Lessons from the Russia-Ukraine Conflict and Implications for Mechanised Operations in the Indian Context

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Abstract

With the Russian invasion of Ukraine on 24 Feb 2022, war returned to Europe, revisiting the sites of some historical battlegrounds of World War II. Russian security concerns about Ukraine joining North Atlantic Treaty Organisation were major factors. Most nations expected a behind-closeddoors solution where Russia would be offered some concessions, leading to a resolution of the situation. However, when the backlash came, no one expected such a violent one. The conflict has continued for a prolonged period with no end in sight and has witnessed the unfolding of large-scale mechanised operations. Thus, offering invaluable lessons for mechanised operations in the Indian context. The article delves into this conflict's strategic, operational and tactical implications, focusing on their relevance to India's military landscape. Analysing the role of advanced weaponry, hybrid warfare tactics, and the impact of technology on modern warfare, it identifies key takeaways for Indian mechanised forces.

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Introduction

Mechanised operations have played a crucial role in the history of warfare since the first use of tanks in World War I. These fluid operations are characterised by the coordinated use of mechanised infantry, tanks, artillery, aerial platforms and other supporting assets to gain battlefield superiority, seize and hold objectives, and conduct offensive or defensive operations. Since the start of the Russia-Ukraine conflict in Feb 2022, much hype has been generated around the use of new-generation technology and its application on the battlefield resulting in a rapidly changing battlefield milieu layered with defining characteristics in multiple domains and, thereby, creating a significant impact on mechanised operations. Few also question the relevance of mechanised warfare in the technologically advanced modern battlefield.

Contrary to the belief that future wars will be short, swift, limited in scope and will not see large-scale employment of mechanised forces, one fact stands proven that mechanised operations are still the dominant and the most successful aspect of modern warfare. This article aims to comprehensively analyse the military lessons relevant to mechanised warfare from the ongoing Russia-Ukraine conflict by examining the strategies, tactics, and technological advancements employed during the conflict.

Russian Tactics

Considering the superiority in numbers, everyone expected the Russian forces to roll over Ukraine in a short war. Initial advances by the Russian troops, 200 km deep into Ukraine were only possible due to the large-scale use of mechanised units and reinforced the view that Ukraine would capitulate soon. Contrary to popular belief, despite the early success and Russian forces reaching the outskirts of Kyiv in the first few days, the operations beyond did not materialise as expected. The photographs of long Russian mechanised columns halted on highways rather than moving and taking the battle into the heart of Ukraine baffled everyone.

Instead of exploiting early success and the inherent characteristics of mechanised forces, the Russian mechanised forces got sucked into a battle of attrition in the urban centres. The confinement of armoured vehicles to roads and not exploiting cross-country mobility has raised many questions. Though, it may be due to the flawed timing of the attack just after the melting of the snow, making the ground unsuitable for mass manoeuvres. The vulnerability of armoured columns on roads and urban centres without securing the flanks by utilising infantry was exposed. Also, the inability of the Russians to capture cities resulted in logistics failing to reach frontline units.

As the war progressed and entered the second year, the Russians have modified their tactics. These are:

• In the initial phases of the war, the Electronic Warfare (EW) capability of Russia was poorly integrated.¹ By some estimates, Russia now has almost one major EW system every six miles of the battlefield.² These systems are predominantly oriented towards defeating unarmed aerial vehicles. A recent study says Ukraine is losing 10,000 drones per month.³

• Russian infantry tactics have shifted from trying to deploy uniform battalion tactical groups as combined arms units of action to a stratified division by function into line, assault, specialised and disposable troop.⁴ These are further grouped into task-based groupings. Line troops are being used mainly for ground-holding and defensive functions. Disposable troops are being used to continuously skirmish Ukrainians, identify their positions and then target them with specialised troops to maximise destruction.

Ukrainian Tactics

In the first few months of the war, when the terrain was unsuitable for mass mechanised manoeuvres, the Ukrainians utilised their armour and mechanised forces to channelise Russians into preselected killing zones and caused heavy attrition using maximum firepower. The ability of mechanised forces to turn the tide of a conflict was evident during the counter attack on the Russian troops at the Hostomel Airfield during the first few days of the war. Had the airfield fallen into Russian hands, the war's outcome would have been different. The bold use of mechanised forces by Ukraine in the counteroffensive in Sep 2022 in the Kharkiv and Kherson areas utilising basic tenets of manoeuvre warfare and exploiting the inherent characteristics, resulted in considerable success. Despite the evident qualitative and quantitative disadvantage of mechanised forces, the examination of documents, photographs and videos indicates that Ukrainians seemed to have followed the basic concepts of mechanised warfare better than the Russians and used their mechanised forces as a rapier as they should be and not like a battering ram.⁵

As the war has progressed, Ukrainian forces have combined existing and new technology to develop three capabilities that have greatly enhanced their performance. First, they have developed a genuinely integrated command and control structure.⁶ Second, the Ukrainian army is able to get persistent surveillance of battlespace.⁷ Third, they have innovatively utilised artillery, drones, and new generation loiter ammunition to damage Russian forces significantly.⁸ These three aspects combined have had a considerable impact on mechanised operations.

