

Risk Management for Smart Healthcare System: Multi-Criteria Decision-Making (MCDM) Approach

Authors : Abdullah, Ali, Salamai

Abstract : Smart healthcare management systems (SHMS) play a vital role in medical centers. SHMS has various risks and threats that affect patient care. So, risk management is the best choice to identify and mitigate these risks. This study proposed a multi-criteria decision-making (MCDM) framework for identifying risks in SHMS and selecting the best project in SHMS to reduce risks. This study used the MCDM method to deal with conflict criteria. There are two MCDM methods: CRiteria Importance Through Intercriteria Correlation (CRITIC) and Additive Ration Assessment (ARAS). The CRITIC approach is used to compute the criteria weights, and the ARAS algorithm is used to select the appropriate projects in SHMS. The neutrosophic set (NS) was applied with MCDM methods to deal with inconsistent data in the evaluation process. The results show the Health Data Informational System project is the best. Sensitivity analysis was conducted to show the stability of the rank. The comparative study was conducted to show the effectiveness of the proposed methodology. The outcomes demonstrate the rank of projects is stable through all scenarios, and the proposed methodology is effective compared with MCDM methods.

Keywords : risk management, portfolio management, smart healthcare, neutrosophic set, MCDM

Conference Title : ICPMRM 2025 : International Conference on Portfolio Management and Risk Management

Conference Location : Madrid, Spain

Conference Dates : March 25-26, 2025