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Online Fatoni University Extracurricular Activity System

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Abstract

"My university is my paradise" is a focus of Fatoni University (FTU) to provide a more conducive atmosphere for students' intellectually, spiritually, emotionally, physically and socially developments. The university attaches importance to the development of student potential by promoting and supporting student activities, all which are managed by the Student Potential Development Office, but activities tracking still managed by paper-based method. This project aims to develop an online FTU extracurricular activity system of Fatoni University as a form of web application. An interview with university authorities has been directed to understand system requirements, whereas a questionnaire and interview conducted during testing session to test the final output of the system after implementation phase. FTU Student Activity System has been developed and tested by different types of users. This work relays on the System Development Life Cycle method to develop the system as its progress is easily assessable and more flexible to structured environment. The result indicates that having the Online Fatoni University Extracurricular Activity System is helpful to accomplish the task of managing and monitoring extracurricular activates done inside or outside Fatoni University campus by students.

Keywords: extracurricular activity system; web application; activities tracking; System Development Life Cycle.

I. INTRODUCTION

Universities need to provide college students with meaningful extracurricular activities so they can strengthen the competencies relevant to their future careers (1). Fatoni University (FTU) student activities are categorized by attendance priority into mandatory ones and optional ones. Students with activity engagement will be privileged to have a scholarship and successfully graduate. Activities are varied and classified to develop students intellectually, spiritually, emotionally, physically, and socially. The samples cover Halaqah Al-Quran, Qiyamullail, Ma-al-Quran, Sports Game and Club meetings. The Office of Student Potential Development is responsible for monitoring students' participation. In contrary to the age of technology, Fatoni University students are still using an activity handbook so that their activities participations are followed up and recorded. This traditional method brings about many difficulties and problems, such as book loss consequently causing to acquire a replacement with recollection of activity supervisors' signatures for record. And disappearance of previous recorded data.

Improving urban environments for the well-being of the increasing number of urban citizens is becoming one of the most important challenges of the 21st century (2). Universities are a sign of civilized regions. Using information system and database management system to collect the student participation information, such as data on extracurricular activities, appears to be the top priority and a key mechanism for examining and confirming several hypotheses associated with the modernization of education (3). The gap of this work laid on two issues, firstly, Fatoni University extracurricular activities isn't managed by any system, secondly, there is no test carried on assisting the usefulness, easy to use, and usability of such system. Therefore, this work attempts to provide

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an interactive solution to this shortcoming that is to develop an effective web-based application for Fatoni University activities, the Online FTU Extracurricular Activity System and to evaluate the usefulness, usability, and ease of use of such a system. The system is ultimately aimed at evaluating students' experiences of joining and tracking campus activities during their study period.

II. LITERATURE REVIEW

An application software stored and working on a web server is called a web-based application, that is, it needs a server to run, and it can be accessed by using a web browser. The web-based application is a cress platform written once and run-on multiple platforms (4). Many web applications have been created to manage activities. Zip Event is one of them. It is a web-based application that logs events happening across Thailand. Users can explore nearby events. Zip Event provides an access to different types of users such as organizers and participants. Universities worldwide such as emphasize the need to put their own online extracurricular activity systems, for instance Songkhla Rajabhat University. Their systems require the students to log in using it. The system administer monthly announces the coming activities. Students can participate in optional ones, and they are requested to assess them for improvement.

Software quality assessment refers to the method that is followed to assess the software components and design based on the specified requirements to deliver quality software to the user (5). This step begun after developing phase, and it is the last step in the research methodology. Several factors influence users' satisfactions, such as speed, some of the robust factors are Usefulness (6), service interaction, and usability (7). This work relay on three variables to evaluate the proposed system, these three variables considered essentials in any system to make it run properly at lease at its first version. These three variables are perceived ease of use, system usability, and perceived usefulness, all of which have been proposed and tested in previous research, as for perceived ease of use, and perceived usefulness were proposed and tested by (8) and both are significantly connected with self-reported indicators of system use, the third variable is system usability which an important part of any system, it was tested by (9).

III. METHODS

The initiation of this work began with an interview with student development potential department to analyse the type of system to be developed, from this phase the developer identified five different user levels. The second step were to design the system and illustrate how the interaction would be done by different users. The implementation of the system took place as a third phase by writing the code and creating the database and configure the system different components into one complete project. While an interview with student development potential department carried out to test the system and evaluate it beside run a questionnaire-based survey to students and lecturer to assist the developed system were parts of the last step of the development process.

