

E-Queue Mobile Application

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Abstract. Waiting in line is a common experience in daily life, whether for a table at a popular restaurant or for the service at a bank. This experience is not always pleasant for most of people because they always have to wait for a long time to be serviced. The ability to interact with waiting customers is highly desirable because it allows businesses the opportunity to optimize their existing services and offer new services to waiting customers. However, interacting with individuals waiting in a queue has been inefficient and costly because employees must either talk with each waiting customer on an ongoing basis or the business must provide high tech devices that interact with each waiting customer. Agile methodology which will be used to develop this application, it incorporates the SDLC phases starting from the Planning phase up to the Maintenance phase. End of the research, we found that majority of respondents are prefer to use the proposed system compared with current method.

1 Introduction

Current system available for businesses to manage waiting customers, queue them for service, and notify them when service is ready for them have no means of interacting with each waiting customer. These system include physical queues, customers gather in a small lobby or in an area roped off from other customers, which awkward unappealing, and uncomfortable for customers. Intercom paging systems, customer's names are called out over a loud speaker to a crowd of waiting customers. This system can be cumbersome to manage because some guests may not hear the page the first time their names are called. This could also worsen the atmosphere for customers who are currently receiving service. "Take a number" system, each customer is given a number and an elevated display shows the "Now Serving" number to a crowd of customers. This system has similar problems as the intercom system with regards to crowd management. So, businesses not only interact with waiting individuals, they also cannot verify that waiting individuals have received notification that services is available, provide alternative services, or allow individuals to control their place in queue. The proposal aimed at developing a new Smartphone application, called "E-Queue mobile application" for businesses. Nowadays, more people use portable communication devices like Smartphone as their primary means of communications, these device and proposed system use to solve the queuing problem. This proposed system can reduce the costs of business to hire staff or purchase high tech devices

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to interact with waiting customers therefore customers also no need to spend long time to wait at waiting area.

1.1 Problem Statement

During peak period, customers must spend long time at waiting area to wait for service. They not dare to leave the waiting area to do others thing because they can't estimate the waiting time. With this proposed system, customers can view the estimate time by system and customers will received a notification when their queue number is nearing. In today's market "queuing" system, most of the business centres are using the number ticketing system which a number will be written on a piece of small paper when you press the button on the "queuing number system". However, based on researcher observation to the said system, its do have lots of disadvantages. At first, this method is not environmental friendly as they have to use so much paper in ticketing printing (especially some of the customer never turn up after took the number and this might create another environmental issue which is paper wasting).Customers will be given a queue number via this application without using a piece of paper. Businesses need to cost much money to hire employees and purchase high tech devices to satisfy waiting customers' unlimited needs. With this proposed system, customers can direct interact with system by using their own Smartphone to satisfy their needs.

1.2 Aim

The aim of this proposed system is allow customers monitoring the waiting situation and can interact with system through their Smartphone. With the proposed system or application, it enables the users to check the "on queuing waiting list". If the users wish to add themselves to the waiting list, user can just log in to the application with their login ID and password and get a queue number from the proposed application. This proposed system will show the estimate waiting time to customers, so they can go wherever mobile internet service is available while they wait. This proposed system also will automatically update current queue number. When customer's queue number is nearing; this application will send a notification to remind customers. However, the bigger advantages of this proposed system is enables the application system to manage their "wish" anytime after they received the notification or queue number. For example: application users can simply cancel the service request if they found they have something more urgent things to be done. Therefore the system will notify the number behind you to come early. Customers can have some "freedom" while waiting by using it. The proposed system is mainly focus on get a queue number, view queue list, view estimate time and user response to system server. The reason for proposing this E-Queue mobile application is to solve the problem that mentioned in the problem statement.

1.3 Objective

The purpose of developing this mobile application is mainly to research the current system to managing waiting customers, to find out the problem faced by customers and businesses and also to provide a better overall system to them. The objectives of this research would be To provide "freedom" to waiting customers by show estimate waiting time and sent notification when their number is nearing, allow customers interact with proposed system to modify their waiting status like delay or cancel the services, provide a proposed system that more environmentally friendly than current system and to provide a proposed system to solve queuing problem for Android 4 user.

