

User Satisfaction Analysis for Event Management Systems Using RAD and PIECES Framework

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Abstract. The National University Information System Student Association often holds events or activities every period it takes place but has not been integrated and well managed. Many problems were caused, such as: large costs, data loss, long queuing services, and large human resources. Seeing from these conditions, the authors conducted a study that aims to determine the level of user satisfaction analysis of the event management information system that has been designed for the activities of the National University Information System Student Association. This study uses 3 methods, namely Rapid Application Development (RAD), Waiting Line and PIECES. The average result of the analysis of respondents on questions on the performance aspect was 4.35, the information aspect was 3.6, the economic aspect was 4.45, the control & security aspect was 3.50, the efficiency aspect was 3.64 and the services aspect was 3,825. From the results of the average assessment of the total score for the PIECES aspect, it was obtained 3,894 or 77.88% of respondents said they were satisfied with this system. This research contributes to the governance of activities organized by the Information Systems Student Association so that they can be well integrated and managed.

1. Introduction

The development of information technology is currently being balanced by many product innovations in the IT field. One of them is the event management system innovation that moved from conventional or paperless to E-Ticket-Based Event Management Systems [1]-[2]. A web-based management system by utilizing the internet can be accessed by many people. This will actually make it easier and save the use of resources expended.

The Information Systems Student Association as one of the organizations recognized by the National University is always active in holding both academic and non-academic activities. Activities such as seminars, workshops, training, competitions and others are held regularly every period. Seeing this opportunity, the authors created a system that already exists but has not been implemented in a campus environment. This system can facilitate the promotion of association activities or events and integrate all activity management in one website-based platform [2]. The features embedded in this system include: 1). Integrated system-based event registration management, 2). Email and QR Code based event ordering, 3). System-based attendance management and QR code scanning, 4) System-based participant certificate management, 5) SMTP server-based email management, and so on.

In previous studies, researchers have created a website-based application using QR Code technology for booking event tickets and the languages used are PHP Code Igniter Framework and MySQL



Database [3]. Analysis of the level of user satisfaction using the PIECES method can produce an assessment of an application that has been previously created.

The author gives the title of this research is User Satisfaction Analysis for Event Management System Using RAD and PIECES Framework. In this study the authors have designed an event management system that is intended to manage all activities organized by the Information Systems Student Association to be integrated and efficient [15]. The purpose of this study is to determine the results of the analysis of user satisfaction levels from the event management information system that has been designed for the activities of the National University Information System Student Association [15].

This study uses 3 methods, namely the Rapid Application Development (RAD) method, the Waiting Line method and the PIECES method. Rapid Application Development Method or better known as RAD method is a system development methodology that focuses on the speed of development and user involvement [4]. Development is iterative and a series of prototypes can develop into the final system [4]-[5]. Waiting Line method is one of the methods used in solving problems found in decision making such as staff selection, queuing programs from computer systems, staff scheduling and others [5]. While the PIECES method is a framework used to classify existing problems based on the criteria of performance, information, economic, control & security, efficiency and service [6]-[8].

2. Methodology

In this system the authors use 3 methods starting from system development using the Rapid Application Development (RAD) method, the Waiting Line method for the level of service intensity in the event ticket order queue and the PIECES method to analyze the results of evaluating the level of user satisfaction with applications that have been made.

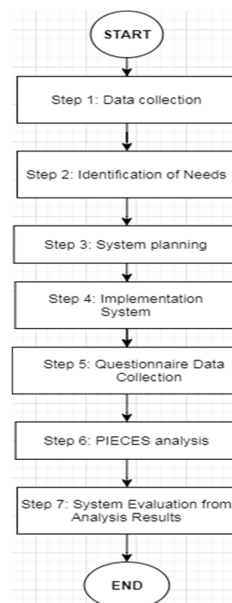


Figure 1. Conceptual Framework

This framework consists of the stages of research conducted by the author, starting with data collection, identification of needs, system design, system implementation, data collection of the questionnaire, analysis of the results of the questionnaire and finally the evaluation of the system from the results of the analysis [9]-[11]. The thought framework can be seen in Figure 1.

2.1 Data Collection Stage

At this stage data collection was carried out directly asking students and lecturers and members of the Information System Student Association regarding the governance of the event ordering system that is currently running.

2.2 Needs Identification Stage

At this stage it is also called Requirement Planning, which is to identify the system objectives to be designed and to identify the information needs of the objectives to be made.

- The hardware requirements used are 1 computer with specifications: Intel® Core™ i3 2350M 2.30 GHz, 4GB Ram, Windows 7 Ultimate 64bit Operating System and 10GB min Hard drive.
- The software requirements used are XAMPP 3.2.3 as server side, MYSQL 4.8.2 as database design, Visual Studio Code as text editor, and Chrome browser.

2.3 System Design Stage

At the system design stage or Design Workshop which makes modeling in new applications that can represent systems that are already running on the Information Systems Student Association [7]-[8].

- Use Case Diagram

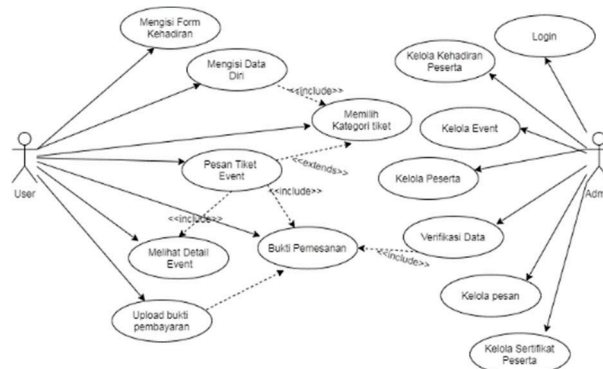


Figure 2. Use Case Diagram

2.4 System Implementation Stage

Implementation, is a phase to introduce the system that has been created by the author for users to be seen and studied in more detail [8]. After that, special testing will be given to implement the system [9]-[10].

