

INTEGRATION OF SMALL AERIAL DRONES IN ASSAULT ACTIONS: TACTICAL IMPLICATIONS ON MANEUVER FORCES

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Abstract: *The recent transformations of the contemporary operational environment, generated by the extensive use of small unmanned aerial systems, determine a profound reconsideration of the way of conducting tactical actions. The paper analyzes the impact of the integration of these systems on the tactics of maneuver forces in the execution of assault actions. The research aims both at the use of drones for real-time observation and surveillance, and at their role as direct strike means in support of offensive actions. Based on doctrinal analysis and a comparative approach, the paper examines the influence of small unmanned aerial systems on the execution of the assault, as a stage of the offensive action, on the relationship between maneuver, fire and information and on the achievement of surprise. The results highlight that the integration of drones leads to increased battlefield transparency, reduced uncertainty and accelerated decision-making cycle at the tactical level. At the same time, their use as striking means determines the expansion of firepower at a lower tactical level and the emergence of a functional fusion between the sensor and the effector. It is thus demonstrated that drones contribute to the transformation of assault planning and execution, requiring the adaptation of maneuver force tactics to the new conditions of the modern battlefield.*

Keywords: small unmanned aerial systems, assault operations, maneuver forces, military tactics, precision strike

1. Introduction

The rapid spread of accessible technologies and the increasing use of small unmanned aerial systems have significantly influenced the conduct of tactical operations at the land forces level [1]. Recent conflicts, characterized by persistent surveillance and expanded ISR (Intelligence, Surveillance, Reconnaissance) capabilities, show that many traditional approaches to warfare no longer fully explain the dynamics of contemporary combat operations [2].

Small unmanned aerial systems are no longer used only in supporting roles. They contribute directly to the collection, transmission, and exploitation of tactical information. Their ability to provide near real-time situational awareness, identify vulnerabilities within enemy positions, and

conduct precision strikes is reshaping the relationship between maneuver, firepower, and information—three fundamental components of maneuver warfare tactics [3]. Traditionally, assault operations represented the decisive phase of combat and depended on force concentration, operational tempo, and the effective use of surprise. Today, however, these operations take place under conditions of constant operational exposure. Constant aerial observation at the tactical level makes surprise more difficult to achieve and exposes maneuver forces during movement and engagement [4]. So, the integration of small unmanned aerial systems affects not only the support of assault operations, but also the way such operations are planned, coordinated, and executed.

In our view, small unmanned aerial systems no longer serve merely as supporting assets during assault operations. They are beginning to reshape the logic of tactical maneuver itself. It also considers whether these developments require broader doctrinal adaptation.

The research focuses on the effects of small unmanned aerial systems on maneuver force tactics during assault operations and on the doctrinal implications associated with their growing integration. The study analyzes the operational characteristics of these systems, their role in offensive actions, and their influence on maneuver, firepower, and information. In addition, it evaluates the advantages, vulnerabilities, and operational limitations associated with their use, particularly in relation to operational tempo, uncertainty reduction, and the changing role of surprise in modern combat.

We consider that the widespread integration of these systems is gradually transforming not only the effectiveness of assault operations, but also the internal balance between maneuver, firepower, and information at the tactical level. Persistent aerial observation, combined with the constant risk of precision engagement, reduces opportunities for concealment and exposes maneuver forces throughout offensive actions. On today's battlefield, assault operations unfold under near-constant observation, forcing maneuver forces to rely on rapid adaptation, flexibility, and superior situational awareness.

The integration of ISR and precision-strike capabilities significantly shortens the interval between target detection and engagement at the lower tactical level. This development increases the operational importance of rapid adaptation and decentralized tactical execution. As battlefield observation becomes more continuous and engagement cycles accelerate, maneuver forces must adjust their methods of movement, concentration, coordination, and target engagement to the realities of a highly observable battlefield

environment. This paper contributes to current doctrinal discussions regarding the adaptation of tactical thinking to a combat environment shaped by continuous ISR integration, rapid access to information, near real-time battlefield observation, and precision-strike capabilities available at lower tactical levels.

