

Determinants of AI acceptance in logistics: comparative insights from Germany, Poland, and Belarus

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Abstract

The integration of Artificial Intelligence (AI) has become a pivotal factor for operational excellence in the modern e-business landscape. This research addresses the problem of varying AI readiness levels in the logistics sector, influenced by regional digital disparities.

The primary objective of the paper is to evaluate and compare the determinants of AI acceptance among logistics enterprises operating in Germany, Poland, and Belarus. Drawing on a synthesized framework of the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), the study examines how perceived usefulness, ease of use, and social influence determine organizational behavior.

Methodologically, the study utilizes a quantitative approach based on a Computer-Assisted Web Interview (CAWI) survey conducted with 102 logistics professionals. The results reveal a significant technological gap, with Germany leading in implementation readiness, followed by Poland and Belarus. Key findings identify efficiency enhancement and cost optimization as primary drivers of acceptance, while a lack of specialized expertise and high implementation costs serve as major barriers.

The research implies that overcoming these obstacles requires not only technical infrastructure but also strategic investments in human capital and digital culture. Ultimately, this study provides a comparative framework for managers to assess their competitive positioning and develop tailored strategies for AI-driven transformation in international logistics networks.

Keywords: AI acceptance, technology adoption, international logistics, digital maturity, e-business