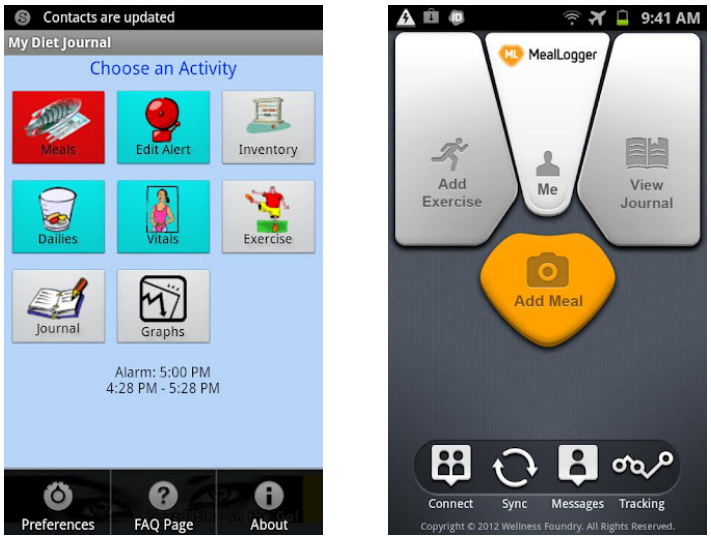


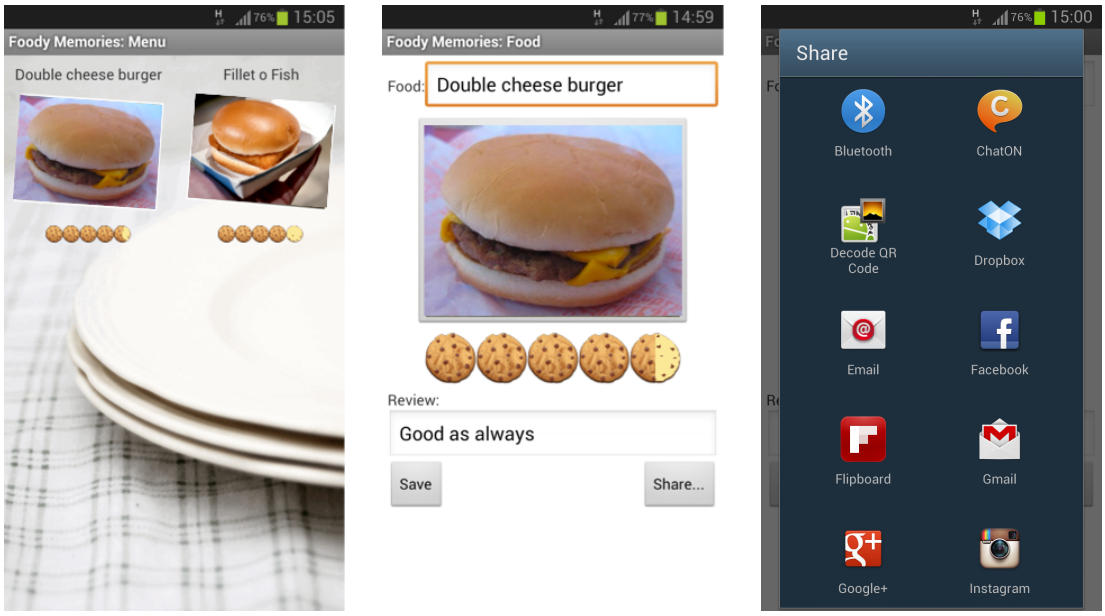
Figure 4.32: Health-focused food journal applications (Google play, 2012)

While, other applications relatively more similar to MYFood were few in number and were not as comprehensive, as they offered rather limited functionality. These applications were focused on food journalism for leisure purposes rather than health, as previously discussed. The following sections will discuss in greater detail of comparable applications in the market - Foody Memories, Food and Evernote Food applications. Table 4.1 summarizes the feature comparison between existing mobile food journals in the market (1 = low, 2 = fair, 3 = moderate, 4 = good, 5 = high).

Features	**MYFood**	**Foody Memories**	**Food**	**Evernote Food**
Holistic content creation	5	2	4	5
Location sensor & navigation	5	1	1	3
Multimedia integration	5	3	3	4
Social network sharing	3	5	3	5
Region specific	Yes	No	No	No

Table 4.1: Mobile food journal feature comparison

4.3.1 Foody Memories Application

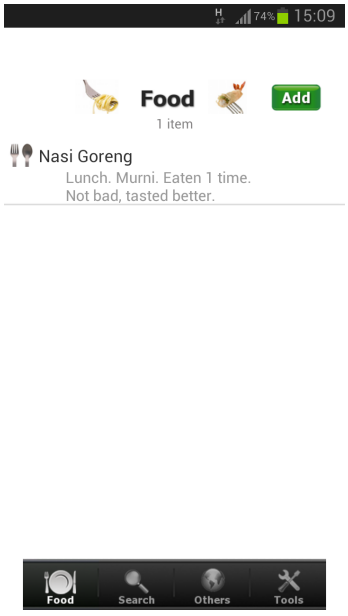


Home screen New/Edit/View screen Share screen

Figure 4.33: Foody Memories screenshots

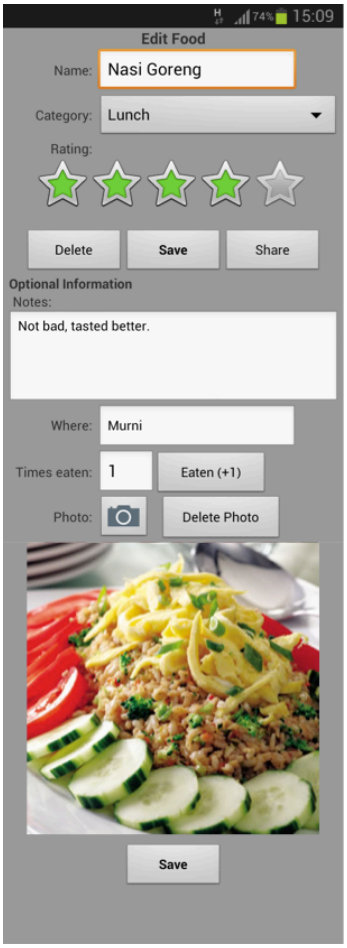
In contrast to MYFood, Foody Memories is a simple mobile food journal which is primarily focused on sharing food experiences on social networks. As seen in Figure 4.33, this application offers relatively limited fields in terms of content creation: food name, insert photo from gallery, ratings and review. Additionally, there is not even any location or date atrribute for each entry.