2. Research Methodology

This research follows a qualitative doctrinal and analytical approach focused on the impact of small unmanned aerial systems on maneuver force tactics during assault operations at the tactical level. The study examines how the integration of ISR and precision-strike capabilities influences the relationship between maneuver, firepower, information, and command execution within contemporary land operations. The methodological framework focuses on the effects of continuous battlefield observation and rapid engagement cycles on the planning and execution of assault operations.

The research relies primarily on documentary analysis, including the examination of military doctrines, specialized literature, and lessons learned from recent conflicts. Our analysis also incorporates NATO and U.S. Army doctrinal publications relevant to offensive and assault operations.[5, 6] This approach is complemented by a comparative analysis between traditional assault operations and drone-supported operations in order to identify differences related to execution, synchronization, command and control, and operational effectiveness.

An analytical method was also used to examine the main functional components of assault operations and to assess the influence of drones on each of them. The resulting findings were subsequently integrated into a broader synthesis intended to identify the principal tactical and doctrinal trends emerging from the analysis.

The study also incorporates elements of case-study analysis, particularly through the examination of recent conflicts such as the

war in Ukraine, where small unmanned aerial systems have been extensively employed in support of assault operations.[7] These examples help connect doctrinal concepts with operational realities and provide a clearer understanding of the growing role of drones in contemporary combat operations.

Overall, the selected methodology offers a useful framework for comparing doctrinal concepts with battlefield practice while supporting the identification of emerging tactical and doctrinal trends associated with the expanded employment of small unmanned aerial systems. The analytical approach facilitates the examination of how continuous aerial surveillance, faster engagement dynamics, and the growing integration of ISR and strike capabilities influence the evolution of maneuver force tactics within the contemporary operational environment.

3. Theoretical Framework

3.1. Considerations Regarding Assault Operations in Land Forces Doctrine

In classical military doctrine, the assault operation is regarded as the decisive phase of offensive action at the tactical level. For instance, NATO and U.S. Army doctrine define assault operations as offensive actions aimed at destroying enemy forces and seizing designated objectives through the synchronized employment of maneuver and firepower.[5, 6] Its primary purpose is to destroy or neutralize enemy forces and seize designated objectives. Assault operations are conducted as part of a broader operational process that includes preparation, approach, contact, and exploitation. Within this process, the effective synchronization of maneuver and firepower, together with the use of surprise, plays a critical role.

Maneuver forces represent the central element of the assault operation because they generate the decisive effect against enemy positions. Their effectiveness depends on the coordination of movement,

the use of terrain, the exploitation of available information, and the ability to maintain initiative against the adversary. Traditionally, tactical operations have been conducted under conditions characterized by uncertainty and limited situational awareness, factors that consistently influenced both planning and combat execution.

In traditional combat environments, assault operations relied heavily on the ability of maneuver forces to concentrate combat power while limiting enemy awareness regarding the timing, direction, and composition of the attack. Under conditions of reduced battlefield observation, concealment and surprise provided important advantages to attacking forces and enabled commanders to create localized superiority at decisive points. The increasing integration of persistent aerial surveillance and precision engagement capabilities is gradually challenging these traditional assumptions by exposing force concentrations, limiting concealment opportunities, and increasing the vulnerability of maneuver elements during movement and assault execution.

3.2. The Role of Information and Surprise in Assault Operations

Information has always represented an essential element of tactical operations. In traditional combat environments, however, information was often incomplete, delayed, and affected by a considerable degree of uncertainty. Under such conditions, surprise acted as an important force multiplier and was generally achieved through maneuver, concealment of intentions, and the exploitation of gaps in the adversary's situational awareness [8].

The widespread use of modern surveillance systems, particularly small unmanned aerial systems, is significantly altering this dynamic. Near real-time access to battlefield information reduces uncertainty and limits the ability of maneuver forces to achieve surprise through traditional concealment and movement [9]. In our view, tactical surprise

has not disappeared from modern combat, but it has become far more fragile and difficult to sustain under continuous aerial observation. In many situations, surprise now relies less on concealment and more on speed, deception, decentralized execution, and the rapid concentration of combat effects.

