Factors Influencing Human Error in the Aviation Industry

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Despite substantial improvements in technological reliability and system safety, human error remains the prominent cause of accidents in the aviation industry. There is a pressing need for enhanced methodologies to model the factors leading to human error incidents. This study employed the errors caused by employees to analyze and model the correlation between causal factors contributing to aviation mishaps. A comparative analysis of documented and non-documented accident/ incident data focused on general aviation maintenance to systematically assess the impact of human errors and identify potential causal factors. The methodology was built upon prior research in understanding causal relationships, utilizing Structural Equation Modeling (SEM) to simulate the complex relationships between accident/incident causation and the triggering factors behind them. Additionally, a framework was established using the Human Factors Analysis and Classification System to pinpoint key areas that the stakeholders of aviation safety should focus on to reduce similar human errors in the future. The findings demonstrate an insightful approach to assessing the quantitative correlations between causative elements, offering insights not easily obtainable from occurrence rate analysis alone. Additionally, the findings elucidate theoretical and managerial implications to minimize human errors, thus enhancing the overall safety and quality of aircraft maintenance. The paper discusses the practicality of the framework, and its potential applicability to the other domains of aviation, and suggests avenues for future research.

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