

Mobile Application Cycling Tracker – Virtual Environment

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Abstract—This study was carried out to create a mobile app for cyclist and help what cyclist needs and wants when on journey. Also, been made for user that want to train their stamina indoor by using gymnasium equipment or bike trainer by using virtual environment video. The main function of this application was provided speed calculation, calorie, current time and also virtual environment videos in Malaysia. By creating this application on the common device platform, android platform was choosing for easy and convenience to user. Therefore, developer build an application cycling application that has virtual environment recorded in Malaysian roads. The application that have been created was given a feature that might be useful otherwise this gadget can be carrying around wherever user go. Although, certain application might help among the daily activities for example cycling. This application gives a data to user while using it. All the data might help to improve user performance and acknowledgement.

I. INTRODUCTION

According to Malaysia sport participant statistic shown 27.4% of all sport are participant during the survey conducted by Cint in Statista website. Cycling has multiple benefits such as health, environmental, transport, economic and social benefits. In order to encourage more people into cycling especially for women, the elderly and children special attention needs to be paid about the danger of road as a preventive. Bicycle is widely used since it is introduced in 19th century. Around the turn of the 20th century, bicycles reduced crowding of traffic by allowing people to commute from more spacious dwellings into the suburban areas. Bicycle riding has significant effect on reducing air pollution because it does not require any use of fuel. Plus, bicycles allow people to travel for leisure since bicycle are three times as energy efficient and faster compare to walking. Nowadays, many developers made an application for cycling which has a lot of functionality. By this kind of application, the developer observes there is no developer in Malaysia develop the application yet according to google play statistic. So, developer take the challenge and build that has Malaysian content in it. Thus, application “Cycling Tracker – Virtual Environment” provided cyclist some information while they on bicycle and also provide virtual environment videos for people used indoor because developer want to give motivate user while workout alone or on journey.

II. RELATED WORKS

A. CASE STUDY 1 - “How Mobile Apps Are Transforming The Fitness Industry”

Health and wellness is quickly becoming a top priority for an increasing number of people, and a core component of this trend is fitness. With this growing demand comes the inevitable growth in gyms, trainers, and related experts.

According to Andrew Gazdecki in research paper in 2017, say that fitness nearly three quarters of people online researched wellness and fitness trends in 2015 and people are attached to their phones, as evidenced by nearly everyone at a gym either having them strapped to their arm or breast.

According to Andrew Gazdecki again, mobile apps also can share all user data in their social media for competitive reason and potential recruit members to join with. This may increase the population of cyclist within certain area because people easy affected by other people activities.

Therefore, according to Sveta Cherednichenko in research journal in 2017 says fitness in 2011 probably wasn't such a popular topic. The general public didn't think is was interesting. But everything has changed in 2014 when the fitness industry took a gigantic leap said Sveta Cherednichenko in 2017. Wearables immediately became a trend, and as the figure 2.1 shown the increasement:

Cycling mobile apps also help user to lose much weigh by target different goal in daily routine. According to Casey Newton in research paper in 2017 said cycling mobile apps also help lose his weigh by choosing a free downloadable application in google store and used it as the application order to do. He also creates custom routines, log workouts, and track weight over time. On one hand, the tool wouldn't have mattered at all had his not been motivated to use it. But on the other hand, having a great tool made his workouts much easier — and in a variety of ways, has pushed him to keep going.

People want a personalized experience instead of being part of a one size fits all, assembly line approach. Apps allow a gym to let users personalize their workout experiences. They can be a virtual trainer, real time exercise planner, or even a pocket workout buddy.

Additionally, mobile apps meet gym users where they are (no matter where that might be), and combined with

wearable technology, enhance the member’s experience which in turn boosts the gym business. The service a gym now offers must extend beyond the four walls of the gym itself, or in other words members expect to be able to workout at them gym even when they aren’t there. A mobile app gives them what they want – a complete package that inspires them, informs them, and adds real life value.