4.3.2 Food Application

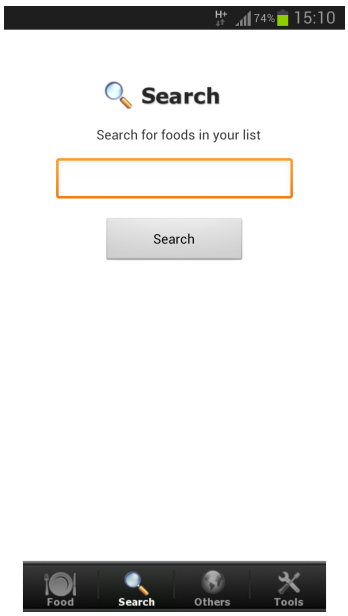


Home screen

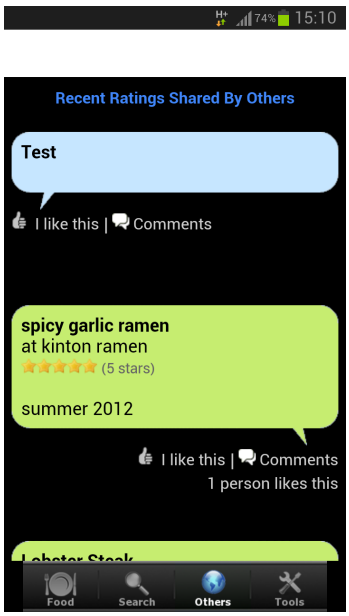
View screen



New/Edit screen



Search screen

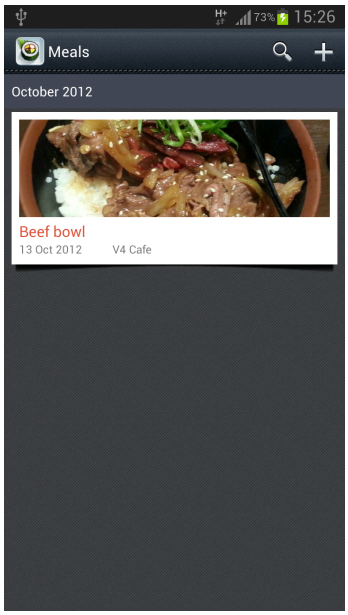


Share screen

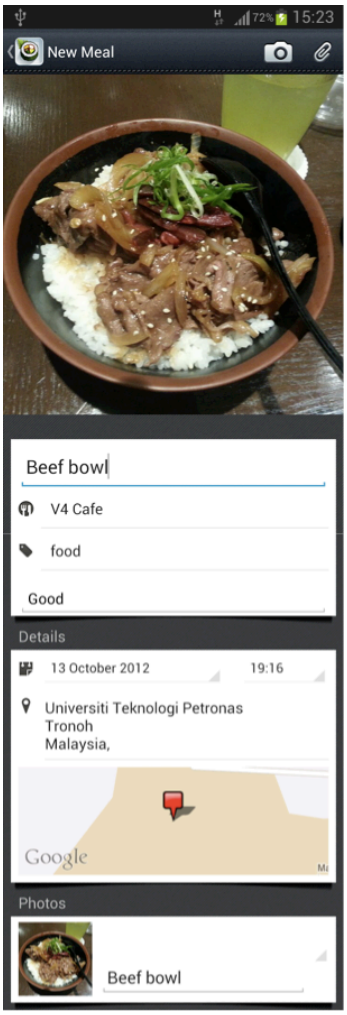
Figure 4.34: Food application screenshots

As seen in Figure 4.34, Food application features are comparable to MYFood. With rather holistic fields for creating journal entries, Food application however has the upper hand in filtering/search and sharing functions. This application has its own server, where users can share their food experiences with users worldwide. Prominent advantage which MYFood has relative to Food is its location sensor and navigation features. Additionally, in terms of multimedia integration, Food only allows photo upload direct from camera, unlike MYFood which enables users to upload photo from gallery and camera as well as record videos.

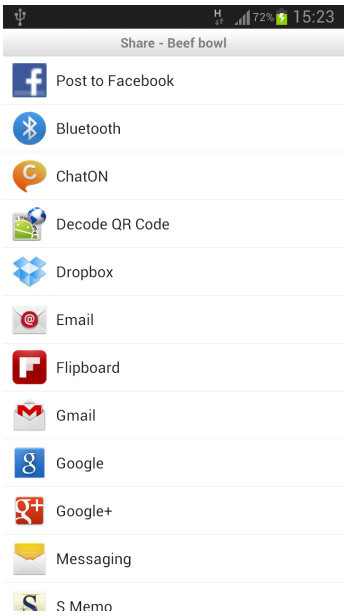
4.3.3 Evernote Food



Home screen



New/Edit/View screen



Share screen

Figure 4.35: Evernote Food screenshots

As seen in Figure 4.35, Evernote Food is also a comprehensive mobile food journal application. Although Evernote Food has location sensor features via Foursquare, MYFood has an added value in terms of navigation with googlemaps. Whereas, in terms of multimedia integration, Evernote Food allows numerous photos to be uploaded via camera and gallery, while MYFood only allows single photo for both modes and allows user to record videos of their food experiences. However, a clear feature biased towards Evernote Food is the multiple social network sharing platform.

4.4 Post-Implementation Survey

The post-implementation survey was conducted to evaluate the effectiveness of MYFood prototype in addressing the initial problem statement. The survey was conducted on 15 respondents and method of conduct was done physically, via pen and paper. Prior to answering the questionnaire, users were first required to test the application. The questionnaire was divided into 3 sections: personal information, effectiveness and improvement. Findings of the survey will be discussed in the following section. The sample of the post-implementation survey can be found in Appendix 2.

Part 1: Personal Information

Based on the pre-implementation survey, it was found that females of 21-25 age group to be most responsive. Therefore, for this purpose, the survey was largely focused on the aforementioned group, so that responses are less-biased and more accurate.