Duration of Conflict and Logistics

Any campaign, however, carefully planned, with a considerable force level and asymmetry in multiple areas of military prowess, does not cater for intangibles that can prolong a war beyond expectations. The Russian concept of logistics relies heavily on using railroads and pipelines to push forward supplies,⁹ which is typically possible around roads and cities. Hence, the urgency to capture cities was seen in the Russian offensive. The towns did not fall at the pace expected. This exposed the critical weakness in the logistics plan for the Russian offensive over such a vast frontage. Hence, the stretch and stamina of logistics will always be a major decider in the time and spatial reach.

Urban Warfare Challenges

Mechanised forces offer adequate protection and pack abundant firepower to counter a threat on the battlefield. However, when utilised in an urban environment, they need to be protected adequately and augmented suitably to prevent exploitation of vulnerabilities by the adversary. The addition of irregulars or civilians as potential threats further adds to the situation's complexity. The ongoing conflict has constantly witnessed intense fighting in urban environments, which has proved to be a significant challenge for the mechanised forces from both sides.

Importance of Intelligence, Surveillance and Reconnaissance

The element of surprise was not there during the build-up of the Russian offensive. The early concentration and detection led to Russian forces being monitored from an early stage, which enabled Ukraine to undertake preparation to hold the Russian offensive before the war had begun. It can be safely stated that concealing mechanised forces from air, ground, and satellite observation in today's battlefield is near impossible and will be a significant factor in future too.

The Ukrainian offensive in Kharkiv and Kherson used light vehicles to slip through gaps in Russian deployment, utilising information from drones and human intelligence inputs and forming surveillance screens behind the Russian defensive lines to cut off the retreating enemy and guide their forces. This was the classic use of the concept of 'Reconnaissance Pull'.¹⁰ The success reinforces the fact that skilful and innovative employment of basic tenets of mechanised warfare suitably augmented with technological advancements can still pay rich dividends on the battlefield.

Mechanised Forces versus Anti-Tank Weapons and Drones

The United States, United Kingdom, Germany and other countries supplied over 4,000 Javelins and 3,500 next-generation light antitank weapons to Ukraine to build up the anti-tank potential.¹¹ In addition, rocket propelled grenades and often locally made molotov cocktails augmented the capability of the Ukrainians. Russian tanks with Explosive Reactive Armour (ERA) panels and armoured vehicles with a metallic cage or mesh for protection were adequately seen on news channels.

Yet, the innovative methods used by Ukrainians, such as bombarding the fighting vehicles with dozens of projectiles to defeat the ERA and other protective suites, has resulted in considerable destruction of the armoured vehicles and confirmed the efficacy of modern-day anti-tank weapons against the armoured fighting vehicles. Also, the vulnerability of tanks to top attack munitions exploiting the weakness of minimal armour protection has repeatedly been exposed.

The Ukrainian drones have also exploited this vulnerability and stands out as a valuable lesson to commanders on the battlefield. On one end, the Ukrainians used hi-tech drones such as the Bayraktar and Switchblade Kamikaze drones. On the other end, innovative use of cheap, locally made and commercial drones has been done to attack Russians with pinpoint accuracy. Even commercial drones have been modified to drop impact-initiated bombs and grenades to inflict casualties on troops day and night.

Russia has now integrated at least one drone jammer gun per platoon.¹² Russia is also attempting to generate fake drone signatures to confuse Ukrainian sensors and prompt the engagement of ghost drones.¹³ Also, the Russians have started using drones to advance, along with their mechanised columns, giving the crew early warning and over-the-horizon visibility. These actions have enhanced their effectiveness on the battlefield.

Combined Arms Approach and Firepower

At the start of the war, the Russians were estimated to have approximately 1,500 fighter aircraft against 150 effective fighter aircraft of Ukraine.¹⁴ Yet, the effort to dominate or control the skies, even though out-matching Ukraine in quality and quantity, was not seen. Attack helicopters and helicopters in support roles were seen in the conflict. However, their susceptibility to air defence fire, especially Man Portable Air Defence Systems (MANPADS), resulted in a heavy attrition rate on both sides. Whatever the reasons, the apparent absence of the air dimension to deliver lethal long-range firepower on the adversary has been baffling.