Thus, assault operations must adapt to combat conditions shaped by continuous surveillance, accelerated engagement dynamics, and the persistent exposure of maneuver forces during movement and engagement. On today's battlefield, effective tactical planning depends on rapid adaptation, flexibility, and the ability to react quickly under continuous observation.

3.3. Operational Characteristics of Small Unmanned Aerial Systems

At the lower tactical level, small unmanned aerial systems offer a combination of mobility, affordability, and situational awareness capabilities that few other systems can provide. Among the most important are their relatively low cost, mobility, ease of operation, and ability to provide near real-time information [10]. The rapid development of commercially available technologies has expanded access to these systems and contributed to their widespread use by both regular armed forces and non-state actors.

From an operational perspective, these systems support assault operations in multiple ways. They can conduct reconnaissance and surveillance missions, identify vulnerabilities within enemy positions, support fire correction, and, in the case of modified platforms, deliver precision strikes [11]. The integration of reconnaissance, surveillance, and strike functions within the same tactical system significantly reduces the time required to move from target detection to target engagement at the lower tactical level.

This growing connection between sensor and effector capabilities accelerates engagement processes, improves tactical responsiveness, and directly affects the

coordination between maneuver, firepower, and command execution during assault operations. In practical terms, small tactical units are now capable of identifying, tracking, and engaging targets with far greater speed and reduced reliance on higher-echelon support assets.

3.4. The Impact of Emerging Technologies on Maneuver Force Tactics

The introduction of small unmanned aerial systems on the battlefield is reshaping the relationship between the fundamental elements of tactics: maneuver, firepower, and information [12]. In traditional combat environments, information was often limited and difficult to obtain in a timely manner. Today's battlefield provides tactical units with near real-time information, enabling faster reactions and more effective operational coordination.

These technological developments create new vulnerabilities. Dependence on technological systems, exposure to electronic warfare capabilities, and the risk of information overload can negatively affect both command effectiveness and operational execution [13]. For this reason, drones must be evaluated not only in terms of their operational advantages, but also in relation to the risks and limitations associated with their employment in combat operations.

This creates conditions in which maneuver force tactics are gradually evolving toward a model characterized by greater dispersion, lower force density, decentralized tactical execution, and the continuous integration of ISR and precision-strike capabilities during combat operations. As battlefield observation becomes more persistent, traditional concealment measures become less effective. On today's battlefield, maneuver forces can no longer mass combat power without also considering the risks created by continuous observation and rapid precision engagement.

4. Analysis of the Impact of Integrating Small Unmanned Aerial Systems on Maneuver Force Assault Operations

4.1. Integration of Small Unmanned Aerial Systems into the Conduct of Offensive Operations

As the decisive phase of offensive action, the assault operation forms part of a broader tactical process that includes preparation, approach, contact, and exploitation. The integration of small unmanned aerial systems affects each of these phases and influences both decision-making and combat execution.

During the preparation phase, drones improve the quantity, speed, and accuracy of available information. This enables commanders to develop a more realistic understanding of enemy dispositions, identify vulnerabilities, and anticipate potential enemy reactions. So, operational planning becomes more closely aligned with battlefield realities, while decision-making benefits from improved situational awareness.

In the approach phase, near real-time information reduces uncertainty associated with the movement of maneuver forces. Routes can therefore be adjusted more rapidly, allowing units to avoid exposed or heavily monitored areas. Continuous aerial surveillance also improves the cohesion and synchronization of participating elements during movement. Recent combat experience shows that assault groups frequently coordinate directly with drone operators who support movement and engagement through real-time aerial observation. This allows maneuver elements to modify routes, identify threats more rapidly, and react faster to changes in the tactical situation.

The transformation produced by the integration of small unmanned aerial systems becomes more visible when comparing traditional objective reconnaissance methods with drone-supported reconnaissance during assault operations.