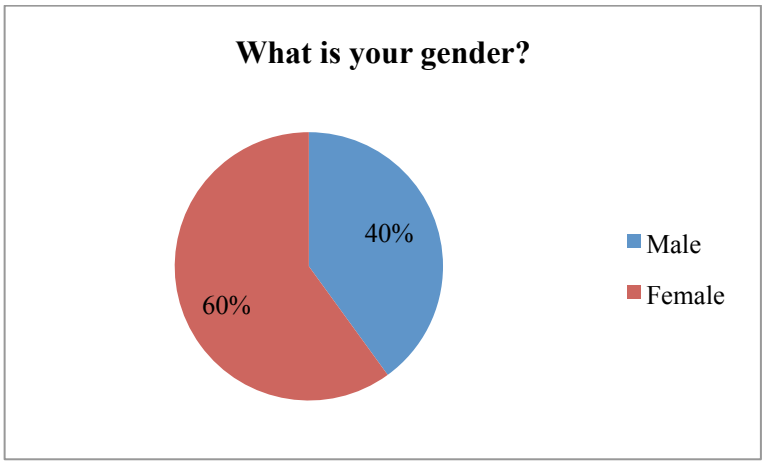


Figure 4.36: Gender

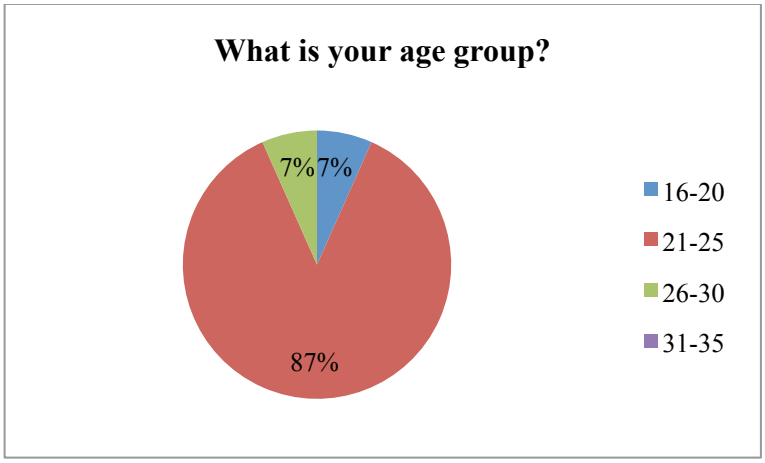


Figure 4.37: Age

Part 2: Effectiveness

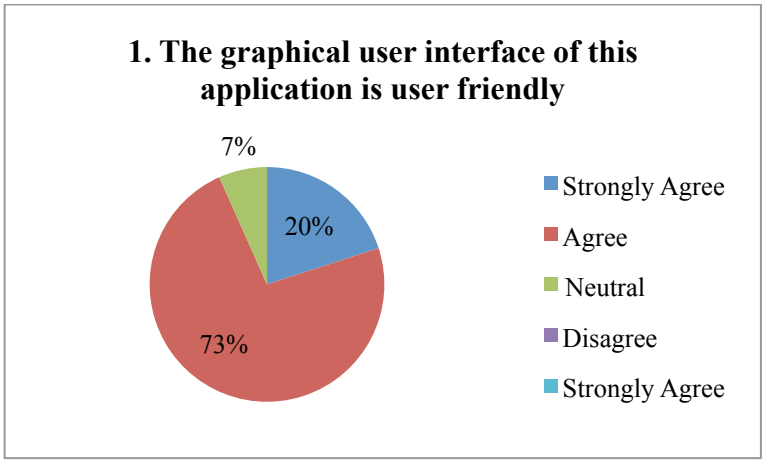


Figure 4.38: GUI friendliness

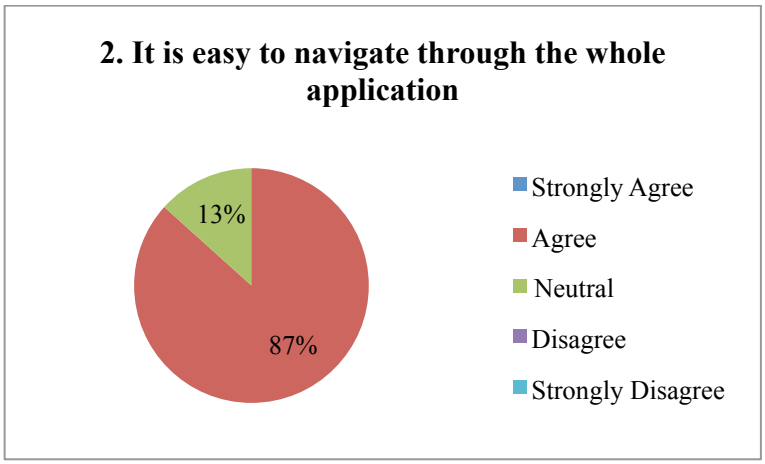


Figure 4.39: Ease of navigation

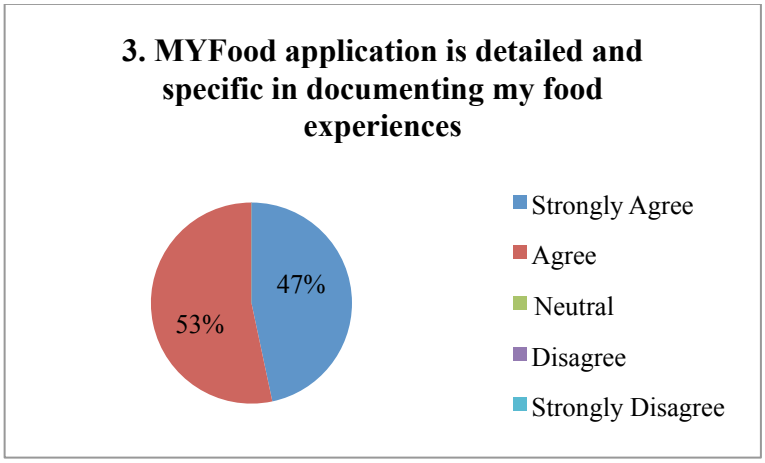


Figure 4.40: Detailness of documenting

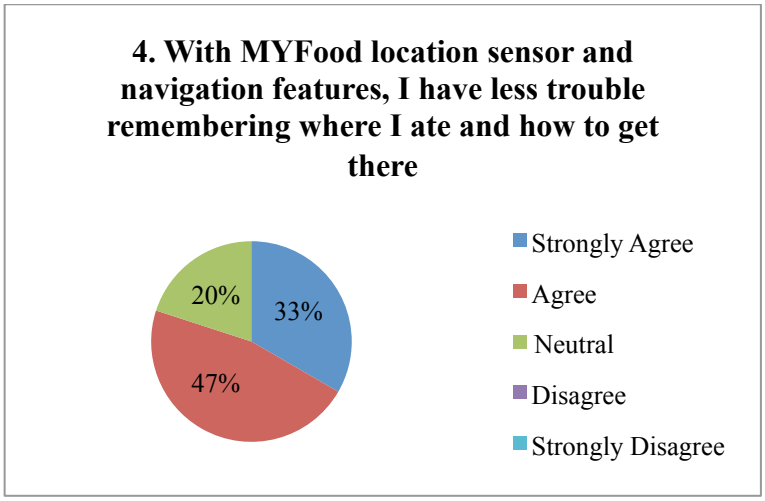


Figure 4.41: Location navigation assistance

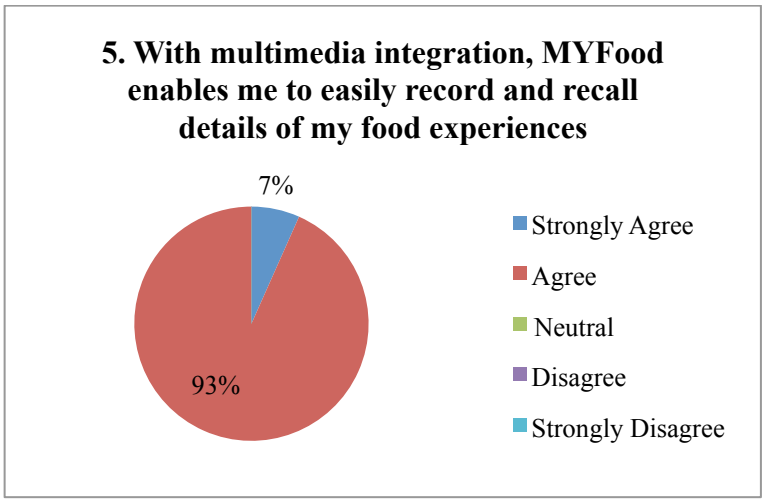


Figure 4.42: Multimedia integration assistance

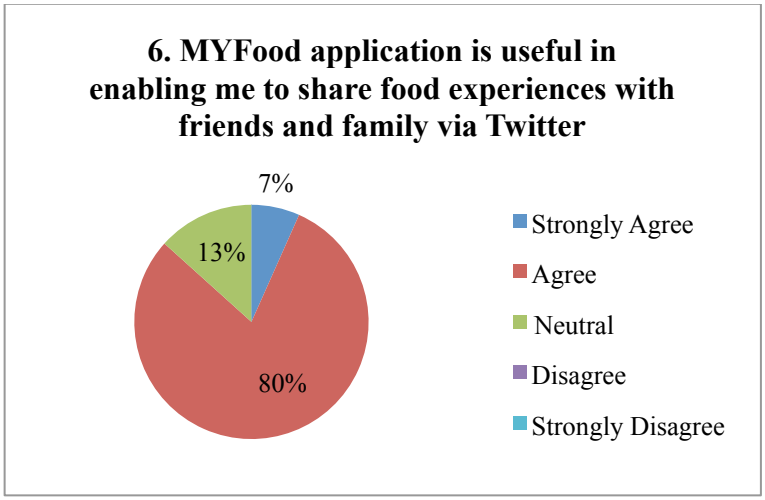


Figure 4.43: Usefulness of social network sharing

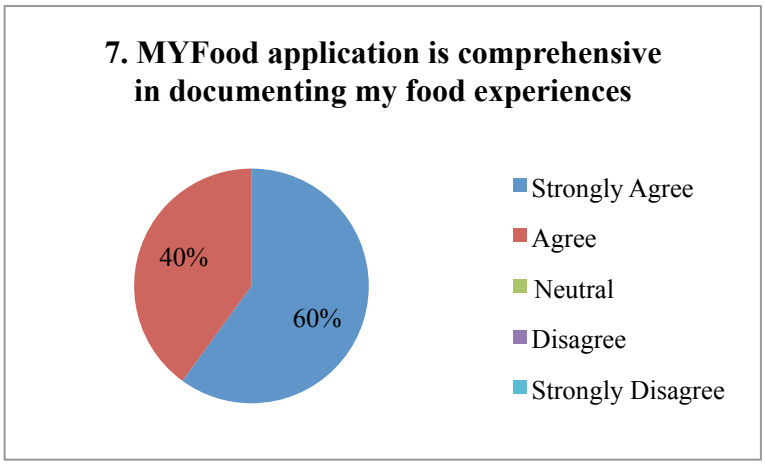


Figure 4.44: Comprehensiveness of application

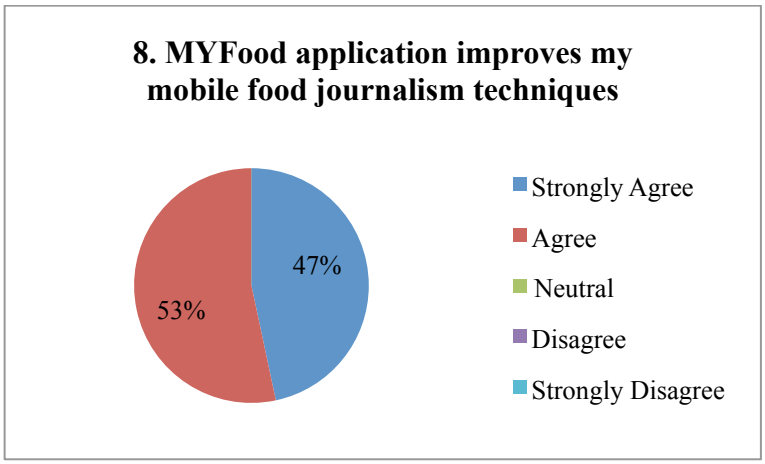


Figure 4.45: Effect on mobile food journalism techniques

Part 2 of the questionnaire was focused on the effectiveness and performance of the application. After testing MYFood application, users were required to rate the statements based on which they strongly agreed to strongly disagreed. Questions 1 and 2 focused on the usability of the application – GUI friendliness and ease of navigation. While, questions 3 to 8 were focused on the functionality and features of the application. Parallel to the