

**ANALISIS PENGGUNAAN *DRONE* KOMERSIAL OLEH UKRAINA
PADA PERTEMPURAN BAKHMUT PERIODE 2022–2024 MELALUI
PERSPEKTIF *REVOLUTION IN MILITARY AFFAIRS* (RMA)**

ABSTRAK

Penelitian ini bertujuan menjelaskan penggunaan *drone* komersial oleh Ukraina dalam Pertempuran Bakhmut periode 2022-2024 melalui perspektif *Revolution in Military Affairs* (RMA) yang dikemukakan oleh Andrew F. Krepinevich. Penelitian ini menempatkan penggunaan *drone* komersial dalam konteks transformasi kapabilitas militer negara dalam konflik antarnegara, dengan menganalisis bagaimana teknologi sipil diadaptasi dan diintegrasikan ke dalam penyelenggaraan operasi militer. Penelitian menggunakan metode kualitatif dengan pendekatan deskriptif-eksplanatori. Analisis dilakukan berdasarkan empat dimensi RMA menurut Krepinevich (1994), yaitu perubahan teknologi, pengembangan sistem, inovasi operasional, dan adaptasi organisasi. Temuan penelitian menunjukkan bahwa penggunaan *drone* komersial oleh Ukraina dalam Pertempuran Bakhmut dapat dianalisis melalui keempat dimensi tersebut. Pada dimensi perubahan teknologi, *drone* komersial diadaptasi untuk menjalankan fungsi pengintaian, penargetan, koreksi tembakan, dan serangan langsung. Pada dimensi pengembangan sistem, *drone* diintegrasikan dengan sistem komunikasi, perangkat lunak, personel, dan artileri sehingga membentuk rangkaian operasi yang saling terhubung. Pada dimensi inovasi operasional, penggunaan *drone* mengubah cara pelaksanaan operasi pada tingkat taktis melalui peningkatan kecepatan pengumpulan informasi, penargetan, dan pelaksanaan serangan. Sementara itu, pada dimensi adaptasi organisasi, meningkatnya peran *drone* mendorong pembentukan unit khusus dan pelembagaan kemampuan sistem nirawak dalam struktur militer Ukraina. Rangkaian perubahan tersebut menunjukkan bahwa penggunaan *drone* komersial tidak hanya menghasilkan adaptasi teknologi, tetapi berkembang menjadi proses transformasi kapabilitas militer melalui keterkaitan antara teknologi, sistem, operasi, dan organisasi. Penelitian ini menyimpulkan bahwa penggunaan *drone* komersial oleh Ukraina dalam Pertempuran Bakhmut mencerminkan proses transformasi kapabilitas militer sebagaimana dapat dijelaskan melalui perspektif *Revolution in Military Affairs* Krepinevich.

Kata kunci: *Drone* Komersial, *Pertempuran Bakhmut*, *Revolution in Military Affairs*, Transformasi Kapabilitas Militer, Ukraina

***ANALYSIS OF COMMERCIAL DRONE USE BY UKRAINE IN THE
BATTLE OF BAKHMUT IN THE PERIOD 2022-2024 THROUGH THE
PERSPECTIVE OF THE REVOLUTION IN MILITARY AFFAIRS (RMA)***

ABSTRACT

This study aims to explain the use of commercial drones by Ukraine during the Battle of Bakhmut from 2022 to 2024 through the perspective of the Revolution in Military Affairs (RMA) proposed by Andrew F. Krepinevich. The study situates the use of commercial drones within the transformation of state military capabilities in interstate conflict by analyzing how civilian technology was adapted and integrated into military operations. This study employs a qualitative method with a descriptive-explanatory approach. The analysis is based on four dimensions of RMA identified by Krepinevich (1994): technological change, systems development, operational innovation, and organizational adaptation. The findings indicate that the use of commercial drones by Ukraine during the Battle of Bakhmut can be analyzed through all four dimensions. In terms of technological change, commercial drones were adapted to perform reconnaissance, targeting, artillery correction, and direct attack functions. In terms of systems development, drones were integrated with communication systems, software, personnel, and artillery units, forming an interconnected operational process. In terms of operational innovation, the use of drones altered the conduct of tactical operations by increasing the speed of information gathering, targeting, and attack execution. Meanwhile, in terms of organizational adaptation, the increasing role of drones contributed to the establishment of specialized units and the institutionalization of unmanned systems capabilities within the Ukrainian military structure. These developments demonstrate that the use of commercial drones involved not merely technological adaptation, but also a process of military capability transformation through the interaction of technology, systems, operations, and organization. This study concludes that the use of commercial drones by Ukraine during the Battle of Bakhmut reflects a process of military capability transformation that can be understood through Krepinevich's Revolution in Military Affairs framework.

Keywords: *Commercial Drones, Revolution in Military Affairs, Transformation of Military Capabilities, Ukraine, The Battle of Bakhmut*