Table 1 related apps

Mobile Application	Advantages	Disadvantages
STRAVA	<ul style="list-style-type: none"> Connect with Friends and Fellow Athletes Running on background and collect all the data. 	<ul style="list-style-type: none"> Have premium for extra importance features. Activities feed not well organized.
CYCLEMAPS CYCLING	<ul style="list-style-type: none"> Plan bike routes, quickly and easily; everything is mapped out Discover new routes, save them, and use them offline later. 	<ul style="list-style-type: none"> Slow on rendering the map data. Too many bug
MAP MY RIDE	<ul style="list-style-type: none"> Connect with apps and wearables. Track and map workouts 	<ul style="list-style-type: none"> Tracker seem buggy on certain smartphone. This apps don’t track correctly and the feedback only works when upgrade.

III. RESEARCH METHODOLOGY

A. INTRODUCTION

Research methodology are important in this chapter. This section set of procedure or method used to conduct research. A combination of both qualitative and quantitative methodological approaches was adopted by the researcher in order to attain a realistic result. According to Moran, A. (2014). Used agile methodology might minimize the amount of up-front planning and design. This research gives the developer impact on using the agile methodology.

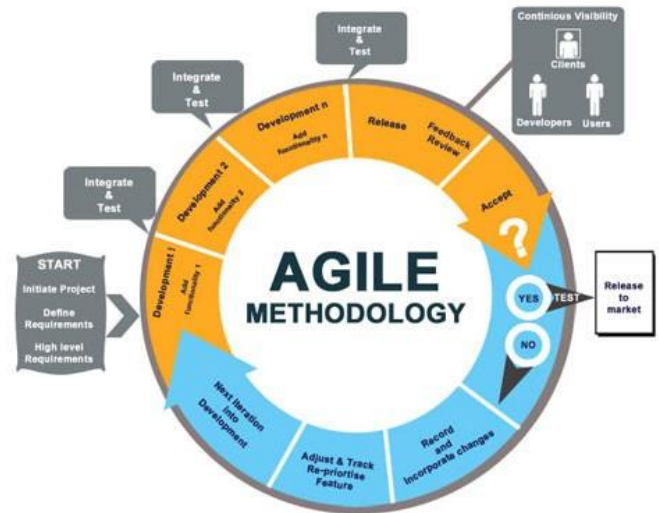


Figure 1 agile methodology

1) AGILE METHODOLOGY

Agile is an iterative, team-based approach to development. This approach emphasizes the rapid delivery of an application in complete functional components. Rather than creating tasks and schedules, all time is “time-boxed” into phases called “sprints.” Each sprint has a defined duration (usually in weeks) with a running list of deliverables, planned at the start of the sprint. Deliverables are prioritized by business value as determined by the customer. If all planned work for the sprint cannot be completed, work is reprioritized and the information is used for future sprint planning.

As work is completed, it can be reviewed and evaluated by the project team and customer, through daily builds and end-of-sprint demos. Agile relies on a very high level of customer involvement throughout the project, but especially during these reviews.

Agile is a powerful tool for software development, not only providing benefits to the development team, but also providing a number of important business benefits to the client. Agile helps project teams deal with many of the most common project pitfalls (such as cost, schedule predictability and scope creep) in a more controlled manner. By reorganizing and re-envisioning, the activities involved in custom software development, Agile achieves those same objectives in a leaner and more business-focused way.

IV. FINDING DISCUSSION

The beta testing is the final testing before publishing the application to the public. Normally in this phase, this testing is to make sure that the animation information is working properly. Beta testing can be considered as a "prototype." The tester is targeting to student and internet. Testers were asked to play this mobile application and from that, the results of the evaluation can be made. In this beta testing phase, questionnaire

was given to the user to evaluate. As for the Beta developer gain response from 37 despondences.

Below are the figures of charts results of finding base on the questionnaire given to 37 respondents.

Do you Cycling?