*Table 1-
Comparison Between Traditional Objective Reconnaissance
and Drone-Supported Reconnaissance During Assault Operations*

Aspect	Traditional Reconnaissance	Drone-Supported Reconnaissance
Information acquisition	Delayed	Near real-time information
Exposure of reconnaissance elements	High	Reduced
Detection of firing positions	Limited	Precise identification
Operational tempo	Slower	Accelerated
Situational awareness	Fragmented	Continuous
Fire correction	Indirect	Immediate
Adaptability during assault	Limited	High

The comparison illustrates how persistent aerial observation and near real-time battlefield information improve operational adaptability and accelerate tactical decision-making during assault operations.

Once contact is established, drones function as operational multipliers by rapidly identifying enemy positions and supporting target engagement. Beyond their reconnaissance role, modified drone platforms equipped with strike capabilities

can neutralize critical targets before or during direct engagement, reducing the exposure of maneuver forces and increasing the effectiveness of the assault. During recent combat operations in Ukraine, FPV drones were frequently employed to suppress trench positions immediately before assault groups initiated direct engagement. In these situations, drones acted as low-cost precision-strike assets capable of neutralizing firing points and

reducing the vulnerability of maneuver forces during the final phase of the assault. During exploitation, drones support battle damage assessment and assist in identifying opportunities for continuing the operation. In practice, this contributes to maintaining operational tempo and exploiting the advantages gained during the assault.

Continuous aerial observation and rapid precision engagement now make large-scale force concentration during assault operations considerably more risky. The growing vulnerability of force concentrations to rapid detection and engagement forces commanders to adopt greater dispersion, reduced tactical signatures, and more decentralized forms of maneuver during both movement and assault execution. Maneuver forces must balance combat power concentration with survivability under conditions of continuous battlefield observation.

4.2. Increased Battlefield Transparency and Reduction of Uncertainty in Assault Operations

The integration of small unmanned aerial systems has significantly increased battlefield visibility [14]. In traditional operational environments, commanders frequently operated with fragmented, delayed, or incomplete information. By contrast, near real-time battlefield data is now available at much lower tactical levels, reducing uncertainty within the decision-making process [15].

These developments directly influence maneuver force tactics. On the modern battlefield, commanders rely on near real-time tactical information to adapt operations quickly as combat conditions change. Continuous aerial observation also reduces the effectiveness of traditional forms of surprise and forces commanders to rely more heavily on speed, deception, and rapid adaptation in order to achieve tactical advantage. In practice, assault elements can now identify exposed routes, enemy firing points, or troop movements much faster than in traditional combat environments.

Within this operational environment, maintaining informational superiority becomes essential for preserving tactical initiative. Drone integration is therefore no longer limited to a supporting role. Under current combat conditions, these systems have become essential components of military operations conducted under continuous surveillance and the constant risk of rapid precision engagement.

4.3. Reconfiguration of the Relationship Between Maneuver, Firepower, and Information in Assault Operations

In the traditional doctrinal model, maneuver and firepower occupied the central role in combat operations, while information primarily supported decision-making. We believe that one of the most important consequences of drone integration is the progressive shift of information from a supporting element of combat toward a decisive component of tactical action itself [16].

Rapid access to battlefield data enables faster target identification and engagement, while maneuver can be adjusted continuously as the tactical situation evolves. During several offensive operations, small drones were used to identify and monitor enemy positions along assault corridors while simultaneously supporting real-time artillery fire correction. This significantly reduced the interval between target detection and engagement and improved synchronization between maneuver elements and supporting fires.

Furthermore, the integration of strike capabilities into drone systems creates a much closer connection between target detection and target engagement, reducing delays between identification and action [17]. In some tactical engagements, the same drone platform was employed both for target identification and strike execution, creating a direct sensor-to-effector connection at the lower tactical level. This reduced dependence on traditional fire-support coordination procedures and accelerated tactical responsiveness during combat operations.

The growing availability of low-cost strike drones also contributes to the decentralization of precision lethality at lower tactical echelons. Small tactical units can now employ capabilities that previously required coordination with higher-echelon fire-support assets. This development changes the relationship between maneuver and firepower by expanding the offensive capabilities available to assault elements during close combat operations.