MANPADS have become primary air-defence assets on the battlefield. Indeed, the threat from them has forced tactical adaptation on both sides, with ground-attack aircraft and helicopters having to fly extremely low and adopt 'Lofted Launch' tactics for unguided missiles, reducing the effectiveness of these attacks.

The war in Ukraine has demonstrated that firepower can decisively impact the outcome of battles, undeterred by enemy, terrain and weather. With the war's progress, the scope and utilisation of firepower have considerably increased.

Russia has employed firepower in a destructive role; the destroyed cities and villages in Ukraine stand testimony to the lethality of firepower. The Russian Army has utilised drones to effectively locate and target Ukrainian fire assets, sometimes tracking them to their bases. The use of new-generation ammunition with enhanced range, cluster bombs, and at times

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thermobaric weapons displayed the lethality of these bombs. Russia has also leveraged the demonstrated use of firepower coupled with the nuclear threat to prevent North Atlantic Treaty Organisation countries from directly being involved in Ukraine.

On the other hand, the Ukrainians have innovatively employed firepower in various phases of battle. The initial months saw Ukrainians executing ambushes by tracking Russian forces and utilising deadly firepower from guns and rockets to cause heavy attrition on the Russian convoys at pre-selected killing zones on roads, junctions, or choke points. In the counteroffensive, emboldened by the arrival of western new generation firepower assets, the Ukrainians have heavily relied on firepower to target logistics dumps, command and control centres, communication networks and frontline troops.

Other Aspects Related to Mechanised Operations

As the war progressed, pictures of armoured vehicles with the letter 'Z' painted on Russian vehicles were common on social media. Recently, Ukrainian soldiers wearing coloured tapes on helmets and uniforms have also been seen. As the technology further finds application on the battlefield, the practice of discerning the identity of own troops on the battlefield, popularly known as Identification of Friend and Foe (IFF) in military parlance, assumes great significance not only for individuals but for these sophisticated drones and munitions too.

Mechanised operations use sophisticated command and control systems to coordinate and synchronise the actions of various units, ensuring efficient execution of missions. These systems are based on the use of the electromagnetic spectrum. With the enhanced application of technology, this set-up is becoming a target itself, and disruptions can cause a lack of coordination in battles. The Russia-Ukraine war has highlighted the importance of this aspect in detail.

Implications or Mechanised Operations in the Indian Context

Out of the many lessons that have emerged from the war, one thing is for sure that the world has not seen the end of tanks or armoured vehicles. These forces are here to stay and will remain the primary means to achieve decisive results on the battlefield. The Russia-Ukraine war has proved that modern anti-tank weapons

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can significantly damage tanks or armoured vehicles. Investing in active protection systems and protective suites will significantly enhance the combat capability of mechanised forces.

It is high time that the need for an effective battlefield management system is met. Such a system should look beyond the sub-unit or unit-level interlinking. It should be able to provide terrain input and the location of all friendly forces operating in the geographical area. It should also be able to provide the ability to communicate digitally and mark enemy dispositions and also offer a direct feed from drones and surveillance assets down to the tactical level.

The ad hoc method of creating combat groups postmobilisation and working in tight silos in peacetime will not suffice in future. Some of our frontline mechanised units should be permanently reorganised; they must include a mix of necessary components as a homogenous entity inherent in its peacetime organisation and have armour, mechanised infantry, artillery, air defence, combat engineers, signals, EW assets, tactical drones for surveillance and targeting, medical and adequate logistical elements as per the operational role. Each component's matching mobility and communication interoperability must also be addressed.

Drones' flexibility and capability enhancement on the battlefield must be exploited. At the operational level, India needs to dominate the battlespace with drones that provide persistent coverage of the battle space and the ability to engage strategic targets. Simultaneously, introducing easy-to-launch drones will significantly enhance the combat effectiveness of a tactical unit. These drones must be interlinked into the battlefield management system to improve the combat effectiveness of armoured vehicles. Additionally, we must incorporate them in our training and include use in tactical and operational doctrines.

The third dimension needs to be intimately integrated at the tac level, cutting across restrictions of domains, i.e. aircraft, attack helicopters, utility helicopters and drones. The present system of ad hoc integration during annual firing or other training events is just for the show and needs to be done away with. The communication compatibility with the aerial assets at the tactical level requires a complete overhaul.

There is an inescapable need to re-look at our intelligence, surveillance and reconnaissance architecture and ensure the information is available to the frontline mechanised forces in realtime. The existing system has some serious drawbacks that need attention on priority.