previously outlined features, questions 3 to 6 were respectively aimed at attaining users' feedback on the effectiveness of holistic content creation, location sensor & navigation, multimedia integration and social network sharing. While, questions 7 and 8 were set out for proving the initial hypothesis of this study: A comprehensive mobile food journal application can better improve mobile food journalism techniques.

Part 3: Improvement

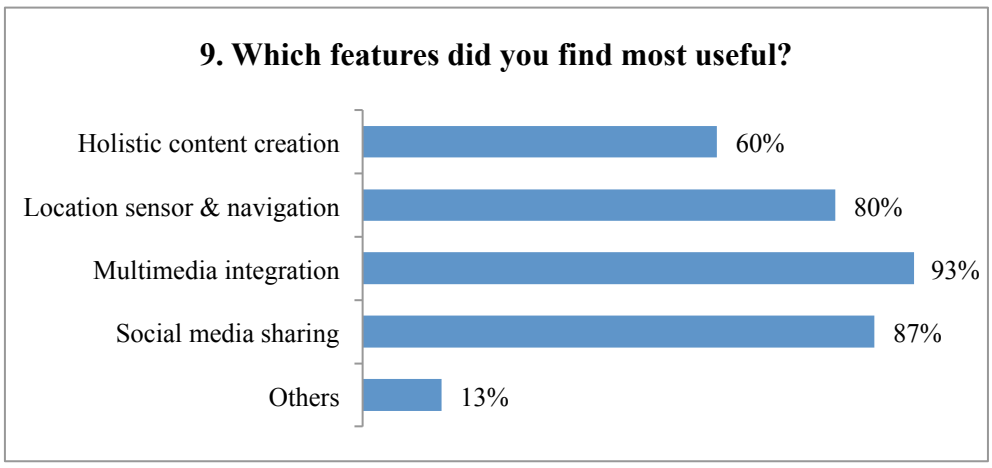


Figure 4.46: Usefulness of features

This section of the questionnaire was aimed at obtaining users' feedback for improvement purposes. Question 9 found that respondents mostly liked multimedia integration (93%), social media sharing (87%), location sensor & navigation (80%), holistic content creation (60%) and others (13%). For others, among features respondents stated were slide show, date picker and ratings system. Question 10 was open ended and required respondents to give suggestions for improvement. Among the suggestions for functionality improvement were to enable "Back" button, create a sort and filter function for journal entries list and include other social networks apart from just Twitter. In addition, user-interface improvements could also make the application more appealing.