Although these transformations improve synchronization and operational responsiveness, they also increase dependence on technological infrastructure. Disruption of information flows, including through electronic warfare, can directly affect both command effectiveness and combat execution.

4.4. The Impact of Using Small Unmanned Aerial Systems on Achieving Surprise and Operational Tempo

In traditional assault operations, surprise played a central role and was usually achieved through concealment, maneuver, and the exploitation of gaps in the adversary's situational awareness. The widespread use of drones has made the achievement of tactical surprise considerably more difficult.

Continuous aerial surveillance at the tactical level limits the ability of forces to move undetected, while the early identification of operational intentions allows the adversary to react before the assault begins [18]. In our assessment, the war in Ukraine demonstrates that persistent aerial observation has fundamentally reduced the ability of maneuver forces to conceal preparations for offensive action. During recent combat operations, small drones repeatedly exposed troop concentrations and assault preparations before attacks were launched, forcing maneuver forces to adopt greater dispersion and less predictable movement patterns.

Tactical surprise has not disappeared entirely, but its character is changing. In many situations, surprise now depends more

on speed, adaptability, rapid decision-making, and the shifting of the main effort than on concealment alone.

The widespread use of small drones generally favors the defender. Constant aerial observation and early warning capabilities restrict the freedom of maneuver of attacking forces and complicate their ability to concentrate without detection before an assault.

For that, maneuver forces now face a significant risk of attrition even before direct contact with enemy positions is established. Continuous aerial surveillance combined with rapid precision engagement reduces the survivability of assault elements during movement, assembly, and assault preparation. These battlefield conditions complicate the traditional concentration of combat power and force attacking units to rely more heavily on dispersion, deception, and rapid maneuver rather than on massed formations and prolonged preparation.

Drone integration also accelerates operational tempo by reducing the time required to obtain, process, and transmit information. Near real-time ISR provided by small drones has enabled assault forces to modify attack directions and redistribute combat power during ongoing engagements. Operational flexibility therefore increases significantly, while tactical adaptation becomes faster under rapidly changing battlefield conditions. Faster decision and reaction cycles also create additional opportunities for immediate exploitation, although they place considerable pressure on command structures throughout combat operations.

4.5. Vulnerabilities and Limitations of Using Small Unmanned Aerial Systems in Assault Operations

Despite their operational advantages, small unmanned aerial systems also introduce a number of vulnerabilities and limitations. Dependence on technological systems exposes forces to electronic warfare threats such as jamming, signal disruption, and communication interception [19]. In

addition, the limited endurance and physical vulnerability of many drone platforms can reduce their effectiveness under certain battlefield conditions.

Another important issue involves the risk of excessive reliance on drone-generated information. Overdependence on these systems may lead commanders to neglect alternative intelligence sources and potentially develop an incomplete or distorted understanding of the operational situation [20]. For this reason, drones should be integrated as components of a broader command-and-control and situational awareness architecture rather than treated as self-sufficient capabilities.

The continuous flow of drone-generated information can also create additional pressure on command structures. The growing volume of near real-time battlefield data may complicate decision-making processes, increase informational overload, and challenge the ability of commanders to rapidly identify operationally relevant information during dynamic combat situations.

4.6. Implications of Integrating Small Unmanned Aerial Systems on Maneuver Force Tactics

The integration of small unmanned aerial systems involves more than the simple improvement of existing tactical capabilities [21]. These systems are contributing to broader structural changes in maneuver force tactics. Among the most important developments are the increasing role of information in tactical decision-making, the adaptation of maneuver to conditions of expanded battlefield observation, the growing need for force dispersion in order to reduce vulnerability, and the acceleration of operational tempo [22].

Technology now influences every stage of offensive action, including the assault phase itself. As a result, maneuver force tactics place greater emphasis on flexibility, rapid information integration, and the ability to operate effectively under conditions of disruption and continuous surveillance.