2.5 Questionnaire Data Collection Stage

From the questions asked to respondents who are target students, lecturers, and the general public regarding comparing the current event management information system with the system to be designed.

2.6 PIECES Analysis Phase

From the questions that have been collected, then an average assessment of respondents' satisfaction will be sought in each aspect of Performance, Information, Economy, Control, Efficiency, and Service using Kaplan and Norton's definitions can be explained in the formula. [8]-[9].

$$RK = \frac{JK}{N} \quad (1)$$

Information:

RK = Mean or average satisfaction

JK = Total score of the questionnaire

N = Number of respondents

Table 1. Satisfaction Level

Criteria	Satisfaction Level
4.0 – 5.0	Very satisfied
3.0 – 3.9	Satisfied
2.0 – 2.9	Doubtful
1.0 -1.9	Not Satisfied
0 - 0.9	Very Dissatisfied

After the calculation results of Kaplan and Norton's definitions, the mean or average satisfaction values obtained are matched with the satisfaction level criteria shown in Table 1.

2.7 System Evaluation from Analysis Results

The application of the PIECES evaluation framework is useful for seeing problems in a program. The PIECES method process is divided into several aspects including: Performance, Information, Economy, Control, Efficiency, and Service [9].

Table 2. PIECES Method Process

Indicator	The system is running	System Usage
Performance	Recap event data is made manually so that it requires more time and effort.	With computers and websites, event data recap processing can be done quickly, integrated and with access rights
Information	Information dissemination is limited due to limited scope and media.	With the information dissemination website can be accessed quickly and widely
Economy	Requires a lot of human resources and administrative costs, print media in disseminating information.	The use of databases as information and data centers can save costs.
Control	Requires complete control because data is not centralized or interacts with each other.	Centralized control with different access rights on the system
Efficiency	It is costly and inefficient in using paper.	Data is digital and does not require paper so it is more efficient
Service	Services that require direct interaction that are long and difficult.	Systematic services can be done quickly and easily.

3. Result and Discussion

The implementation of the database in this system uses a MYSQL database with the database name db_event and has 18 tables that have relations on each primary key and foreign key. In implementing the system interface using the Bootstraps framework in designing a responsive and user friendly interface [12]-[13].

**Figure 3.** Event Details

In Figure 3 is the front page of the user that displays event data for the ongoing or completed Information System Student Association activities.

In testing the system using the Black Box method for the functionality of the system, which is done thoroughly testing through several interface tests and business processes running on the system [10][14]. Based on the results of a questionnaire distributed to 250 respondents to analyze the level of user satisfaction with the event management system using the PIECES method based on the aspects of performance, information, economic, control & security; efficiency and service [8]-[9].

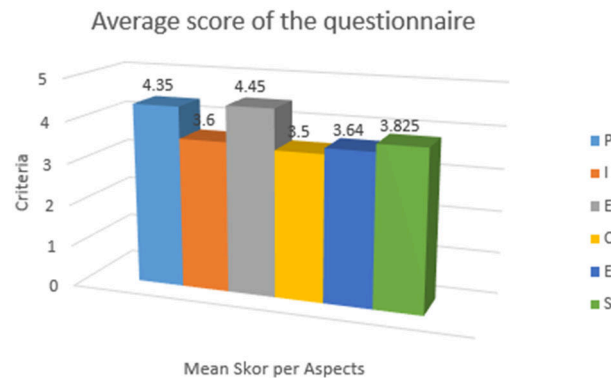


Figure 4. Average Score of the Questionnaire

From the results of the average assessment of the PIECES aspect value, the level of user satisfaction in the system can be calculated in the form of a percentage as follows:

$$\text{Mean Overall Score} = \frac{\sum RK}{6} \quad (1)$$

$$\text{Mean Overall Score} = \frac{4.35+3.6+4.45+3.5+3.64+3.825}{6} \quad (2)$$

$$\text{Mean Overall Score} = 3.894 \quad (3)$$

$$\text{Persentase} = \frac{3.894}{5} \times 100 \% \quad (4)$$

$$\text{Persentase} = 77.88 \% \quad (5)$$

From the results of the above calculations, the results of the average assessment of the total score for each aspect of the PIECES were **3,894** or **77.88%** of respondents said they were **satisfied** with this system.

4. Conclusion

Based on the results of the questionnaire containing 12 questions that analyze the system from 6 aspects of PIECES, it can be concluded that this event management system from 250 respondents stated that the performance aspect is 4.35 with the level of satisfaction is very satisfied, the information aspect is 3.6 with the level of satisfaction is satisfied, economic at 4.45 with the level of satisfaction is very satisfied, the control & security aspect is 3.50 with the level of satisfaction is satisfied, the efficiency aspect is 3.64 with the satisfaction level is satisfied and finally the service aspect is 3,825 with the satisfaction level is satisfied. From the results of the average assessment of the total score for the PIECES aspect, it was obtained 3,894 or 77.88% of respondents said they were satisfied with this system.

The application of the Waiting Line method resulted in the conclusion that free events require additional admins because the intensity and number of queues are greater than paid events. The features developed in the event application system can function properly and show the expected results. In Black Box testing on this system all menus, displays and business processes can run well and as needed.

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