ANALYSIS OF MENTAL WORKLOAD OF OUTBOUND OPERATIONAL TEAM WITH WORK TARGET USING NASA TLX AND RSME METHODS IN PT PN

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SIMILARITY CHECKING RESULT

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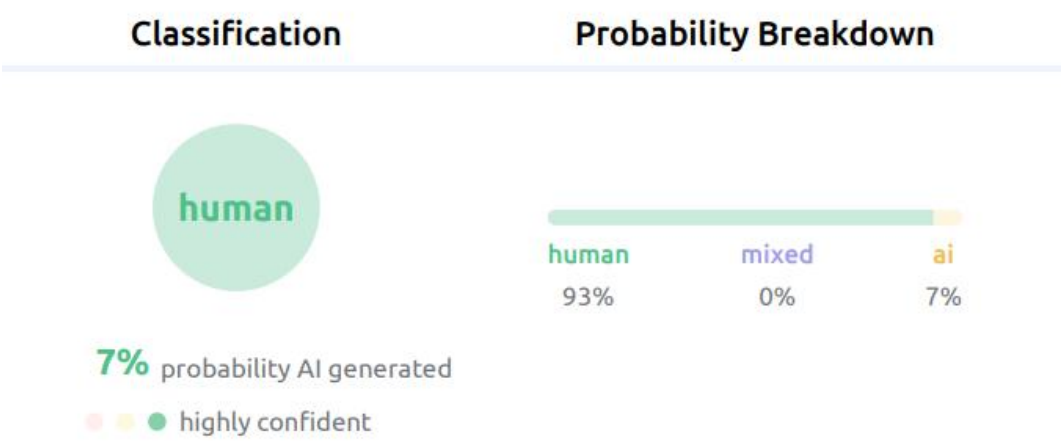
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ABSTRACT

The automotive industry, including in Indonesia, has experienced rapid growth, driving companies to continuously innovate to maintain competitiveness. PT PN, a logistics company specializing in automotive distribution, faces challenges related to high defect rates during loading and unloading processes, such as scratches, dents, and waves on vehicle bodies. These defects lead to increased operational costs, reduced time efficiency, and lower customer satisfaction. This study aims to identify the root causes of product defects, analyze workers' physical and mental workload using the NASA-TLX method, and propose solutions to enhance operational performance. Data were collected through field observations, interviews, and questionnaires involving 15 employees in the outbound department. The results indicate that workers' mental and physical workloads are classified as "high," significantly contributing to product defects. Repair costs due to product defects amounted to IDR 125,850,000 during the June–October 2024 period. The proposed recommendations include stress management training, workload distribution optimization, improved safety procedures, and enhancement of supporting facilities. Implementing these strategies is expected to reduce defect rates, improve operational efficiency, and help achieve the zero-defect target, thereby strengthening the company's reputation in automotive logistics

Keywords: Mental Workload, NASA-TLX, RSME, Product Defects, Operational Efficiency, Automotive Logistics, Zero Defect

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NASA-TLX	:	A subjective method for measuring workload based on six dimensions: Mental Demand, Physical Demand, Temporal Demand, Effort, Performance, and Frustration.
Mental Demand	:	The level of cognitive effort required to complete a task, such as thinking, remembering, and making decisions.
Physical Demand	:	The amount of physical effort needed to complete a task, such as operating tools or lifting heavy loads.
Temporal Demand	:	The time pressure involved in completing a task, including deadlines and urgency.
Effort	:	The amount of mental and physical energy exerted to achieve expected work performance.
Frustration Level	:	The level of stress or frustration experienced while performing a task, which can affect work effectiveness.
Performance	:	An individual's perception of success in completing a task according to set targets or standards.
Weighting Process	:	The process of assigning weights to each NASA-TLX factor based on an individual’s subjective assessment.
Workload Index Score	:	The final score calculated based on the weighted ratings of the six NASA-TLX factors, determining workload intensity.

Subjective Workload Assessment	:	An approach to workload evaluation based on an individual's perception, commonly used in NASA-TLX.
Multidimensional Workload Measurement	:	A workload assessment that considers multiple factors (mental, physical, temporal) in a single evaluation.
Rating Scale Mental Effort	:	A workload measurement method that focuses on a single dimension: the mental effort exerted by an individual to complete a task.
Mental Effort	:	The level of mental exertion required to complete a task, measured on a scale of 0–150 in RSME.
Cognitive Load	:	The cognitive burden experienced when processing complex information while performing a task.
Perceived Workload	:	The workload perceived by an individual based on their subjective experience while performing a task.
Effort-Performance Tradeoff	:	A concept describing the relationship between the effort exerted and the resulting work performance.