1.4 Justification

This proposed system could help customers to get their queue number by using “E-Queue mobile application”. This free application is able to download from Android apps store to their Smartphone. Customers can provide their feedback for the application, and those feedbacks can make as improvement in future. Customers must scan the kiosk by using their Smartphone to get their queue number and estimate waiting time will be show on their Smartphone. They can go anywhere that mobile internet service is available while their waiting. When customer’s queue number is nearing, customer will receive a notification as remind. Customer can direct go counter to show their queue number and get services. Based on their queue number, counter staff can get customer’s details and needs and provide services in shortest time. This proposed system also able to enhance confident of customers towards business because the function of the system.

2 Literature Review

The chapter reviews on topics of Android, Related works, SDLC methods, Requirement Gathering Techniques, Quick Response code(QR code). Proposed system should be assessed in detail from the each of the application functionalities to the application advantages and disadvantages. According to Haughey (2009) Google which acquire Android Inc. in 2013 has been constantly researching and updating the versions of Android to fix bugs faced by previous versions besides adding in more specifications and functionalities [1]. The latest stable version of Android which can be found in market is Android 4.3, Jelly Bean which was released August of 2013. Among the improved functionalities implemented on this latest version are restricted profiles limit access to apps and content, Bluetooth smart support makes Android ready for a whole new class of mobile apps that connect to fitness sensors, high performance graphics games, virtual surround sound, additional language support, location detection through Wi-Fi and auto complete (Developer.android.com, 2013). There are many strengths of Android which are worth to be applauded for. For instance, developers may most likely prefer creating apps for Android devices since Android offers an open development platform which allowing them to use third-party tools to create the particular apps. With the implementation of open source platform, anyone with the right skills and knowledge can create an apps specially tailored for Android devices without tight restrictions or approvals. Besides, this strength of Android also enhances flexibility since it allows developers to update their apps anytime to accommodate a range of different devices and play around with many features and functions of their apps during the development process [2] Developing Android apps may also be easy especially for Java programmers since all applications under Android are mainly use Java programming language [3] also commented that since Android implements the open source platform, available code samples and supports from fellow developers can be easily accessed thus, attracting more new potential developers to learn and create apps either with basic or complex functionalities. Meanwhile, an excellent testing environment also provided by Android that encourages developers to test and debug apps properly before presenting them to the Google Play (Android market). Android Inc. has also make developers’ life easier by providing downloadable System Development Kit (SDK) in its website which comes with the API libraries and developer tools necessary to build, test and debug apps. [4] In contrast with its major competitor’s application market, Apple’s App Store which rejects application submissions that are deemed too simple or are similar to existing apps, Android’s marketplace does not censor its apps. In other words, apps developed by any developers will have equal chances to enter and to be published in the market but of course, the best one will only succeed. Meanwhile, since Android is an open

platform, manufacturers have the flexibility to pair the operating system with any hardware they wish, thus providing end users a higher number of device selections in terms of specifications, design, screen and other physical appearances [5]. However, Android does have its cons too. Though open source platform is part of Android major strengths, this technique has also raised security and quality control concerns to apps developers. Since anyone can develop and present new apps in the market without much restrictions and approvals, end users may purchase low-quality apps numerous times thus wasting their resources. With the open source concept, developers may also face piracy threats and loss of potentials profits since anyone could easily access to the same learning resources and produce similar apps. Meanwhile, hackers could also easily mimic popular apps and trick end users into using the fake apps which may contain malicious elements [6]. Since Android is being licensed to multiple phone manufacturers such as Samsung, LG, Huawei and HTC, apps developers also face problem in successfully presenting their apps across all Android devices since each manufacturer has its own configurations and specifications (especially processing power) being implemented on its respective Smartphone. In other words, there may be an incident in which some devices installed with certain versions of Android will not be able to run applications that work fine either on the same device or another device of different Android version. With such problem, fixing bugs and updating apps will also cause headache to developers as they have to make sure that the apps could be supported by all Android devices as soon as an update is performed [7].

3 Research Methodology

Agile method will be the main methodology used in this research paper. The reason of choosing this method due to agile method enables to enhance the collaboration between the system developer and application users. This benefit of using this agile method are it allow the developer retrieve the immediate feedback from the application user and notify the application user after the changing requirements has been changed within a minutes.

