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Scenario-based modeling of human resource development transformation under macroeconomic uncertainty: problem-oriented approach

The object of research is the process of problem-oriented human resource development under macroeconomic uncertainty. The proposed scenario-based modeling approach integrates tools of cognitive mapping and system dynamics modeling to construct and evaluate alternative development scenarios. A problem-oriented human resource development model was constructed based on a scenario approach, incorporating indicators and instruments at three levels of governance (macro, meso, and micro). This model enables the formulation of a well-founded set of policies and measures, taking into account macroeconomic realities, wartime risks, and institutional constraints. Development scenarios-baseline, optimistic, and pessimistic- were elaborated. Key criteria for evaluating the effectiveness of human resource development and policy directions were identified, including macroeconomic effects (growth in GDP per capita, living standards), regional effects (growth in gross regional product, reduction of unemployment), microeconomic effects (increased productivity, reduced employee turnover, improved workforce qualification), and the extent to which priority problems are addressed (brain drain, skills mismatch, etc.). The proposed system of evaluation criteria enables the alignment of objectives across different governance levels and facilitates multidimensional policy assessment. According to these criteria, all three scenarios – especially the optimistic and synergistic ones – outperform the existing inertial trajectory of development. The results demonstrate a synergistic effect of coordinated investments in human resource development across all governance levels, providing a solid foundation for national human capital development policies. The impact of the full-scale war in Ukraine was taken into account in the formulation of challenges and scenarios, and state support measures for transforming human resource development during crisis and post-war recovery were substantiated.

Keywords: development, human resources, problem-oriented approach, scenario modeling, macroeconomic uncertainty, cognitive map