INFORMATION SYSTEM DEVELOPMENT FOR WORKLOAD MANAGEMENT IN THE FACULTY OF EDUCATION, NAKHON RATCHASIMA RAJABHAT UNIVERSITY

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Abstract— This research has the objective for developing the information system for workload management in Faculty of Education, Nakhon Ratchasima Rajabhat University. The reporting of the work load in the current situation will lack of the information system to support. The reporter will have to prepare documents of the workload and attached evidences which will have to use many papers. Moreover, this will have to use the time in gathering and analyzing the information for the long time including lacking the concluded information which will be used for considering the goodness for the executive. For the aforementioned problem, this will lead to the development of the information system for workload management which will have the application to use the cycle of the development of the system for 5 procedures such as; Planning, Analysis, Design, Developing and Evaluation. The information system for workload management which is developed; will be able to be usable via the internet system. This can determine the category, the right of the usability and this will be able to determine the time period of the reporting of the workload. The user can record the information of the workload and conclude the result via the system automatically. Moreover, the system can conclude the information for using for the decision of the executive. This system had been tested and evaluated its efficiency. The results showed that the efficiency had very good level. The information system for workload management is the tool which will help to support the working conveniently and rapidly more.

Index Terms - Information system, Online, Workload

I. INTRODUCTION

At present, information technology plays an important role in human life both in daily life and work. In daily life, we might use information technology for route search, travel, hotel reservations, and weather monitoring. For operation, most agencies have computers to facilitate. Using of data and information as a tool for decision support and operational planning [1],[2], especially in schools that have applied information technology in various areas, including 1) support for teaching and learning, such as distance education, development for educational media, etc., 2) communication, such as using e-mail or websites for publishing in educational institutions, etc., 3) educational support, such as educational service systems, in which students can enroll, check results of examination via the internet network.

Information systems are used in various areas, such as data storage, data searching, data analysis, data processing to obtain information that is used to make timely accurately decisions [1]. Therefore, the information system is widely used in various organizations both public and private to help increase work performance, analysis and processing precisely, modern, able to provide various information services quickly, and also provide benefits to various staffs for operation. Due to advances in hardware, software and peopleware technology, data storage systems are organized, helping to save budget and reduce operating time. [3],[4] Nakhon Ratchasima Rajabhat University has implemented an information system to facilitate various operations such as education service systems, student affairs systems, student recruitment systems, work system, parcel system, including personnel management system. Although Nakhon Ratchasima Rajabhat University has developed an information system to support operations in various parts, there are still some work that lacks information systems to support operations, such as the workload management of academic personnel in the university.

Rajabhat University has a policy for personnel to report workload to the head of the agency for 2 times per 1 academic year. This workload information will be used for considering salary promotion, considering merit, considering the number of workload in various areas, and considering employment contracts. Reporting the workload, the reporter should prepare the document to report in the category as specified by the university [5], and also attach a lot of supporting documents. Therefore, the preparation of the workload report each time requires a lot of papers and takes a long time for collecting and processing. When the reporter submits all the documents, the personnel officer must act in the aggregation of documents, record the workload scores into the computer, which takes a long time because of the large number of personnel, resulting in delays in the preparation of information for executives.

In the Faculty of Education Nakhon Ratchasima Rajabhat University, we therefore have the idea of developing information systems for workload management as a tool to support reporting. Users can record and summarize workload information via the internet, which will make reporting workloads more convenient and faster. In addition, it helps to reduce

personnel working time, and is a tool to support the operation of executives.

II. RESEARCH OBJECTIVES

1) To develop information systems for workload management in the Faculty of Education, Nakhon Ratchasima Rajabhat University.
2) To assess the performance of information systems for workload management in the Faculty of Education, Nakhon Ratchasima Rajabhat University.

III. METHODOLOGY

The development of the System Development Life Cycle (SDLC) is divided into 5 steps [6] as follows;

A. Planning

Process of studying problems from the system, studying information related to the system, feasibility analysis of the project, including problems and needs of users, resources, equipment, tools, operational support to be used in the development of information systems for workload management.

