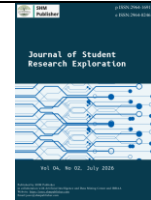




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Analysis of the design of an Emergency Response Plan (ERP) in a private university

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ABSTRACT

Safety and emergency preparedness in university environments represents a critical component of risk management in higher education institutions. Universities, as settings with high-density activities, have potential risks of incidents such as fires, earthquakes, and other emergency situations. Therefore, a structured Emergency Response Plan (ERP) system is required to support fast and effective response actions. This study aims to analyse the design of an Emergency Response Plan (ERP) in a private university as an effort to improve emergency preparedness. This research uses a descriptive approach with a case study design. Data collection was conducted through observation, interviews, documentation, and questionnaires. The results show that the implementation of the ERP is not yet optimal. The ERP documents are not fully developed and have not been widely disseminated. Safety facilities such as fire extinguishers (APAR) and evacuation routes are available, but limitations remain in signage, inspection, and maintenance. The level of knowledge among academic members regarding emergency procedures is also still low. The ERP system in private universities still requires strengthening in planning, implementation, and evaluation aspects to improve the effectiveness of emergency response.

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1. Introduction

Occupational Safety and Health (OSH) is not only a concern in the industrial sector, but also in higher education environments [1], [2]. Universities, as academic spaces with high mobility levels, have potential risks of accidents and emergencies such as fires, earthquakes, gas leaks,

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and sudden medical incidents [3]. This condition requires a structured and well-planned emergency management system [3], [4]. An Emergency Response Plan (ERP) is an emergency response planning system designed to reduce the impact of emergency events through evacuation procedures, risk communication, and coordination among relevant stakeholders [5]. ERP is an important component of risk management because it ensures fast, accurate, and coordinated responses during emergency situations [6], [7].

Several studies show that the implementation of ERP in educational institutions still faces challenges, particularly in human resource readiness, understanding of evacuation procedures, and the availability of safety facilities [8], [9], [10]. The lack of regular drills and socialization also contributes to the low level of preparedness among academic communities in responding to potential emergencies [11], [12]. Private universities, as educational institutions, have a responsibility to provide a safe and protected environment for students, lecturers, and administrative staff. Therefore, a comprehensive analysis of the Emergency Response Plan design is required to assess the level of preparedness, the effectiveness of procedures, and compliance with applicable safety standards [13]. This study is important to evaluate and identify gaps in the existing ERP system, so it can serve as a basis for developing a more effective, integrated, and operationally suitable emergency response system in universities.

In lowland and coastal areas, the dominant hazards are hydrometeorological disasters such as river overflow flooding, inundation caused by high rainfall that exceeds drainage capacity, and tidal flooding (rob), which is further intensified by land subsidence [14], [15]. In contrast, in the southern hilly regions, the steep slope structure and geological conditions create a high potential for landslides and ground movement, especially when triggered by intense rainfall infiltration [16]. Thus, this topographic complexity makes Semarang City highly vulnerable to both flooding and landslides, requiring a specific and integrated disaster mitigation approach tailored to the characteristics of each regional zone.

The Semarang City Regional Disaster Management Agency (BPBD) recorded that almost every year since 2015, more than 15 urban villages in the northern part of Semarang have experienced flood inundation with water levels reaching 50–150 cm, and even higher during extreme rainfall events. The high disaster risk in Semarang underlines the importance of preparedness in the education sector, particularly in private universities. As institutions with hundreds of students, universities are required to have strong resilience in dealing with various emergency scenarios, such as fire hazards, earthquakes, and medical emergencies [17], [18]. However, field conditions indicate that private universities have not yet developed a comprehensive and specific Emergency Response Plan (ERP) document for multiple disaster scenarios, especially one that involves active student participation. Students represent the largest population in the campus environment and are also the most vulnerable group in emergency situations, given their limited understanding of safety protocols and dependence on information from university authorities [17].

BPBD Semarang City recorded 28 flood events throughout 2024, with an average inundation duration of 3–6 hours. Twelve of these incidents occurred in educational areas and densely populated settlements, including zones surrounding university campuses. The Semarang City

Education Office reported that more than 40% of private universities in Semarang do not yet have disaster risk-based emergency response plans. An initial survey conducted among five students at a private university showed that all respondents did not know the designated evacuation assembly points during emergencies and had never participated in emergency response drills. They reported feelings of anxiety and panic if a disaster occurred suddenly during lectures. In January 2024, flooding caused by the overflow of the Garang River disrupted various activities in the river basin area.

National regulations such as Law No. 24 of 2007 on Disaster Management and Semarang Mayor Regulation No. 42 of 2020 on Disaster Management Contingency Planning explicitly require all institutions, including universities, to develop and test disaster preparedness plans based on local risk characteristics [19]. Considering the geographical conditions of Semarang City, which is highly vulnerable to disasters, and the low level of preparedness in private university environments, the development of a specific, structured, and student-participatory Emergency Response Plan becomes urgent [20]. This ERP is expected not only to save lives but also to minimize academic disruption and strengthen campus resilience against hydrometeorological disasters such as flooding.