As a whole, findings from the post-implementation survey validated the initial hypothesis: A comprehensive mobile food journal application can better improve mobile food journalism techniques. Findings found that 100% respondents collectively agreed and strongly agreed to the comprehensiveness of MYFood application as well as to better improving their mobile food journalism techniques.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Relevancy to Objectives

Generally, the development process of MYFood application was parallel to the objectives previously identified. Firstly, research on existing mobile food journal applications and food journalism techniques were conducted, which comprised of the planning and analysis phase in the System Development Life Cycle (SDLC). This was done to get a better understanding on competitor offerings and the fundamental requirements for documenting food experiences. For planning phase, sufficient research and interviews were conducted to provide a solid platform for project initiation. Subsequently, the analysis phase was primarily focused on the pre-implementation survey and mobile application market research findings. The survey outcome was successful in validating the feasibility of MYFood, while comparisons on similar existing mobile food journal applications contributed to identifying system requirements and the novelty of MYFood value.

Referring to the second objective, activities for designing and developing a comprehensive mobile food journal application was conducted, which comprised of the design and implementation phase. The former consisted of the generation of UML diagrams and graphical user interface draft, while the latter involved extensive programming via App Inventor.

Once the prototype was completed, the third and final objective was carried out: To evaluate user's perception on the developed application. In other words, user testing was conducted for measuring the prototype's effectiveness and relevancy to outlined objectives as well as identifying improvement areas. Findings from the post-implementation survey validated the initial hypothesis by proving that users did find

MYFood to be a comprehensive mobile food journal application which also improves their food journalism techniques.

5.2 Recommendation and Future Work

For improvement purposes, several suggestions can be imposed on MYFood – primarily in terms of functionality. In contrast to other existing mobile food journals, MYFood has to improve on its share functions. For prototype purposes, only Twitter has been integrated for direct tweeting. Therefore, in order to remain competitive, other social networks and social platforms should be incorprated for ease of sharing. Filter and sort functions for listing journal entries should also be included to simplify user search as well as reference. Additionally, the application can be enhanced by multiplying the multimedia features (i.e. insert more than one photo) and making the interface more appealing. In order to add functionalities and produce a more stable platform, MYFood could also be re-developed using eclipse IDE for Android supported programming. With App Inventor, there are several limitations which hinders the features of the prototype.

Besides that, for expansion purposes, MYFood can either be replicated for usage of other respective countries or made for general use – without being region specific. Either way, a wider target audience is able to enjoy the benefits of the application. However, further research needs to be conducted to validate this expansion.

Moreover, MYFood can also be offered in multiple Operating Systems (OS) such as iOS and Symbian, just to name a few. The market potential of Smartphone is now huge and being able to leverage on its potential would surely benefit a lot to the industry.

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APPENDIX 1

Pre-Implementation Survey

Part 1: Personal Information

1. What is your gender?

☐ Male ☐ Female

2. What is your age group?

☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ 31-35

3. What is your profession?

☐ Unemployed

☐ Student

☐ Government worker

☐ Private sector worker

☐ Retiree

☐ Others, please specify _____

4. Do you own a Smartphone or any mobile device?

☐ Yes ☐ No

Part 2: Food Documentation Information

5. Are you passionate about food?

☐ Yes ☐ No

6. Do you sometimes document your food?

☐ Yes ☐ No

If no, proceed to question 8.

7. Please select methods of documentation. You can select more than one answer.

☐ Handwritten into journal

☐ Blogging

☐ Social media

☐ Photography

☐ Others, please specify _____

8. Do you think Malaysians take pride in their food?

☐ Yes ☐ No

Part 3: Android Application Acceptance

9. Have you ever used a mobile food journal application before?

☐ Yes ☐ No

If no, proceed to question 11.

10. Did you find the application to be comprehensive in documenting your food experiences?

☐ Yes ☐ No ☐ Neutral

11. If there is an Android application which enables you to document your Malaysian food experience, will you use it?

☐ Yes ☐ No

12. Which features would you like the mobile food journal to offer? You can select more than one answer.

☐ Location sensor and navigation (i.e. GPS, googlemaps)

☐ Multimedia integration (i.e. photo & video recording)

☐ Social media sharing (i.e. facebook, twitter, instagram)

☐ Others, please specify _____

Part 4: MYFood: Mobile Malaysian Food Journal Application

MYFood is a comprehensive Android application which enables users to document their Malaysian food experiences via medium of texts, images and video, aside from added social network sharing and location navigation functions. Please rate the statements below (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).

1. Mobile applications help me a lot in my daily life	1 2 3 4 5
2. I am very familiar with mobile applications and using them would be easy for me.	1 2 3 4 5
3. Using mobile applications is much easier than having to open websites for performing activities.	1 2 3 4 5
4. Food journals make eating experiences more memorable or meaningful.	1 2 3 4 5
5. Malaysians are often seen documenting (i.e. snapping photos) their food.	1 2 3 4 5
6. I am aware of many existing mobile food journals on the market.	1 2 3 4 5
7. I often have difficulty recalling details of my food experiences.	1 2 3 4 5
8. I often have trouble remembering where I ate and how to get there.	1 2 3 4 5
9. I like to share my food experiences on social media.	1 2 3 4 5

APPENDIX 2

Post-Implementation Survey

The purpose of this survey is to evaluate the comprehensiveness of MYFood: Mobile Malaysian Food Journal application in assisting users to better document their food experiences.

Part 1: Personal Information

What is your gender?

☐ Male ☐ Female

What is your age group?

☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ 31-35

Part 2: Effectiveness

Please rate the statements below (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).