The developed system is a web-based system that include five different user privileges including Main admin, Sub admin, Halaqah staff, Activity staff, and Student, each one of them is able to login and use the system for various purposes including view activities provided by university during the current semester.

To evaluate the developed system, two methods have been used, they are: an interview with the student development potential department of university, and the second is a 5-likert scale questionnaire adopted from the questionnaire of (8) which is used to measure the perceived usefulness and perceived ease of use of the system, and the questionnaire of (9) which is used to evaluate the system usability. When the questionnaire becomes ready, a sample population being formalized to try the system and evaluate it by response to the questionnaire items, and finally by

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measuring the mean of the responses. This all are part from system development process which adapt the System Development Life Cycle (SDLC) framework in the effort of design and development of the project.

The SDLC has a variety of models (5, 6) with a similar set of four fundamental phases: planning, analysis, design, and implementation (7, 8). The model adopted in this project is the waterfall model, as shown in Figure 1. It is the original structured design methodology with a step-by-step process, each of which to be done one by one. The advantage of using this model is that it identifies system requirements long before programming begins, and it minimizes changes to the requirements as the project proceeds (7).

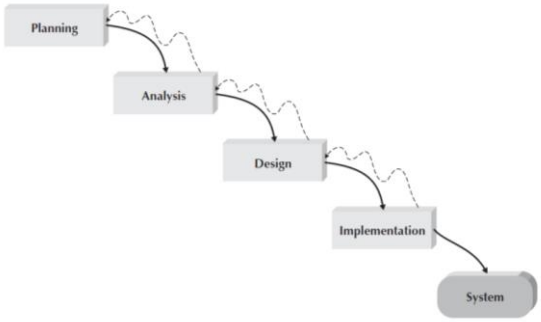

Figure 1. The Waterfall Life Cycle Model

The Waterfall model describes each process of the system development in detail as below:

1. Planning is the first phase of the model. The researcher conducts an interview with the staff of the Student Potential Development Office to understand the features of the Online FTU Extracurricular Activity System. The need of the system, and the actual application after the completion of system development
2. Analysis is the next phase in which functional requirements of the system are defined including existing campus activities, eligible system users, user types involved in activity organization, participation, and evaluation, application procedures, and project development procedures. All of these are to make sure the system will meet the university needs. The researcher reviews the starter code of the Online Extracurricular Activity System made by (9) to understand the current gap and to complete the system.
3. Design is the following step to graphically represent the system. The researcher creates several diagrams and charts including the system structure chart, the use-case diagram, the sequence diagram, the class diagram, and the entity relationship diagram.
4. The final phase is implementation. Coding, creating database and designing of logos and icons are completed in this stage by using several technologies covering PHP, MySQL and JAVASCRIPT as programming languages, JQUERY as a supported library, BOOTSRTAP as a CSS framework for front-end web-development, and LARAVEL as a back-end web-development framework. This system is compatible with Safari, Google chrome, Firefox, and other web browsers.

I. SYSTEM OVERVIEW

The development of the Online FTU Extracurricular Activity System is for the purpose of providing an access to social activities in contextual details for Fatoni University students. The system includes five different types of users with different tasks performed through the system. Having the above information will help to identify the real situation; not only identify the areas to

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be focused on, but in determining the required resources during the analysis as well. The system structure chart, shown in figure 2, represents the connection of the core system to a database management system. The system processes and visualizes the data on a web platform for the users. In this present development, Fatoni University is used as a case study.

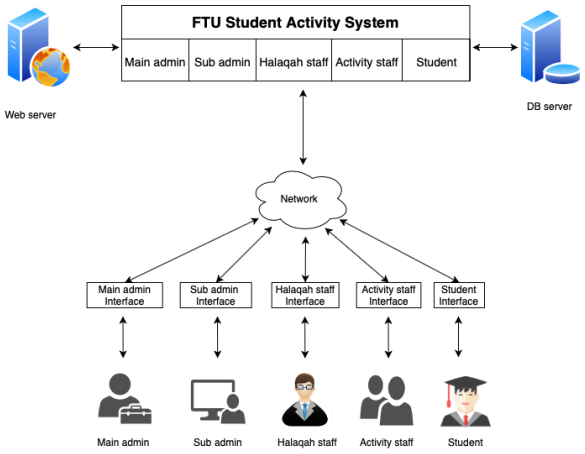

Figure 2. System Structure Chart

II. WEB INTERFACE AND FUNCTIONALITIES

The Online FTU Extracurricular Activity System provides an easy access to its student activities through its web interface. Students and visitors can simply visit the website. The developed prototype is available at http://spdactivity.ftu.ac.th/myproject/dist/view/welcome_home.php. Student portal is composed of graphical user interface (GUI) and non- graphical user interface non-GUI elements. Each screen, known as a webpage, manages different functional requirements. A snapshot of student portal/dashboard in the Online FTU Extracurricular Activity System is shown in Figure 3 where there are mainly 7 elements to be described as follows.