The findings support the central research hypothesis of the study. The integration of small unmanned aerial systems directly affects the conduct of assault operations by increasing battlefield visibility, reducing uncertainty, accelerating engagement processes, and reshaping the relationship between maneuver, firepower, and information. These developments are gradually transforming assault operations from a predominantly maneuver-centered form of combat into a more information-oriented combat system characterized by continuous observation, decentralized precision lethality, and constant tactical adaptation under battlefield exposure.

As a result, maneuver force tactics require doctrinal adaptation capable of integrating survivability, operational flexibility, rapid decision-making, and ISR-strike integration into the execution of offensive operations.

5. Conclusions

In our assessment, the evidence observed in recent conflicts indicates that the integration of small unmanned aerial systems is producing profound changes in the way maneuver forces conduct assault operations. These changes go beyond improving the efficiency of existing procedures and reflect a broader transformation in the operational logic that shapes the planning and execution of offensive operations at the tactical level.

One of the most important consequences of drone integration is the increased visibility of the battlefield and the reduction of uncertainty during combat operations. Access to near real-time information enables commanders to make better-informed decisions and improves the synchronization of maneuver and firepower. The widespread use of drones limits the ability of maneuver forces to conceal preparations, movement, and concentration prior to assault operations. Another major development concerns the changing relationship between maneuver, firepower, and information. One of the clearest developments identified during this research is the growing transformation of

information into a decisive component of tactical action rather than merely a supporting function. The integration of strike capabilities into drone systems also reduces the time required for target identification and neutralization, accelerating both the decision-making cycle and operational tempo. The growing connection between sensor and effector capabilities shortens engagement processes and expands precision lethality at lower tactical levels.

The integration of small unmanned aerial systems also requires significant adaptation in the conduct of assault operations. These adaptations include greater force dispersion, more careful use of terrain, and improved management of vulnerabilities created by persistent surveillance and battlefield exposure. Within this battlefield environment, maneuver forces rely on adaptability, flexibility, and rapid command responsiveness in order to maintain operational effectiveness.

Drone integration also introduces important limitations and risks. Vulnerability to electronic warfare, dependence on technological infrastructure, and the possibility of information overload can negatively affect operational effectiveness if these systems are not integrated properly into the broader command-and-control framework. Maneuver forces must therefore balance the concentration of combat power with survivability under conditions of continuous operational exposure.

In many situations, drones no longer simply support maneuver. They shape it.

Small unmanned aerial systems can no longer be viewed solely as supporting assets within assault operations. Their integration reflects not only technological progress, but also a broader transformation of the contemporary battlefield characterized by continuous aerial surveillance, accelerated engagement dynamics, decentralized precision lethality, and the constant exposure of maneuver forces during combat operations. From our perspective, recent

combat experience suggests that assault operations are progressively moving away from the traditional maneuver-centered model toward a form of combat dominated by persistent observation, rapid information exchange, and decentralized precision engagement.

6. Doctrinal Proposals

The findings of this study highlight several important directions for doctrinal adaptation regarding the integration of small unmanned aerial systems into maneuver force assault operations. These adaptations involve more than the introduction of new technical capabilities. They reflect the broader need to adjust traditional tactical concepts to an operational environment characterized by continuous battlefield observation, accelerated engagement dynamics, and the expanding integration of ISR and precision-strike capabilities at lower tactical levels [23].

While current NATO and U.S. Army doctrines emphasize maneuver, firepower synchronization, and operational tempo during offensive operations, the widespread integration of small unmanned aerial systems increasingly requires the adaptation of these principles to conditions of persistent battlefield observation and decentralized precision engagement [5, 6].

First, small unmanned aerial systems should be integrated directly into the core tactical concepts associated with assault operations [24]. Drones are no longer limited to an auxiliary support role. They now function as organic components of the reconnaissance and strike system, with a direct role in information collection, target engagement, and fire correction.

Second, the planning process for assault operations must account for the availability of near real-time information. Continuous reconnaissance, rapid updates of the tactical picture, and flexible planning procedures now play a central role in effective decision-making and operational adaptation under fluid combat conditions.