This research paper has been targeted completed within a year. System creators suggest 3 weeks times at least to be used to set up the scope of the system and agile system is one of the methods in assisting the above requirements as one of the pros of this agile method is it can easily to refine any of the development phases anytime if some things goes wrong (As this methodology covers up the whole system development learning cycle from planning stage to the maintenance stage)

4 Finding

In Order to gather required information for this research paper, survey is the best approach to be used. Survey method enable researchers gather feedback from students easily about the proposed system and also understand the “thought” of the targeted respondent to the “new proposed system as well. Targeted respondents for this survey proposed to be 800 students from UTAR. The survey is divided into three sections; Section A - Smartphone Users Among UTAR Students, Section B – Study on Existing System and Section C - Proposed System Expectations and Requirements. Each section consists of close-ended questions, students are more likely to spend their time to participate the survey and statistical data can be easily tabulated. We found that majorities of UTAR students are the user of Smartphone either of Androids or IOS, Thus, developing proposed system as an approach for Android- based ticketing system is rational move. Result shown more than 60% of participants are using Smartphone app more 6 to 10 times per day and 95% of them agree mobile application make their life easier. Besides that, result shown only small part

of participants are always went to UTAR admission office because they don't want to take long time to wait at waiting area and this was supported by 35% of participants wait for more than 30 minutes during tuition fees payment period and it can be seen large part of students wait for more than 10 minutes at waiting area. 73% of participations feedback to researcher they are not satisfying the current service that provided and most of participations are agree with the currently method to distribute number is not environmentally friendly. No freedom while waiting will be the biggest weakness because participants dislike waiting long time at specific waiting area and unfortunate we have more than half participants are having such thought in their mind. When come to the last part of Proposed System Expectations and Requirements survey, 56% of respondents strongly agree should having a mobile ticketing apps and most of the respondents are satisfy for the user interface of current mobile ticketing app. More than 50% participants' claim that time estimation is important for the new mobile ticketing app and from the result above, time estimation is most important for the new mobile ticketing app.

Table 1. Results of Respondents feedback on The Current and Expected Application System

% of participants are using Smartphone app more 6 to 10 times per day	60%
% of participants are agree mobile application make their life easier	95%
% of participants are willing to take long time to wait at UTAR admission waiting area for more than 30 minutes during tuition fees payment period	35%
% of participants are not satisfying the current service that provided and most of participations are agree with the currently method to distribute number is not environmentally friendly	73%
% of participants are strongly agree should having a mobile ticketing apps	56%
% of participants are claim that time estimation is important for the new mobile ticketing app	50%

5 Conclusion and recommandations

With the availability of this proposed system name E-Queue, problem faced by UTAR students in waiting for service could be solved in a more effective and efficient way when compared to existing system. Plus, students can wait for service at anywhere as long as their Android phone is capable of retrieving Internet connection, thus ruling out chances for them to miss out their turn as the developed application is targeted to students and their collaboration in the testing phases is highly essential, the agile method is selected. As mentioned in the methodology part above, Agile methodology covers up the whole system development learning cycle therefore if anything goes wrong it enable the system creator back to the "wrong system stage" to rectify the system problem, improve and enhance the system according to the feedback and requirements from the system users. Interview session with one of the president of the student association, he could aid in getting a clearer view on what problem which is faced by students. In the implementation process, Java programming language will be used since Android development supports the mentioned language. As a smart phone user, we notice that system and application upgraded will be a never ending story issue, moreover more new and advanced system will be introduced. Therefore even though our proposed system able to accept by majorities at the launching stage but system creator should be always enhance the said system (for example: enhance and improve the application while found any system bugs or large group of users requirements to certain application function to be added) in order to retain the current application users and to grab new users. Thus, when the proposed system becomes stable and an upgrade of version is needed, developer should consider in adding on student's

requirements function into the proposed system. The addition of this function from time to time will eventually add in value and usefulness to the proposed itself, gaining more new users and maintaining existing ones. As this is a very new “queuing” system to be proposed to the public and still consider it a “newbie” system therefore we do not add must multimedia elements in the application to avoid heavily loading and downloading loading lacking due to these issue might cause the system instability therefore currently we keep the application design as simple as possible. With the current improvement in telecommunication industry, we hope that internet speedy would not be an issue if in the later stage multimedia elements added in the application. However, this is the suggestions and recommendations that we propose to the next researches in the future to have a look in this research look hoop.

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