B. Analysis

Analysis of data in the needs of users from interviews with various types of users, including teachers, executives, and system administrators to use the information to design the system to meet the needs of users. Based on the interviews, we can summarize the requirements of the workload management system as follows: 1) able to manage each type of user, 2) able to set the time to record workload, 3) able to record workload and attach documents according to the category set by university, 4) able to issue reports and summarize the workload results.

C. Design

Design user interface and database, define user rights of each type, and create a prototype of the system to allow executives to initially check.

D. Development

The researchers operate by using the data from the design process to develop the information system for managing the workload to be in accordance with the characteristics and patterns that have been defined by developing in the database and system.

The researchers have created a relational database to be used to store data tables and used the phpMyadmin program to configure various database values.

Development of workload management system is the development of the work process of the system as designed by using Java Script, HTML and PHP. In addition, the system documentation manual is also made for further training and support for user operations. Once the system development is complete, the researchers have installed the system through the university server, then tested the system initially to check and correct the errors before being assessed by experts.

E. Assessment

In this process, the system performance is assessed by using the system performance assessment form, which is a questionnaire based on the 5 scale rating scale, divided into 4 areas: 1) Functional Requirement Test 2) Performance Test 3) Usability Test and 4) Security Test [2], with 16 questions. 5 experts in information system development are evaluators, and the results are analyzed using mean and standard deviations. The results of the questionnaires are as follows: 4.51 - 5.00 = The system is at a very good level of performance, 3.51 - 4.50 = The system is at a good level of performance, 2.51 - 3.50 = The system is at a moderate level of performance, 1.51 - 2.50 = The system is at the fair level of performance, and 0.00 - 1.50 = The system is at the level of performance that should be improved [7].

IV. RESULT

A. Results of System Development

The researchers have developed the information system for managing workloads that support the use of the Web Browser easily and quickly. In addition, we have applied the Responsive Web Design concept to support every device. The workload information management system has the following qualifications:

1) User Management: The system can create and manage the rights of each group of users as shown in Fig.1 with 3 types of user groups are managed as follows:



Fig.1 User Management Screen

- Teachers are able to access their own history data, able to record and summarize their workload, able to attach supporting documents, and can reset the password manually. The recording of the

workload will be scheduled for the operation. Users must login to the system to record the workload within the specified time, if over a period of time, the work load cannot be recorded.

- Executives are able to access to their own history information, able to record and summarize their workload, able to attach supporting documents, and able to reset the password manually. In addition, they are able to check and track data records, check workloads and sort workload ratings, and able to report workloads of personnel in Excel format.
- Administrators are able to access, record the history and workload of users in the system, create, edit, delete, and able to assign individual user rights. In addition, they are able to check and track the workload of users in the system, and set the time to record workloads.

2) Recording Workloads: Users can save, edit workloads according to the 5 categories specified by the university as follows: 1) Teaching workload, 2) Research workload and other academic workload, 3) Academic service and cultural preservation workload, 4) Administrative workload, and 5) Other workload in line with the mission of the university as shown in Fig.2. The workloads will be operated for 2 times per 1 academic year according to the policy set by the university. Determining the start and end of the workload recording will be determined by the system administrator. Recording the supporting documents for reporting the workloads, users can attach 1 item per file with a PDF file to prevent document errors.