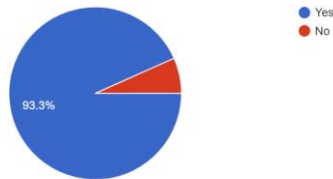


Figure 2 percentage that do cycling

According to question 1, the developer would like to identify whether the user of the application is cyclist. So, based on the evaluation gathered the graph clearly shows that almost all of the respondent is cyclist. However, 7% of the respondent rated they were not cyclist.

This application help you during cycling?

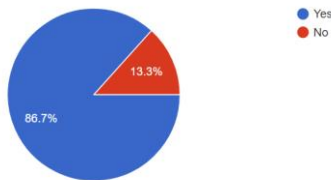


Figure 3 percentage that agree the application help during cycling.

Based on the pie chart above, 86.7% of the respondent have rated yes which the application helps the during cycling. This clearly shows that the developer has successful developed an application that use suitable content to deliver for user to used. In contrast, almost 13.3% of the respondent who rated no. Even though, the number of respondent who rated yes is quite high but the developer has to reconsider with the data collected with those who rated it average. Certain action should be taken by the developer to identify and improved the quality of the application so that it can reach 100% of excellent level from the respondent.

Does the application working well and accurate?

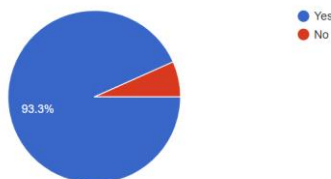


Figure 4 percentage that working find bug in the mobile application

According to pie chart above, 93.3% of the respondece used the application with running issue which mean bug or error during the test run. This shown developer has done great job on minimizing all the bug and error in the application. Unfortunately, 7% of respondents found the bug which for developer need to fix and run the application to consumer without any bug.

Does the application help motivate your exercise?

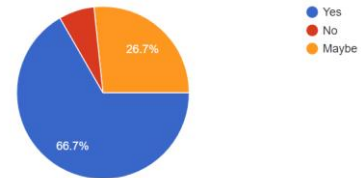


Figure 5 percentage of user feel motivate while using the application

In question 4, it is a question that is interrelated with question 3. The developer would like to identify whether the application help did motivate user or not. Thus, based on the graph above, 66.7% respondents have rated this question yes which basically means that half of the respondent feel satisfied and motivated with the content that had been provided in the application. This indirectly indicates that the developer had successfully, reach the objective level of the user in terms of motivating user while using the application. Besides, the developer still has to improve certain content since there are 27% respondent who still feel that they still confusing about motivation.

Does media element suitable for this application?

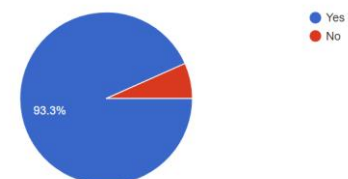


Figure 6 percentage of user agree on media element suitable for the application

Next on question 5, the developer feels satisfied with the application that had been produced because based on the graph, 93% respondent out of 100% respondent feels that the quality media are quite good which is above average. Besides, there are 7% respondent who rated the question as not suitable which indicates that they are fully satisfied with the quality provided in the application. Thus, it shows that application that have been developed by the developer produce good quality for the user.

Does the font and picture suitable and easy to understand?

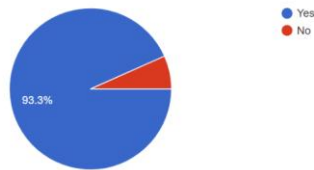


Figure 7 percentage of suitable picture and font in the application

Moving on to the next question, the developer would like to find out whether the content that had been provided in the application is easy for the user to understand or not. According to the graph above, 93.3% of the respondent which are almost all of the majority rated yes for this question. This indicates that the application does provide a good information and content which is understandable for the user. Nevertheless, there are 7% of the respondent who feels that the content is still need to be improved since they rated it.

Do you understand all the icon and button?