2. Method

This study uses a descriptive approach with a case study design. This approach is chosen because the study focuses on analysing the Emergency Response Plan (ERP) system in a specific location, namely a private university, without manipulating variables. The case study method is used to describe the actual condition of emergency preparedness in a detailed and structured manner. The object of the study includes the ERP system, which covers emergency response policies, emergency management organizational structure, evacuation procedures, safety facilities and infrastructure, and the level of understanding of academic members regarding these procedures. The research is conducted at University X in Semarang City. The focus of analysis is directed toward the alignment between field conditions and general ERP standards. Data collection is carried out using several techniques. First, direct observation of the campus area is conducted to identify potential hazards, evacuation routes, assembly points, and the availability of safety equipment. Second, semi-structured interviews are conducted with relevant stakeholders such as occupational safety officers, campus security personnel, and facility managers to obtain information on ERP implementation. Third, documentation analysis is performed by reviewing safety policy documents, evacuation procedures, and available evacuation maps. Fourth, questionnaires are used to measure the level of knowledge and preparedness of students and staff regarding emergency conditions. Data analysis is conducted using a qualitative descriptive method. Data from observations, interviews, and documentation are classified based on ERP indicators and then compared with emergency management standards such as ISO 22320 and building safety guidelines [21]. The results of the analysis are used to identify gaps between actual conditions and ideal standards. Data validity is ensured through source triangulation by comparing findings from observations, interviews, and documentation to obtain consistent and accurate data. Using this method, the study is expected to provide a comprehensive overview of ERP readiness in private universities and serve as a basis for improving emergency response systems.

3. Results and Discussion

The results of the study show that the implementation of the Emergency Response Plan (ERP) in the private university is not yet optimal. ERP documents are not fully available and have not been widely disseminated to all members of the academic community. Several basic ERP components, such as evacuation procedures, emergency response team structure, and emergency communication flow, remain limited and not fully integrated. Field observations indicate that fire safety equipment such as fire extinguishers (Alat Pemadam Api Ringan/APAR) is available in several building locations. However, not all units have clear signage, and there is no documented routine inspection. Evacuation routes are available, but several obstacles exist, including insufficient directional signage and areas that may hinder evacuation processes.

In addition, interview results show that most staff and students do not yet understand systematic emergency response procedures. Emergency drills are also not conducted regularly, resulting in a relatively low level of preparedness.

The Emergency Response Plan (ERP) is a critical element of safety management systems in educational institutions. ERP functions to ensure fast, structured, and effective responses in emergency situations such as fires, earthquakes, or other incidents [6]. In the context of the studied private university, the results indicate that ERP implementation has not met ideal preparedness principles. Irregular documentation and limited dissemination reflect weaknesses in risk management. ISO 22320 emphasizes the importance of coordination, role clarity, and effective communication systems in emergency response, yet these aspects have not been optimally implemented [21].

The uneven availability of fire extinguishers and lack of routine inspection also indicate gaps in risk mitigation. In building safety systems, fire protection equipment must be available, accessible, and properly maintained to function effectively during emergencies. This inconsistency increases the potential risk of losses in the event of an incident. Furthermore, the low level of understanding among academic members regarding ERP procedures indicates weak preparedness. Preparedness depends not only on physical facilities but also on individual knowledge and response during emergencies. The absence of regular simulations is a major contributing factor to this low preparedness level. Overall, the findings show a gap between the actual ERP conditions in the university and ideal emergency management standards. Therefore, strengthening the ERP system is necessary through structured documentation, improved dissemination, regular training, and periodic evaluation of safety facilities and procedures.

4. Conclusion

The Emergency Response Plan (ERP) in the private university has not been implemented optimally. The ERP system is not yet fully developed and has not been integrated into a single document that is easily accessible to all academic members. This condition indicates that emergency response planning remains at a developmental stage. The availability of safety facilities such as fire extinguishers (Alat Pemadam Api Ringan/APAR) and evacuation routes is present. However, these facilities do not yet fully meet proper preparedness standards. Some

equipment lacks clear signage and is not supported by scheduled inspection and maintenance. This condition reflects a gap in risk mitigation practices. The level of knowledge and preparedness among academic members regarding emergency procedures remains low. This is influenced by limited socialization, training, and regular emergency drills. As a result, individual responses to emergency situations have not been systematically formed. Overall, the implementation of ERP in the private university still requires strengthening in planning, implementation, and evaluation aspects. Improvements are necessary to ensure that the emergency response system operates effectively, systematically, and in accordance with risk management and occupational safety principles in higher education environments.

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