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# **The importance of the human factor in decision-making in rail transport**

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## **ABSTRACT**

The human factor is a central element in ensuring safety and efficiency in railway transport, as decisions made under pressure may lead to critical consequences. In the current context, where railway systems are becoming increasingly complex, understanding the cognitive mechanisms underlying professional judgment is essential. While the literature provides extensive analyses of the technical dimensions of safety, there is still a significant gap regarding the systematic study of cognitive biases in decision-making, particularly the Dunning-Kruger effect. This bias reflects the tendency of individuals with low competence to overestimate their abilities, a phenomenon with direct implications for compliance with procedures and prevention of operational errors. The present paper explores the role of the human factor in railway decision-making through a systematic literature review of scientific databases (Scopus, Web of Science). Findings indicate that overconfidence, associated with the Dunning-Kruger effect, contributes to unsafe decisions, whereas training focused on cognitive awareness and metacognitive skill development improves both performance and safety. Integrating psychological assessment and training programs into organizational practices may strengthen decision-making resilience and reduce safety-related risks.

**Keywords:** human factor, railway transport, decision-making, Dunning-Kruger effect, cognitive biases