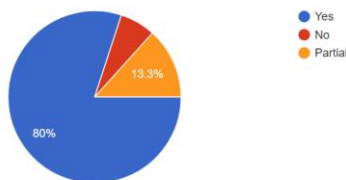


Figure 8 percentage on understandable all the icon and button

Besides evaluating the easy to use of the application, the developer also collected some data from the respondent regarding the button and the icon. So, to summarize it based on the pie chart, almost 80% of the responded which have rated it yes. This shows that the application is smooth and easy for the user to use it since 13.3% rated partial which mean they only understand the half of the button and icon. It clearly indicated that the respondent did provide a good system of the application. Nevertheless, there are 7% of respondent who rated it no which probably shows that the users are still expecting the application to be better and easier to understand.

Do you understand the information provided when you use the application?

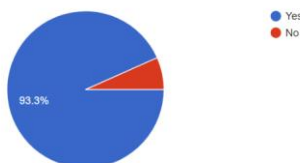


Figure 9 percentage of understanding the information provided

Based on this question, the developer had figured out that the information provided for the user in the application is quite good since almost 93.3% of the respondent rated yes. This clearly indicates that the information is sufficient enough for the users to understand. Therefore, the application shows that it is really useful for the user beside the content and the information is understandable and easy for the user to interpret the information clearly without any problems

Do you know other related application?

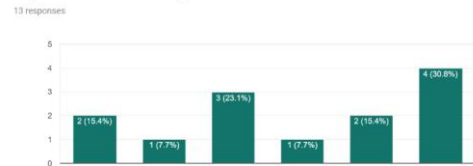


Figure 10 bar chart that ask user known related application

As shown figure 5.9, bar chart that ask user known existing related application. Only 13 response that responses on this particular question. Some of the response answer it so fairly but other still don't know this type of application exist on android market. but other still don't know this type of application exist on android market.

Feedback



Figure 11 feedback about the application

As shown figure 5.10, many respondent satisfied with the application as shown in figure above which is a feedback from user.

Suggestions for improvement



Figure 12 suggestion for improvement

V. CONCLUSION

The mobile application of Cycling Tracker – Virtual Environment developer is successful completed. The developer learns how to face all the problems in order to achieve research objective. By the development of the application, developer combine all the related application and find any lack in it and follow the user preference for example taking from google play comment section and from the questionnaire. It is also can motivate the user to cycling even more and know the interesting using helpful information in the application while using the smartphone. In additional, by making the application free to use and user will be interest to use. Furthermore, the application made for the largest smartphone platform which is Android. Usually application that has video file in it will use a lot of storage while this application been develop by developer is using the streaming video and it reduce the use of storage. This application is literally not for cyclist but also can use by everyone. Sometimes user demotivate when workout and cycling alone. By the indicator and information provided in this application, user will be more motivated. Therefore, the application can also represent a good vision about cycling because not everyone knows how excited by involving themselves and give a good impact on their health.

The goal of this research is to develop a positive mind of Malaysian people to do something healthy and reduce the number the obesity in Malaysia because the statistic states that prevalence of obesity was at 13.3 percent, while overweight was at 38.5 percent. The developer hopes that the application also made for others smartphone platform so the uses of the application can be widened. These goals have been successfully achieved on completion of this project. The project was tested on both Adobe Animate simulator and Android base mobile device. The application ran smoothly and the user-interface components responded as expected.

During development of this research, developer successfully manage the project correctly base on the guideline and Gannt chart. With help from supervisor and friends, developer gain the possibility to finish the project with minimal problem. Therefore, developer ask all the impossible task to manage find the problem. Forum in adobe and others tutorial also give developer big help to solve all the problem. From the beginning, developer make the schedule on task base on time to easily manage the project.

Furthermore, developer gain a lot of knowledge from conducting this research such as can manage the timeline while its own, find the new solution for certain problem, doing research on how to make mobile application successfully developed, manage money for the overall project while developer itself life with minimal amount of income, learnt more knowledge without hoping input from developer institute and also analyzing problem from the topic and object from the project.

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