

ABSTRACT

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Data management and analysis in the HSE department of PT XYZ is still relying on manual processes that have been proven to be inefficient and prone to errors. This study aimed to develop a web application for accident data management and analysis. The Waterfall system development methodology was applied to build the appropriate solution. The web-based application was developed using the Streamlit framework. The Agglomerative Hierarchical Clustering algorithm and Natural Language Processing (NLP) were implemented to facilitate user/admin operation and Data Visualization for periodic. The application has interactive features such as easier reporting capabilities and graphical visualizations of analysis results that facilitate visual understanding of data. The Agglomerative Hierarchical Clustering successfully mapped the common characteristics of the accidents. Cluster 1 did not have a specific risk focus, while clusters 2, 3, 4, and 5 had more specific risk focuses, such as operational risk, environmental risk, and safety risk. The findings were used to further understand the causes of accidents and to develop accident prevention and mitigation efforts. The developed web application can improve the efficiency and accuracy of accident data management and analysis in PT XYZ's HSE department. The application can also be used to identify common accident characteristics and develop targeted prevention and mitigation efforts.

Keywords: *Accident data management, accident analysis, web application, Agglomerative Hierarchical Clustering, Natural Language Processin*