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**ANALYZING TRENDS AND DETERMINANTS OF EMPLOYEE
ABSENTEEISM IN THE APPAREL MANUFACTURING SECTOR**

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Abstract

Employee absenteeism creates a major operational and financial burden for organizations, especially in labor-intensive sectors. This study aims to identify patterns and key factors influencing employee absenteeism using a real-world dataset comprising 12,097 absence records from 1,000 employees over a 2.5-year period. The dataset underwent rigorous pre-processing to ensure data consistency and exploratory data analysis (EDA) applied to uncover seasonal trends, demographic influences, and team-level variations using Python-based analytical tools. Correlation analysis examined relationships between categorical and numerical variables, with findings derived from the actual dataset. Results showed absenteeism peaks with a cyclical components, with sick leave and annual leave marking the highest number of absence records. Gender wise analysis indicated that females had higher absence frequencies, mainly due to maternity leave, while employees aged 36-45 recorded the majority of absence records. The study revealed that the average absence duration is 3.67 working days, and the mean tenure of employees is about 7.13 years. Correlation analysis further revealed significant relationships among variables such as age, gender, tenure, marital status, shift, and team, providing insights into workforce structure and patterns. The results also show higher absenteeism among certain teams, illness-related absences, and short-term absences, and the effect of demographic factors. Overall, these findings can guide organizations in leveraging predictive analytics in workforce management, effective policy implementation, and enhance operational efficiency, which is aimed at reducing absenteeism.

Keywords: *Employee Absenteeism, Machine Learning, Workforce Planning*