

Multi-Criteria Decision-Making Techniques in the Defense Industry: A Bibliometric Analysis

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Abstract

Military development is linked to strategic independence and technological superiority and constitutes a significant factor in the scientific and economic development of countries, as well as their security. Given the complex nature and dynamics of military operations, multi-criteria decision-making (MCDM) is a frequently used method for making decisions based on multiple criteria in conflicting and immeasurable situations such as reducing costs, improving success, and enhancing defense capabilities. This research presents a literature review and bibliometric evaluation of the Scopus database regarding the types of key decision-making problems and decision-making processes observed in military organizations. Data were extracted from Scopus and analyzed using bibliometric tools such as Biblioshiny (R Studio) and Vosviewer. Within the scope of this study, documents related to "multi-criteria decision-making" criteria (TITLE-ABS-KEY ("multi-criteria decision-making" and "military")) in all categories were examined, and a total of 222 documents were recorded between 2000 and 2026. The analysis results showed that AHP and TOPSIS methods form the basic methodological backbone in defense industry decision-making processes; however, fuzzy logic-based hybrid approaches for managing uncertainties have become a dominant trend in the literature. Furthermore, the chronological evolution of the field indicates a strategic shift from traditional structural models towards the integration of decision-making frameworks into digital transformation and emerging security paradigms, such as blockchain and network security.

Keywords

MCDM, Bibliometry, Defense Industry, TOPSIS, AHP.

Biographies

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