Maneuver execution must also adapt to the increased visibility of the modern battlefield. This requires greater force dispersion, less predictable movement routes, reduced tactical signatures, and the avoidance of excessive troop concentration during critical phases of the assault in order to reduce vulnerability to persistent surveillance and rapid precision engagement. In this operational environment, maneuver forces must balance concentration of combat power with survivability during movement and assault execution.

Drone integration also highlights the importance of resilience against electronic warfare. Protection against jamming, redundancy within communication and control systems, and the ability to continue operations under degraded informational conditions are now essential for maintaining combat effectiveness.

Drone-generated information must be integrated more efficiently into the tactical decision-making cycle. Faster operational tempo requires shorter reaction times and greater decision-making capability at lower tactical levels. These conditions favor a more decentralized approach to tactical command, increased responsibility among subordinate elements, shorter command-response cycles, and greater tactical autonomy for maneuver units operating in rapidly changing combat environments.

The role of surprise in assault operations is also evolving. Traditional forms of concealment are less effective on a battlefield dominated by persistent aerial observation, while surprise now relies more on operational tempo, deception, rapid adaptation, decentralized maneuver, and the rapid concentration of effects than on undetected movement alone.

Personnel training remains essential for fully exploiting the capabilities provided by small unmanned aerial systems. Maneuver forces must be trained not only to operate and integrate drones, but also to interpret rapidly changing information and adapt decisions

under conditions of high informational intensity.

These doctrinal directions reflect more than isolated tactical adjustments. They point toward a broader transformation of maneuver warfare at the tactical level, where information, survivability, precision engagement, maneuver, and decentralized tactical adaptation are closely interconnected within a continuously observed battlefield environment. Future doctrinal development will require the integration of ISR capabilities, precision-strike systems, survivability measures, and rapid tactical adaptation into a coherent and flexible combat framework suited to the realities of contemporary warfare.

7. Research Limitations and Future Directions

This research has several limitations that should be taken into consideration. The analysis is based primarily on doctrinal sources, specialized literature, and lessons learned from recent conflicts. It does not include quantitative empirical data or experimental results obtained under controlled conditions. Consequently, the conclusions should be understood mainly as doctrinal and analytical interpretations of emerging tactical developments rather than as empirically validated operational models. The case-study component of the research focuses primarily on the war in Ukraine, an operational environment characterized by the extensive use of small unmanned aerial systems. Although the conflict offers valuable insights into contemporary combat dynamics, its findings cannot be applied directly to every operational environment. Technological capabilities, doctrinal approaches, organizational structures, and battlefield conditions vary significantly across conflicts. Of course, the war remains an important reference framework for understanding the effects of persistent aerial surveillance, decentralized drone employment, and accelerated engagement

dynamics on contemporary maneuver warfare.

Another limitation of the study is its focus on the tactical level of warfare. Although the analysis examines the impact of drones on maneuver force tactics during assault operations, it does not address in detail the broader operational and strategic implications associated with drone integration. This narrower focus nevertheless allows a more detailed examination of how expanded battlefield observation and ISR-strike integration influence tactical adaptation during assault operations.

The findings of this study also indicate several important directions for future research. One relevant area involves empirical and experimental studies focused on drone employment during assault operations. Such research could help quantify the effects of drones on operational tempo, maneuver effectiveness, survivability under conditions of continuous surveillance, and tactical decision-making. It may also contribute to the validation and

refinement of the theoretical conclusions presented in this study.

Another important direction for future research concerns the integration of drones into multidomain operations, where interaction between the land, air, cyber, and electromagnetic domains now plays a central role. Examining the interdependencies between these domains and the forces operating within them may provide a broader understanding of how emerging technologies continue to transform contemporary warfare.

Additional research should also examine countermeasures and vulnerabilities associated with drone employment, particularly in the areas of electronic warfare, force protection, and resilience under degraded operational conditions. The impact of drone integration on personnel training, decentralized command execution, tactical adaptation under continuous battlefield observation, and the synchronization of ISR and precision-strike capabilities also remains an important area for future doctrinal and organizational development.

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