Event Management System for Faculty of Mathematics and Natural Sciences Organizers

Agung Prajuhana Putra 1,*, Lita Karlitasari 2

* Corespondence Author: e-mail: prajuhana.putra@unpak.ac.id

1 Department of Computer Science; Universitas Pakuan, Indonesia; Jl. Pakuan, RT.02/RW.06, Tegallega, Kecamatan Bogor Tengah, Kota Bogor, Jawa Barat 16129; e-mail: prajuhana.putra@unpak.ac.id
2 Department of Computer Science; Universitas Pakuan, Indonesia; Jl. Pakuan, RT.02/RW.06, Tegallega, Kecamatan Bogor Tengah, Kota Bogor, Jawa Barat 16129; e-mail: lita.karlitasari@unpak.ac.id

Abstract

The advancement of technology in today’s era has led to increased demands across various sectors, including Event Organizer (EO) Professional Service Providers. As a pivotal institution in scientific and academic advancement, the Faculty of Mathematics and Natural Sciences (FMIPA) at Universitas Pakuan regularly hosts a multitude of events ranging from seminars to workshops. However, the complexity of managing these events, exacerbated by varying participant numbers, presents substantial logistical, administrative, and communication challenges. FMIPA has witnessed a surge in event frequency and complexity in tandem with the growth in student enrollment, research, and academic collaboration. This paper underscores the critical importance of effective event management at FMIPA, emphasizing the necessity for an integrated and structured Event Organizer Management System. This system aims to address challenges such as team coordination, budget monitoring, and post-event reporting. By acknowledging the dynamic educational landscape and the imperative to meet high-quality standards, this research aims to contribute positively to FMIPA’s institutional development. The proposed system seeks to enhance efficiency, effectiveness, and the overall impact of each scientific activity. Focusing specifically on FMIPA’s logistical and administrative challenges during event organization, this study aims to design, develop, and implement an Event Organizer Management System tailored to FMIPA’s unique requirements. The system targets improved event planning, streamlined participant registration, and structured logistics coordination, ultimately aiming to elevate operational efficiency and event quality. The success of the system hinges upon user involvement throughout the development cycle, ensuring alignment with FMIPA’s evolving needs and fostering a culture of continuous improvement. Through this research, concrete solutions are expected to emerge, enhancing FMIPA’s academic competitiveness and institutional standing.

Keywords: Management, Event Organizer, Information Systems, Web programming

1. Introduction

The development of an increasingly advanced era like today has also increased people’s needs. This has been driven by the rapid advancement of technology (Said, 2023). The influence of technological development has touched various fields, such as Event Organizer (EO) Professional Service Providers (Nasyuha et al., 2021). The faculty of Mathematics and Natural Sciences (FMIPA) of Universitas Pakuan, a higher education entity, plays a crucial role in supporting scientific and academic development. As a center of academic activities, FMIPA regularly organizes various events such as seminars,
workshops, conferences, and other scientific activities (Supiani et al., 2023). The complexity and diversity of these types of events, along with the varying number of participants, present significant challenges in logistical, administrative, and communication management. In recent years, FMIPA Universitas Pakuan has experienced an increase in the number and complexity of organized events, in line with the growth in student numbers, research, and academic collaboration. Effective event organization requires good management, including careful planning, efficient participant registration, logistical coordination, and post-event evaluation. The main challenges faced by FMIPA Universitas Pakuan are team coordination, budget monitoring, and reporting of event results (Sudarsi & Yuniati, 2022).

The successful organization of these events not only impacts the image of FMIPA Universitas Pakuan as an educational institution but also affects the experience of participants, staff engagement, and scientific contributions resulting from these activities (Zeyan Wang et al., 2019). Therefore, an integrated and structured event organizer management system is necessary to improve the efficiency, effectiveness, and positive impact of each event (Vahdati et al., 2021). In line with the development of information technology and the need for more computerized event management, this study attempts to address these needs by designing and implementing an FMIPA Universitas Pakuan Event Organizer Management System (Tarhini et al., 2019). This research was initiated by awareness of the complexity of administrative tasks, increased participation, and optimization of the use of resources needed to organize various events at the FMIPA Universitas Pakuan.