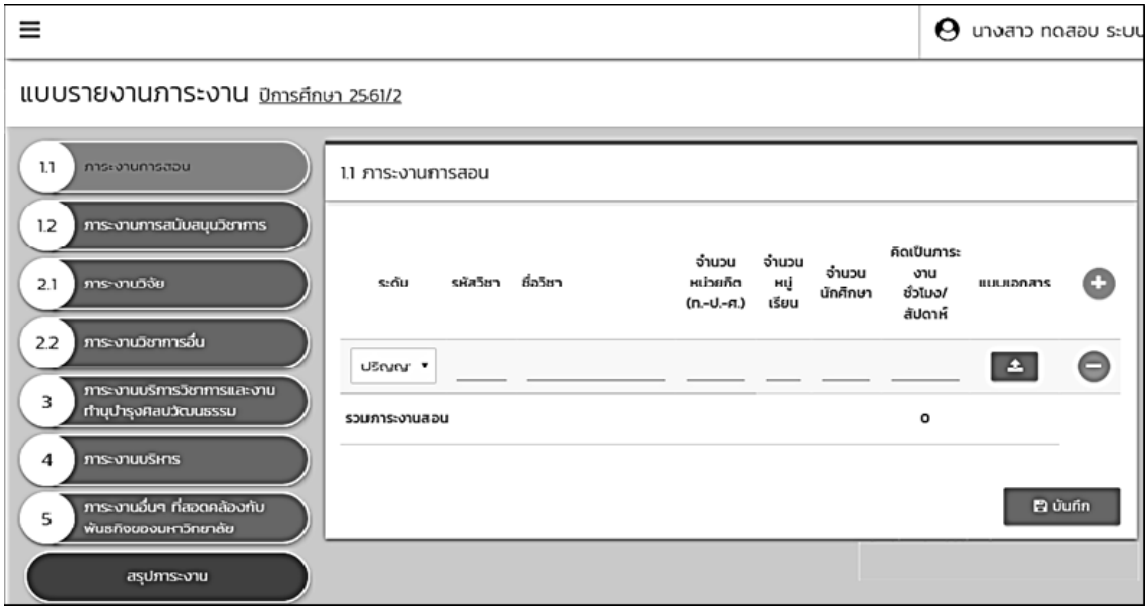


Fig.2 Workload Recording Screen

3) System Security: In order to maintain the security of the data in the system, every type of system must be always filled the Login information, which is the username and password to access. In addition, users will only have access to information related to themselves. In the first access, users should contact the system administrator to create an account. If the users forget the password, the request must be sent to the system administrator to request the new password.

4) The issuance of a report: In the summary report of the workload recording, the groups that have the right to use this menu are executives and system administrators. The system can issue a report of the workload record as an Excel file which can sort the workload rating and browse through the web browser.

B. The Results of Assessment of System performance

The results of the assessment of the performance of the system by 5 experts in information system development can summarize the results of the assessment by classified into 4 areas, as shown in Table1.

Table 1 The results of the assessment of the performance of the system by experts in information system development

Assessment	$\overline{X}$	S.D.	Level
Functional Requirement Test	4.76	0.48	Very Good
Performance Test	4.57	0.47	Very Good
Usability Test	4.38	0.50	Good
Security Test	4.42	0.51	Good
Mean	4.53	0.49	Very Good

From Table 1 shows that the experts assess the overall system performance at a very good level ($\overline{X}$ = 4.53,

S.D. = 0.49). The most effective area is Functional Requirement Test ($\overline{X}$= 4.76, S.D. = 0.48). The least effective area is Usability Test ($\overline{X}$= 4.38, S.D. = 0.50).

V. DISCUSSION

A. System Development

Information system for workload management of the Faculty of Education, Nakhon Ratchasima Rajabhat University that is developed in accordance with the needs of users. Originally, in reporting workloads, the reporter had to made a large number of documents, reports and attachments and had to spend long time for data collecting and processing. As a result of this problem, the concept of developing an information system for workload management was occurred to help support the operation to be more convenient, faster, and also resulted in a reduction of paper usage. This corresponds to the research of the development of information systems in the management of university courses. The results of the research present that the use of information systems in the organization can help increase work performance, and the information obtained from the system is accurate, which helps to reduce the operating time [8].

B. Assessment of System Performance

The results of the assessment of the system performance by experts in the development of information systems have a very good level ($\overline{X}$ = 4.53, S.D. = 0.49). When considering each area, found that the area with the lowest score is Usability Test ($\overline{X}$ = 4.38, S.D. = 0.50).

The form for recording data is appropriate and convenient for recording data. When interviewed further, the experts found that recording data was mostly a message box for users to type in their own text, some of which could create data options for users to choose. This will reduce the amount of time and increase the convenience of saving data.

CONCLUSION

Information system for workload management in the Faculty of Education, Nakhon Ratchasima Rajabhat University can be used as a tool to manage workloads very well, meet the needs of users, process correctly, convenient to use, secure, and able to use the information obtained from the system to support the operation as well. However, the researchers have suggestions for development, that is the development of the data record to be more convenient. Moreover, there should be an assessment of system satisfaction in all groups of users in order to improve the system to be more efficient and support the operation better from their suggestions.

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