1. Fatoni University (FTU) logo: A hyperlink to return to the home page.
2. Profile image: Clicking it, users/students can view and update their own profile information.
3. Register activity: Students will be able to register for future activities interesting them to join.
4. Registered activity: It shows a report of future activities that the student applied to join. Students can drop/cancel the registration by press the cancel button in the page.
5. Student activity participation timeline: This element shows a report of student participation in previous activities.
6. Select Language: Students can change user interface language to a preferred one.
7. Logout: Students are able to logout from the system to keep their information confidential and protect their privacy.

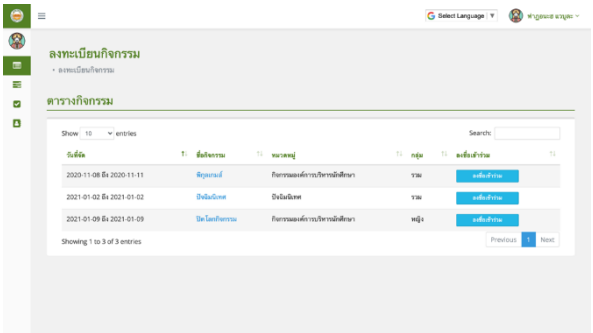

Figure 3. Student portal/dashboard in the Online FTU Extracurricular Activity System.

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III. RESULTS AND DISCUSSIONS

It is seen from the previous studies, and the analysis that developing an Online system to manage extracurricular activities for university students is an essential part of any university system. Online Fatoni Extracurricular activities system has been developed, tested, and assessed to confirm the quality of a system to be used in daily bases. The system serves all types of users in the university including university administration level, university staff/lecturers, student union members, faculty association member, and students. The overall result is optimistic, and the system is promising.

Analysis of system done after interviewing university staff who agree to lunch the system and made it available online to students. Further analysis took place after the use of the system by lecturers and students, and a questionnaire-based survey introduced to them. Questionnaire results were analysed and presented in figure 4 and figure 5. Further discussion of the result as follows:

- System Usefulness

  In this part of the questionnaire, participants were asked questions related to whether the system is needed or not. Most of the responses where around neutral, agree and strongly agree, were more than 35% of it strongly agree. Overall, the sample population who participate in this experiment to evaluate FTU extracurricular activity system perceived the system as being useful with the average rating of 3.56. However, expert users including IT specialist rate was higher than the average with 4.2 out of 5.
- Easy to use

  This section focuses more on the developed system, and how it easy to navigate and explore. Similarly, the responses were varied, while majority of it were strongly agree, agree and neutral. Overall, the sample population who participate in this experiment to evaluate FTU extracurricular activity system perceived the system as being easy to use with the average rating of 3.53, yet the result from experts was 4.32 out of 5.
- Functionalities

  Finally, the part to testing the functions included in the system and how enough it is to handle the user needs. This section got the least evaluation result from participates, still it passes the satisfaction. Overall, the sample population who participate in this experiment to evaluate FTU extracurricular activity system perceived the system functionalities as comprehensive with 3.47 rating. While experts rating was 4.13. These results further discussed in the discussion section.

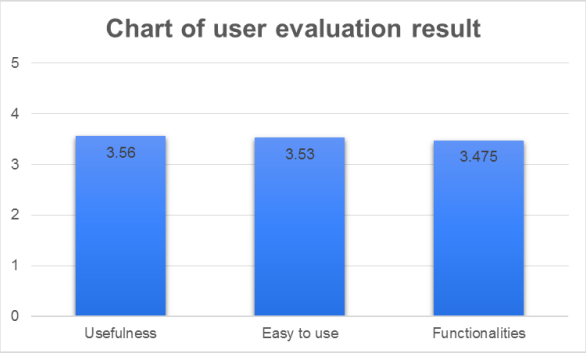

Figure 4. Chart of overall user evaluation result.