The dynamic and evolving educational environment, along with the demand to meet high-quality standards, makes this research both relevant and urgent (Vutete & Vutete, 2016). By addressing the challenges of event management, it is hoped that this research can make a positive contribution to FMIPA's institutional development, encourage the growth of scientific activities, and improve FMIPA's academic competitiveness on national and international scales (Gunadi & Riki, 2022; Pratama & Wirdiani, 2018; Surya & Ginardi, 2019; Thiele & Brehm, 2020).

This study focuses on the complex problem of event management in FMIPA. One of the problems that arise is the significant logistical and administrative challenges during the organization of events, such as seminars, workshops, and conferences. These complexities include intricate planning, time-consuming participant registration, and logistical coordination, which often go awry. Moreover, the FMIPA has a wide variety of events with varying numbers of participants, adding to the difficulty of resource and time management. The absence of an integrated and efficient event organizer management system in FMIPA is one of the main obstacles that needs to be overcome to improve the quality and positive impact of each scientific activity. To address these problems, this research aims to design, develop, and implement an Event Organizer Management System that can overcome logistical and administrative challenges at the FMIPA. With this system, we hope that more systematic event planning, efficient participant registration, and structured logistics coordination can be achieved. In addition, this system is expected to provide convenience in budget monitoring and post-event evaluations. By paying attention to FMIPA's special needs, such as various types of events and fluctuating numbers of participants, this research will master the system features that can accommodate these needs. By discussing this problem, research is expected to provide concrete solutions to increase the efficiency and effectiveness of event management at FMIPA, contribute to institutional development, and strengthen FMIPA's position as a dynamic and innovative higher education entity.
2. Research Method

This research requires a research method that is used to answer the problems being studied and the research objectives. A study usually starts with careful planning that follows a series of instructions that are arranged logically and systematically so that the results can represent the actual conditions and can be accounted for. The steps to be included in the research methodology are discussed as follows.

2.1. Research Flow

To produce good research in accordance with the research objectives, a research flow is made that is in accordance with the research title, and the results are representative of the actual conditions and are accountable. Research flow, which is in accordance with the research title and includes the steps taken in the research, is as follows. The following are the research steps that the author describes through the research flow.

![Research Flow Diagram](image)

Source: Research Result (2024)

Figure 1. Research Flow
2.1.1. Problem Identification

Problem Identification was the first step of this research. At the stage of identifying problems, it is intended to be able to understand the problem to be studied so that in the analysis and design stages, it does not get out of the problem under study.

2.1.2. Literature Study

In the literature study stage, the author studies and understands the theories that become guidelines and references obtained from various books, journals, and the Internet to complete the treasury of concepts and theories so as to have a good foundation and knowledge to solve the problems discussed in this study research that is relevant to the problem under study.

2.1.3. Data Collection

As supporting material that is very useful for the author to find or collect the data needed in this study, the author uses several methods (Ou, 2023; Shibin et al., 2023):

1. Working Document (hard document)
   The author collected data by studying documents related to the activities of the FMIPA event organizer management system at the Pakuan University. This was done with the aim of determining the work process of FMIPA as a promotional medium.

2. Observation
   This observation activity is carried out by making direct observations of the object to be studied to directly determine the event organizer management system at FMIPA Pakuan University.

3. Interview
   The author conducted field research by interviewing related parties to obtain the data needed by the researcher. This is done so that researchers know what activities are carried out as well as to obtain accurate and relevant data to produce a website design that suits their needs. Interviews were conducted in two forms, namely structured interviews (conducted through questions prepared in accordance with the problems to be studied). Unstructured interviews (interviews were conducted when the answer developed outside the problem system).

2.1.4. System Analysis

At this stage, the author analyzes and makes a Web-based FMIPA event organizer management system plan using Unified Modeling Language (UML) modeling (Karlzén, 2009; Shershakov & Rubin, 2016; Surya & Ginardi, 2019; Zidong Wang et al., 2018) with the steps as follows:

a. Determining Initial Planning
   At this stage, a plan is made regarding the activities to be carried out and the time required for each activity.

b. Analyzing Business Processes
   At this stage, an analysis of the business processes that occur in the Web-Based Tourism Information System as a Promotional Media in FMIPA Universitas pakuan is carried out. Web-Based Tourism Information Systems as Promotional Media in FMIPA University, Pakuan.

c. Analyzing the Current Information System
   At this stage, an analysis of the systems and information technology currently used in supporting business processes on the Web-Based Management Information System at FMIPA Pakuan University was carried out.

d. Modeling information systems using UML (Unified Modeling Language) modeling.
At this stage, modeling information system requirements are created using the Use Case, Activity Diagram and Class Diagram.

e. Building Information System Prototypes

At this stage, a system prototype is created in the form of a user interface using the Adobe Dreamweaver CS5 application.