1. The graphical user interface of this application is user friendly.	1 2 3 4 5
2. It is easy to navigate through the whole application.	1 2 3 4 5
3. MYFood application is detailed and specific in documenting my food experiences.	1 2 3 4 5
4. With MYFood location sensor and navigation features, I have less trouble remembering where I ate and how to get there.	1 2 3 4 5
5. With multimedia integration, MYFood enables me to easily record and recall details of my food experiences.	1 2 3 4 5
6. MYFood application is useful in enabling me to share food experiences with friends and family via Twitter.	1 2 3 4 5
7. MYFood application is comprehensive in documenting my food experiences.	1 2 3 4 5
8. MYFood application improves my mobile food journalism techniques.	1 2 3 4 5

Part 3: Improvement

Please answer the questions accordingly.

9. Which features did you find most useful? You can select more than one answer.

- ☐ Holistic content creation (i.e. detailed and specific fields for creating journal entries)
- ☐ Location sensor and navigation (i.e. googlemaps direction)
- ☐ Multimedia integration (i.e. photo & video recording)
- ☐ Social media sharing (i.e. direct tweeting from the application)
- ☐ Others, please specify _____

10. Please give your suggestions for improvement.

MYFood: Mobile Malaysian Food Journal

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***Abstract* — Food is a necessity for man. For many years, individuals have grown to appreciate and become more passionate for the ideal gastronomic experience. Malaysians, in particular, take their cuisines very seriously. Whether it is over local or abroad dining experiences, food journaling has been practiced for quite some time. From common methods of blogging, sharing on social networks and photography, individuals have learned to take technological opportunity in leveraging food journalism techniques. However, current existing mobile food journal applications in the market are not only limited in number, but also lack comprehensiveness. This study is focused on addressing the aforementioned concern, while aiming to improve mobile food journalism techniques with the aid of MYFood application. In doing so, prior researches on food journalism, Android technology and Malaysian food & culture were also conducted to give a better understanding on market situations as well as user requirements. Throughout the process of achieving the project's objectives, Rapid Application Development (RAD) methodology was used as it allowed for an iterative approach and integrates customer response for project implementation. MYFood is targeted at technologically inclined food-lovers of any ethnicity background, which offers documentation medium of texts, images and video, aside from added social network sharing as well as location navigation functions. Developed on Android OS, the application is hoped to cater to a wide audience, from within and outside of Malaysia. Findings of this study successfully validated the initial hypothesis: comprehensive mobile food journal applications help improve users' mobile food journalism techniques.**

I. INTRODUCTION

As a country rich in cultural and ethnicity diversity, Malaysians are very proud of the food variety they have to offer. Very often, Malaysians are seen snapping photos of their meals at restaurants, blogging about food reviews, sharing new café locations via social networks, etc. Throughout the years, individuals have also learned to take technological opportunity in assisting them to improve their mobile food journalism techniques. However, existing mobile food journal applications in the market are limited not only in terms of function, but also quantity. This research raises the question of how can we provide a more comprehensive approach for improving mobile food journalism techniques?

The objectives of this project are to conduct research on existing mobile food journal applications in the market and food journalism requirements, to design and develop a comprehensive mobile food journal application and to evaluate user's perception on the developed application.

The scope of this project is focused on food journalism, Android technology and Malaysian food & culture. Since MYFood application is primarily focused on food journalism, therefore it is important to understand the behaviour and requirements of food journalists. When documenting food experiences, what do they take into account and how. Here, the identification of contents to be included into the application is crucial as it could potentially leverage one's mobile food journalism techniques. While, as the application is developed on Android platform, it is also crucial to understand the workings of this technology – how to develop the application and what is suitable for the market. Focus on Malaysian food & culture is also vital because prior to providing an application for documenting Malaysian food experiences, the Malaysian food culture and heritage must first be understood. The racial diversity in the the country has created a mix of cuisines, ranging from multiple backgrounds and taste. Therefore, it is important to include these authenticities and uniqueness in capturing the user's food experiences.

II. RELATED WORKS

A. Malaysian Food and Culture

The Malaysian population is built on ethnic diversity; inheriting ancestral norms, culture native language and culinary heritage that is being practiced until today. In due course, the ethnic integration formed a unique Malaysian culture. The 'multiculturalism' among the different races produced a distinctive cuisine of Malaysia - described as "Asia's greatest cuisines meet and mingle" - that behaved as a basis to forming and shaping the dishes which are apparently accepted by

people from all walks of life in the country[1]. Culinary practices had gradually changed over the years due to respect for each other's cultural and religious sensitivity. Consequently, intercultural culinary practices became evident. This can be seen in the usage of Malay and Indian spices in Chinese food and the creation of halal versions of Chinese food, which are consumable to all races. This also had significantly contributed to the variety of distinct cuisines in Malaysia[2]. Malaysians take pride in sharing their food, whether with locals or foreigners. It is perceived as an act of hospitality and the need to impart satisfaction from the offerings to the receiver. In a study on relationships between Malaysian food image, tourist satisfaction and behavioural intention, it was found that responses on the dimension of satisfaction were positively skewed. Respondents, consisting of tourists, agreed that Malaysian food contributes to the quality of their visiting experience and enjoyment as well as eating pleasure. Based on the results, it can be derived that Malaysian food played an important role in conveying a memorable and positive image of Malaysia as a tourism destination.

B. Technologies and Food Documenting

In 1825, the French philosopher and gourmand Jean Anthelme Brillat-Savarin wrote, "Tell me what you eat, and I will tell you what you are." Today, people are often sharing their food experiences with the world, revealing more about themselves merely by doing so. Kathryn Zerbe, a psychiatrist who specializes in eating disorders and food fixations at Oregon Health and Science University in Portland, also stated that "In the unconscious mind, food equals love because food is our deepest and earliest connection with our caretaker. So it makes sense that people would want to capture, collect, catalogue, brag about and show off their food." [3].

For a long time, man's passion and interest towards food has taught them to document their eating experiences. From traditional conducts of collecting wrappers to handwriting into journals, food documenting methods too have greatly progressed. Technological opportunity has provided individuals with a platform to leverage and expand their initial methods, while staying true to the major purpose. Keeping a photographic food diary is a growing phenomenon[3]. According to Tara Kirchner, marketing director of Flickr, the number of pictures tagged "food" on the photo-sharing website has increased tenfold to more than six million in the last two years. One of the largest and most active Flickr groups, called "I Ate This," includes more than 300,000 photos, contributed by more than 19,000 members. The same phenomena can be found on other sites like Twitter, Facebook, MySpace, Foodspotting, Shutterfly, Chowhound and FoodCandy. While in October 2012, #food on twitter was ranked at 33rd position in twitter's Top 100 Tags with 13,175,897 photos, validating the popularity of posts on food.

