

## ***ABSTRACT***

This study aims to systematically synthesize the development, mechanisms, benefits, and challenges of applying reinforcement learning (RL) in investment decisions. Although the use of RL in investment contexts has grown rapidly, existing studies remain fragmented and exhibit substantial methodological variation, highlighting the need for a structured mapping of the role of RL in investment decisions.

This study employs a systematic literature review following the PRISMA protocol by searching the Scopus database for publications from 2021 to 2025. Out of 2,309 articles initially identified, 30 articles met the inclusion criteria and were analyzed further.

The synthesis results indicate that reinforcement learning is applied through adaptive learning mechanisms based on market condition representations and reward functions that account for risk and portfolio performance. The application of RL contributes to improved investment performance and stability as well as enhanced risk management; however, it still faces challenges related to overfitting risk, data limitations, structural market changes, and low model transparency. This study provides a comprehensive mapping of the literature and identifies research gaps for the development of more robust models in the future.

Keywords: Reinforcement Learning, Investment Decisions, Systematic Literature Review

