

A Study on the Relationship between Automation Levels and Combat Effectiveness

Author:

Imsoo Kim; Civil-Military Relations/Security Studies; "Differences in Cultural Dimensions Between South Korean Officers and Conscripts: A Topic Modeling Approach." *Armed Forces & Society* (2024); Sociology.

Kieun Sung; Conflict Studies/Methodology; "Unpacking Conflict Process on the Korean Peninsula with Political and Seasonal Distribution." *Pacific Focus* 39.2 (2024): 303-331; Political Science.

Yeeun Hwang; International Relations

Abstract:

This study examines the relationship between the level of automation in warfare and combat effectiveness, focusing on unmanned combat systems (UCS). As the Republic of Korea faces a significant decline in available military personnel due to demographic changes, UCS adoption has emerged as a critical priority. While UCS are anticipated to surpass human combatants in operational efficiency, they require substantial maintenance and repair resources. Using an agent-based model adapted from ecological frameworks, this study simulates conflict scenarios involving two opposing groups

Bottom-line-up-front:

UCS generally exhibit superior combat effectiveness, but specific scenarios underscore the importance of human combatants. The effectiveness of UCS heavily depends on the quality and quantity of maintenance personnel. While technological advancement and resource availability significantly influence the adoption of UCS and force structure decisions.

Problem statement:

What is the optimal ratio between human combatants and USCs that maximizes combat effectiveness, considering the advantages and limitations of each?

So what?:

These findings contribute to understanding the trade-offs between UCS and human combatants, offering essential insights for defense policymakers navigating automation's role in modern military strategy.