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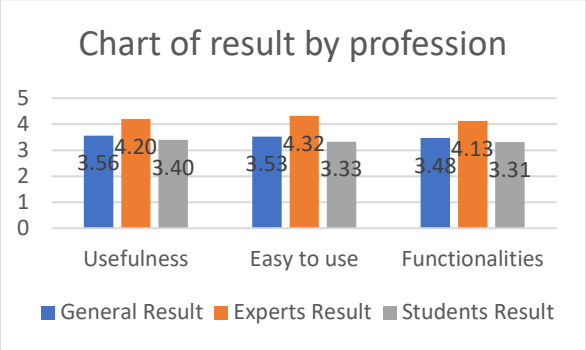

Figure 5. Chart of evaluation result by profession

The current shifts in modern lifestyles cause universities to have their own comprehensive online services to the current and prospective students. A tracking system for extracurricular activities is also included. This paper has presented The Online FTU Extracurricular Activity System as a tool that allows users to quickly identify coming activities at Fatoni University, it also provides log for previous joint activities.

It has been developed to facilitate the users. Basically, the waterfall model is adopted due to its advantage of development process structure (15). As an initial action started from the requirements elicitation step through interviews. The interviews were accomplished three times: at the beginning, a frequent weekly interview, and a client interview with the Student Development Potential Office Staff. Additionally, existing event information management systems were interviewed for developing the Online FTU Extracurricular Activity System. The developer worked on creating a user interface (UI) design for each part of this system prior to the implementation. Several technologies, tools and programming languages were used during the implementation phase including PHP, MySQL, JAVASCRIPT, JQUERY Library, BOOTSRTAP and LARAVEL Framework. Google Cloud Translation API was used to provide users with multiple languages support.

As a last step of the development lifecycle, a quantitative study had been conducted, where the participants were university students and Information Technology (IT) experts. In general, participants agreed on that the system is useful, easy to use and has lots of major functions that it need. However, experts in both university extracurricular activity and IT rate the system as useful, easy to use and has the needed functions as higher than the rate was given by students. This result could be interpreted by different ways, one of which is that experts has clearly understand of the system and the extracurricular activity hierarchy. Nevertheless, the evaluation for the system functionalities seems to be the lowest, which means that there is a need to add more functions to make the system more interactive and benefits both the students and the university staff.

IV. LIMITATION AND FUTURE WORK

The Online FTU Extracurricular Activity System was developed to manage student activities in Fatoni University organized by the activity staff working under the FTU Student Potential Development Office. The developer collected the information related to this work and walked through the development process step by step to complete it. An initial implementation of the system has been available online. Currently, the system runs as expected with no errors or any bug. Still, there are several problems and limitations appearing during the development of the system including:

- The activity process in Fatoni University is complex. For example, there are 5 types of users involved, and activities are classified by gender.

- The number of international students in the university and the varieties of their language. Google Cloud Translation API was thus a solution.
- Time limitation.
- User interface across a variety of devices took additional effort to be accomplished.
- New minor functions shall be implemented and added to the system.

Due to the limitations of this work, the Online FTU Extracurricular Activity System still has a lot of work to be done in the future. The following features are suggested to add to the system:

- Explore more minor functions of the system and implement them.
- Use new technologies to verify student activity participation, such as barcode and QR code.
- Support many languages: Thai, English and Arabic, in the code rather only using API.
- Improve GUI to look better on small screen devices.

V. CONCLUSION

The Online FTU Extracurricular Activity System was developed for 5 types of users in Fatoni University, it provides each user with different tasks. This system was developed based on the student activity logbook as a useful tool for Fatoni University students and staff involved in managing extracurricular activities to keep tracks with and plan around them. This work contributes to the previous work of urban development by proposing the need for making universities a model of development which influence students, and society to join the development process. Developing universities mean begin with developing online services that it provides to others including its students, with the online extracurricular system students will be up to date with university various activities, and they will be able to track their activity performance which may influence their activity participation in future. System development shall go through a systematic way, and System Development Lifecycle fit this purpose, with proper analysis of the system, design, implementation, and finally testing, the developed system would perform as expected at least in the first release which can be improved later. System testing could be done by interview with the prospective owner of the system as well as by investigating the opinion of future users, in this case university authority and students are the target sample. Students opinion could be extracted using a well-designed questionnaire that test system usefulness, usability, and ease of use which are essential part of any system to run properly and gain users satisfaction, not to forget the need for continuous development of such system to bring it to next level of usefulness especially during disasters or pandemic such as covid-19 pandemic.

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