India must focus on developing Counter Anti-Access/Area Denial (A2/AD) measures, which our adversaries could employ in a conflict. This includes investing in long-range precision strike weapons, robust air defence, anti-aircraft and anti-drone systems, and EW capabilities to neutralise potential threats even at the tactical level. Developing tactics and systems that allow for mobility and rapid manoeuvrability despite A2/AD challenges should be a priority.

The consumption of ammunition and supplies can never be predicted has been made amply clear in the Russia-Ukraine conflict. Hence, more than merely adopting the push or pull system of logistics supply will be required. The western armies tend to have high 'Tooth-to-Tail' ratios, with as many as ten support personnel for every combat soldier, while Russia has fewer.¹⁵ Therefore, embedded logistics must be shaken out of the conceptual domain and made a reality. A mission-based teeth-to-tail is essential; cutting corners or thinking it will come when required can create situations, as seen during the Russian advance.

India must re-look at our surprise and deception concepts. Run-of-the-mill activities will not achieve surprise on the battlefield as the use of technology has enabled near-persistent coverage of the battlefield, and every action can be picked. The deception plan has to be credible and executed at the highest level. Similarly, the IFF concept has to be revised. Using rear-facing lights on armoured vehicles for IFF will not suffice any longer. We must use electronic means and have the ability to know friendly forces on the battlefield management systems. We must invest in technology that supports achieving surprise and deceiving enemy sensors.

Another aspect that needs overhaul is the camouflage and concealment doctrine. The present capability of surveillance assets is far superior, and hiding a tank, armoured vehicle and artillery gun under a camouflage net made of cloth or in trees is akin to fooling ourselves. The vehicles must be coated with anti-thermal/ anti-radiation material from the factory itself. The capability must also be developed to defeat thermal or infrared signature-seeking assets. After suffering huge losses, Russia has started to employ thermal camouflage on its vehicles, and using a range of other modifications, tactics, techniques and procedures, significantly reducing the detectability of tanks at stand-off ranges.¹⁶ Furthermore, these measures have reduced the kill probability of a variety of anti-tank guided missiles at ranges beyond 1,400 m.¹⁷ The mobile phone has become a potential threat to the safety of own forces on the battlefield or in concentration areas. This aspect has been adequately proven during the ongoing Russia-Ukraine war. Hence, in the future, tactical commanders must be conscious of this aspect and put measures that do not result in adverse situations for their forces.

Mechanised forces work on sophisticated command and control systems to synchronise units' actions, ensuring the efficient execution of missions. Technological advancement has made this very system a lucrative target. Therefore, India must develop the capability to ensure the survivability of our structures. Simultaneously, own EW capabilities need to be considerably enhanced. In addition to EW assets being employed at the operational level, these have to be integrated at the tactical level within the permanent structure of the combined arms unit to enable integrated training and enhance combat effectiveness.

The Russia-Ukraine war has highlighted the impact of the technology-dominated urban environment on mechanised forces. The different approaches and continuous evolution of tactics by Russia and Ukraine have brought forth very important aspects. Firstly, innovative employment of tactics supported by new-generation technology can offset adversaries' qualitative and quantitative advantages. Secondly, the importance of tactical leaders being able to innovate and adapt to rapidly changing situations. Therefore, we need to enhance our urban warfare capability at the tactical level and revisit our urban warfare doctrine.

Conclusion

It is evident from the Russia-Ukraine conflict that the nature of warfare has changed. Innovative combined arms tactics, precision fires, fire ambushes, track-and-destroy operations, and the ability to control and target depth communication will pay rich dividends. Therefore, the mindset of combat forces and supporting forces must change. In this context, the nation must holistically rethink the employment of mechanised forces, including the infantry, air force, helicopters, artillery, air defence, drones, and electronic warfare assets. Our geographical borders provide a unique conflict spectrum; therefore, India must develop robust integration spanning ground, air and deep inside enemy territory.

Additionally, the country has to accept that battles have to be fought by matching technology with technology and tactics with tactics; a poor man's choice will not yield the desired results or exact a heavy price for every success. The nation must acquire technology and make it available in response to adversaries fielding new technology on the battlefield. No amount of changes to tactics will provide us with the fluidity required in mechanised operations. Hence, investing in modernising equipment, enhancing its capabilities, and then revising tactics and doctrines is a compulsion.

Endnotes

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⁸ TX Hammes, loc, sit.

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⁹ Ajay Singh, op sit, p 19.

¹⁰ ibid, p 102.

¹¹ ibid, p 97.

¹² Jack Watling and Nick Reynolds, loc, sit.

¹³ ibid.

¹⁴ Ajay Singh, op sit, p 16.

¹⁵Accessed Jul 16, 2023, https://www.economist.com/ special-report/2023/ 07/03/why-logistics-are-too-important-to-be-left-to-the-generals/ 07 July 2023.

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¹⁷ ibid