Within the last four years, manufacturers, Nikon, Olympus, Sony and Fuji have released cameras with special "food" or "cuisine" modes, costing approximately $200 to $600. Terry Sullivan, associate editor of digital imaging technologies at Consumer Reports, stated that "These functions enable close-up shots with enhanced sharpness and saturation so the food colours and textures really pop."

C. Existing Food Journal Applications in the Market

Existing food journal applications in the market are largely focused on improving health. Method of consumption documenting assists in keeping track of calorie intake, identifying suitable diets and monitoring general health. Aside from that, added functions of exercise schedule and health consultation also enable users to maintain their fitness. As of 11th October 2012, it was found that 12,320 health and lifestyle applications existed in the market, with fair average ratings of 3.8/5.0[4]. Several food journals specifically for food-lovers or solely leisure purposes also exist in the market. These applications enable users to rate their food experiences and share them via social networks. However, these genre of application are not only limited in number, but also functionality.

III. METHODOLOGY

A. Research Methodology

This section focuses on giving the insights on how the research was carried out. This includes the mode of data collection, how the data was analyzed and the research tool design.

Vital information for this research work are collected through primary and secondary sources with the combination of:

1. Research on existing market situations and potential requirements and issues with existing mobile food journal applications
2. Interview with acquaintances on better understanding the behaviours of food journalists
3. Questionnaire & survey to validate previous findings and better outline system features

B. Tools and Equipments

The hardware and software specifications of this project are as follow:

Software

- Google AppInventor
- Google Chrome browser
- Adobe Photoshop
- Microsoft Powerpoint

Hardware

- Android device
- Computer

C. System Methodology

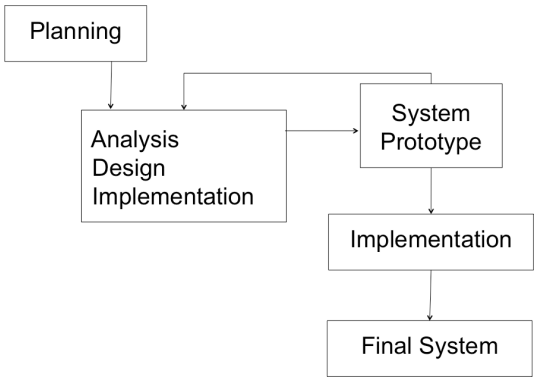


Figure 1: Rapid Application Development (RAD) Model

RAD was selected as minimal planning was required in favour of rapid prototyping. Planning activities of the software were interleaved with writing the software itself. The lack of extensive pre-planning also generally saved time and allowed the software to be written much faster, making it easier to change requirements. Users, in this case journaling food-lovers, were involved in the development and assisted in ensuring that the application was catered to their needs. Participation of user was essential as RAD required the prototype to be revised from time to time.

IV. RESULT AND DISCUSSION

A. Prototype Features

The prototype serves as an extension to existing mobile food journals. In terms of features, MYFood consists of the basic requirements as well as those which gives added value. The following sections will discuss this in greater detail.

Basic functions – fundamental functions which allow journal entries to be created.

- Save
  - On "NEW" and "EDIT" screen, journal entries can be saved. Journal entries are stored in the Tiny DB, making them available even after exiting the application.
- Edit
  - An entry can only be edited on "VIEW" screen. Once the entry has been edited and saved, the initial journal entry will be overridden.
- Delete
  - An entry can only be deleted on "VIEW" screen. After doing so, the entry is removed from the Tiny DB.
- View
  - Once an item is saved, then it is viewable. To view previous journal entries, press "VIEW" button and a list picker will appear – allowing the user to select the intended entry. This mode is Read-Only and allows users to perform other activities discussed in the next section.

Added features – features which promote the comprehensiveness of MYFood application.

- Holistic content creation
  - Unlike other mobile food journals in the market, MYFood is detailed in documenting user's food experiences. Specific fields are designated for particular contents. By doing so, details are better recorded, allowing users to better recall their food experiences.
- Location sensor and navigation
  - Based on the pre-implementation survey conducted, it was found that many users have difficulty with their food locations. MYFood integrates with global positioning system (GPS) and internet connectivity to enable users to record their current food location and get directions (via googlemaps) with mere clicks of buttons.
  - Users can get their current location on "NEW" or "EDIT" screen, when creating journal entries. Simply click "GET ADDRESS" button and the user's current location address will appear in the "ADDRESS" field.
  - While, navigation is applicable on "VIEW" screen. When user clicks "GET DIRECTION" button, googlemaps will direct the user towards the intended address.
- Multimedia integration
  - MYFood also allows users to record their food experiences using mediums of photo and video. In addition to recording user's review in text form, these medium further help users in capturing other graphical details. Users can also watch a slide show of the food images previously captured.

- Users can insert photo either on “NEW” or “EDIT” screen. Unlike other mobile food journals, MYFood also allows users to insert photos from the gallery and not just directly from the camera.
- Videos can be directly recorded on “NEW” or “EDIT” screen. Once recorded, users can directly watch the video from the thumbnail on “VIEW” screen or click “FULL SCREEN” button and watch on the device’s native video player.
- In order to play slide show, users have to click on “SLIDE” button on “VIEW” screen and images of previous food entries will appear. To end slide show, simply click on the “STOP” button.

o Social network sharing

- In today’s world, individuals have made the social network part of their daily lives. Every action is being posted across the internet among friends and family members. Therefore, it makes sense that users would also want to share their food experiences online. MYFood allows users to do just that. However, at the moment, for prototype purposes, MYFood is only integrated to Twitter. Other networks (i.e. facebook, instagram) will be proposed for future implementation.
- To log into Twitter, click on “LOGIN” button on “VIEW” screen. The twitter site will require the user’s authorization. Once allowed, the user is logged into twitter and click the “TWEET” button for direct tweeting. This will then show in the user’s Twitter timeline.
- To log out, user can either click on the “LOGOUT” button or simply navigate to other screens.

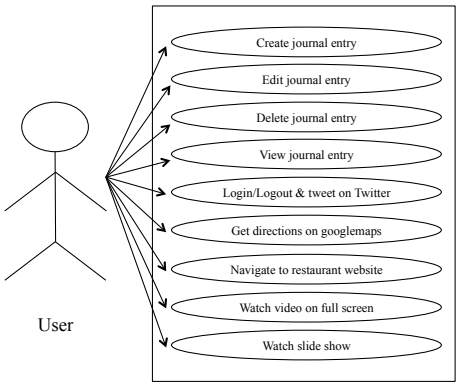


Figure 2: Use Case Diagram

B. Sample Screenshots

The following sections will explain further on the functions and features on how the application works.

Figure 3: Start

When starting the application, user will see the start screen, as seen in Figure 3. As required, in oder to start the application, users will have to first tap on the logo.