2.1.5. System Design

At this stage, the author will design a new system proposal using a system design method with a prototype model. Prototype is a software design method that is widely used by developers so that they can interact with customers during the system development process and consists of 5 interrelated or influencing stages (Handayani & Fitriana, 2022; Rifky & Sunarti, 2023).

**Figure 2. Prototype Model**

The prototype model described are (Case et al., 2020; Frischbier et al., 2014): Communication, Quick Plan, Modeling Quick Design, Construction of Prototype, and Delivery Deployment & Feedback

2.1.5. Preparation of Research Report

At this stage, the author makes a research report which contains a research report on the problems and solutions that exist in the object studied by the author, namely the Analysis and Design of a Web-Based Event Organizer Management Information System at FMIPA Pakuan University, the theories taken by the author that are used as support in research, how the author conducts research, research results and analysis and some complements to the research report.

3. Results and Analysis

In this Web-Based Event Organizer (EO), the service booking system has two user levels: admin and user as a customer. For the admin level, organizational data, event data, QR-Code attendance, and financial data. For a user-level login, the process is to register first in the system, and then obtain login access rights.

3.1. Main Page

On the main page, several pieces of information will appear, namely organizational data, event types, finances, and login to the system. The data displayed were the organization, event type, user registration, and login. After seeing the information on the main page, the Home or dashboard on the application plays a crucial role in the service booking process.
role in providing users with a comprehensive and quick view of important information, features, or actions. Further details are shown in Figure 3.

Source: Research Result (2024)

Figure 3. The Home Page (left) and Organization Page (right)

Organizations in apps refer to various features and capabilities that allow users to manage, collaborate, and interact in the context of a specific organization or group.

3.3. Add Event

Adding an Event in the app refers to a feature that allows users to create and manage specific events or activities.

Source: Research Result (2024)

Figure 4. Add Event Page

3.4. QR-Code Presence

QR-Code Presence in the application is a feature that utilizes QR code technology to facilitate the process of recording the attendance of participants in an event or activity.
Presence in the application is a feature that allows the recording and monitoring of the attendance of participants in an event or activity.

3.5. Financial

A financial Update in the app refers to a feature that allows users to update and track their financial information.

A financial Report in an app refers to a feature that allows users to generate reports or analyses related to finance.
A Detailed Financial Report in the app gives users the ability to access more detailed and granular financial information. This function is useful for in-depth analysis and decision making.

4. Conclusion

This study aims to design, develop, and implement an Event Organizer Management System that can improve the efficiency and effectiveness of event management at the Faculty of Mathematics and Natural Sciences (FMIPA). Importance of the Event Organizer Management System: This research confirms the urgency of implementing an event organizer management system in an academic environment, especially in FMIPA. This system not only simplifies administrative processes but also increases participant engagement and the positive impact of each event. The research
process identified several challenges and constraints, including limited resources, uncertainty of user needs, integration complexity, and information security challenges. Understanding and overcoming these constraints are key to the successful implementation of a system. Through user needs analysis, an event organizer management system was developed with the specific needs of FMIPA in mind. Successful implementation of this system is highly dependent on its ability to be customized and flexible in the face of changing needs. The implementation of this system is expected to positively impact the planning process, participant registration, logistics coordination, and post-event evaluation. The success of the system is reflected in the improved operational efficiency and quality of events at the FMIPA. The active involvement of users during the system development cycle is a critical factor. Participation in needs analysis.

Acknowledgements
The author would like to express his sincere appreciation to LPPM (Institute for Research and Community Service) Pakuan University for the funds provided through the Internal Applied Research Scheme. The author also would like to thank the Mathematics and Natural Sciences Faculty for all the support provided as well as the Computer Science student team for their contribution during the research.

Author Contributions
Agung and Lita proposed the topic; Lita conceived models and designed the experiments; Agung conceived the optimization algorithms; Agung and Lita analyzed the result.

Conflicts of Interest
The authors declare no conflict of interest.

References

PIKSEL status is accredited by the Directorate General of Research Strengthening and Development No. 225/E/KPT/2022 with Indonesian Scientific Index (SINTA) journal-level of S3, starting from Volume 10 (1) 2022 to Volume 14 (2) 2026.


