

A knowledge driven AI readiness assessment framework for universities: Integrating AHP expert weighting with self-report and behavioral evidence in a multi-country evaluation

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Abstract

Generative artificial intelligence (AI) has become increasingly integrated into higher education, introducing novel challenges for information processing in relation to verification, trust calibration, and the responsible use of AI-generated content. This study proposes and validates a hybrid AI Readiness (AIR) framework that combines self-reported competencies, scenario-based behavioral performance measures, and expert-derived domain importance weights estimated using the Analytic Hierarchy Process (AHP). AI readiness is conceptualized across four domains: Awareness & Understanding, Skills & Application, Trust & Risk Perception, and Regulatory Compliance.

The framework is empirically evaluated using data from 1845 university students across nine countries, supplemented by expert judgments from 76 domain specialists. Sensitivity analyses are conducted to assess the robustness of expert-assigned weights and to examine the effects of a mixing parameter governing the relative contribution of self-report versus behavioral indicators. The results reveal systematic discrepancies between perceived and observed performance, with the most pronounced misalignment in the Skills & Application domain, indicating a consistent overestimation of applied AI competencies. Expert weighting further identifies Trust & Risk Perception as the most influential domain (30.8%).

The AIR framework offers a scalable, decision-oriented measurement approach for benchmarking AI-related information processing, competence calibration, and governance readiness in higher education, with potential applicability to other socio-technical systems.

Keywords: Artificial intelligence readiness, Information processing, Analytic Hierarchy Process, AI governance, Higher education, Cross country comparison