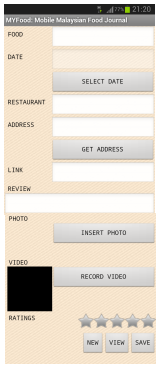


Figure 4: “NEW“

Figure 4 shows the “NEW” screen immediately after startup for creating journal entries. Apart from inserting contents into the required fields, journalism techniques are also further leveraged with clicks of buttons. This way, more accuracy can be attained. “SELECT DATE” button will call a date picker, enabling users to select the date of the entry. While, “GET ADDRESS” button retrieves the location address via internet connectivity or global positioning system (GPS). By doing so, users are spared the trouble of identifying their current eating locations. “INSERT PHOTO” button allows users to either select an image from the gallery or directly capture a photo from the device camera. As the name suggests, “RECORD VIDEO” allows users to directly insert video from the device videocam. Users can give ratings by clicking the stars – none, half or full stars. From this screen, users can either clear fields via “NEW” button, view previous entries via “VIEW” button or save the current entry via “SAVE” button.

Figure 5: “VIEW”

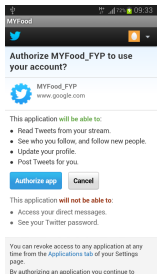


Figure 6: Twitter authorization

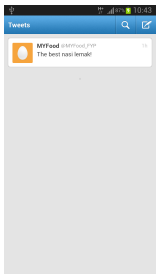


Figure 7: Twitter timeline

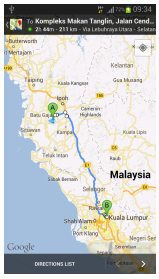


Figure 8: Googlemaps

Figure 5 shows the read-only "VIEW" screen. Users can view their previous journal entries on this screen. While, the buttons on this screen enable users to perform respective functions.

MYFood enables users to directly tweet their food experiences on Twitter. By default, users are logged out and in order to login, simply click the "LOGIN" button. After doing so, users will be navigated to authorize tweeting activities as seen in Figure 6. Then, once authorized, users are officially logged in and the "TWEET" button appears, as shown in Figure 5. To tweet, simply click the "TWEET" button and posts will appear in the user's Twitter timeline, as seen in Figure 7. To logout out of Twitter, click "LOGOUT" button.

When user clicks on the "GET DIRECTION" button on "VIEW" screen, they will be navigated to googlemaps as seen in Figure 8.

Figure 9: Nasi lemak Tanglin website

Figure 10: Watch video on full screen

When user clicks on the link on "VIEW" screen, they will be navigated to the restaurant's website, as seen in Figure 9. While, users can also watch their video journals on full screen by clicking the "FULL SCREEN" button. Then, the device's native video player will perform the action. This is depicted in Figure 10 on the left.

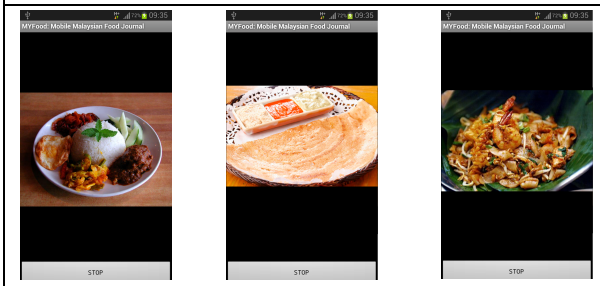
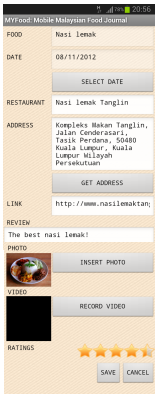


Figure 11: Slideshow

Figure 11 shows the slideshow of food images from previous journal entries that will play when user clicks on "SLIDE" on "VIEW" screen. To stop the slideshow, users are required to click on "STOP" button as seen above and users will then return to the previous "VIEW" screen.



Similar to "NEW" screen, "EDIT" screen also has the same functions and features. However, in contrast to "NEW" screen, this screen only permits saving and cancelling actions as seen in Figure 12. Once the user has saved or cancels changes, the system will update the database and returns to the "NEW" screen.

Figure 12: "EDIT"

C. Post-Implementation Survey

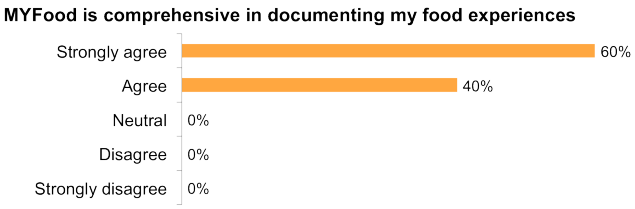


Figure 13: Comprehensiveness of MYFood

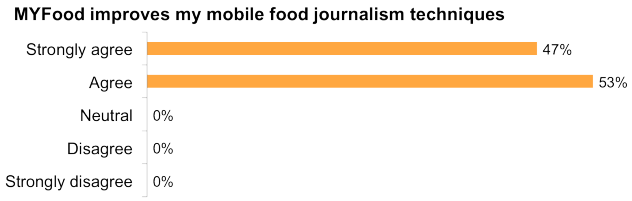


Figure 14: Improvement of food journalism techniques

The post-implementation survey was carried out for getting users' feedback towards MYFood application for validating the initial hypothesis and obtaining aspects for improvement. The results shown in Figures 13 and 14 successfully addressed the problem statement of this study: a comprehensive mobile food journal application can better improve mobile food journalism techniques.

V. CONCLUSION AND FUTURE WORK

Generally, the development of MYFood application managed to successfully validate the initial hypothesis: a comprehensive mobile food journal application can better improve mobile food journalism techniques.

However, for improvement purposes, several suggestions can be imposed – primarily in terms of functionality. In contrast to other existing mobile food journals, MYFood has to improve on its share

functions. For prototype purposes, only Twitter has been integrated for direct tweeting. Therefore, in order to remain competitive, other social networks and social platforms should be incorprated for ease of sharing. Filter and sort functions for listing journal entries should also be included to simplify user search as well as reference. Additionally, the application can be enhanced by multiplying the multimedia features (i.e. insert more than one photo) and making the interface more appealing. In order to add functionalities and produce a more stable platform, MYFood could also be re-developed using eclipse IDE for Android supported programming. With App Inventor, there are several limitations which hinders the features of the prototype.

Besides that, for expansion purposes, MYFood can either be replicated for usage of other respective countries or made for general use – without being region specific. Either way, a wider target audience is able to enjoy the benefits of the application. However, further research needs to be conducted to validate this expansion.

Moreover, MYFood can also be offered in multiple Operating Systems (OS) such as iOS and Symbian, just to name a few. The market potential of Smartphone is now huge and being able to leverage on its potential would surely benefit a lot to the industry.

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