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Adaptive Military Leadership in the Digital Age

Assistant Professor, Abdulkadir AKTURAN*
Professor, Mustafa Taner ALBAYRAK**
Professor, Aykut ARSLAN***

*Faculty of Economics and Administrative Sciences, Piri Reis University/Turkiye
e-mail: aakturan@pirireis.edu.tr
https://orcid.org/0009-0008-9107-0333
**Faculty of Economics and Administrative Sciences, Piri Reis University/Turkiye
e-mail: talbayrak@pirireis.edu.tr
https://orcid.org/0000-0002-4743-9235
***Faculty of Economics and Administrative Sciences, Piri Reis University/Turkiye
e-mail: aarslan@pirireis.edu.tr
https://orcid.org/0000-0001-5689-3918

Abstract

The digital age has dramatically transformed the face of warfare, disrupting conventional military paradigms. Leaders require cognitive agility, digital fluency, and moral resilience to successfully navigate these new military paradigms. In this paper, we examine the promising new form of adaptive military leadership in the rising convergence of artificial intelligence, cyber conflict, autonomous systems, and multi-domain operations. Using an assessment as well as the Russia–Ukraine war and NATO strategic recalibrations as a case study to generalize critical capabilities and institutional transformations necessary for effective military leadership in the 21st century, this article will explore realizable avenues. The adaptive leadership framework draws on the way leaders sense adaptive challenges, regulate distress levels in times of change, and focus attention. Based on these, the study will analyze how military organizations develop leaders who are not only technologically good but also ethically sound and make good judgments in ambiguous and changing situations. This paper will explore digital ethics, systems thinking, and cross-domain operations in professional military education. It argues that creating interdisciplinary learning, fostering experimental environments, and forming steps to build future commanders able to thrive in the chaos and help shape the future of warfare are absolutely necessary steps. Finally, this article will demonstrate that such agile, technologically literate, and ethically grounded leaders need to be developed for achieving operational effectiveness in a highly complex and uncertain modern battlespace with great levels of dynamism.

Keywords:
Military Leadership; Adaptive Leadership; Digital Warfare; Cognitive Agility; Hybrid Conflict; Strategic Command; Defense Transformation.

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Introduction

The nature of warfare has evolved beyond the very tangible realms of armored vehicles and dug-in fighting positions (Kott, Alberts, and Wang 2015). The battlefields of tomorrow are taking shape today in the highly complex domains of cyberspace, satellite constellations, and code-speaking a language so advanced. In such a quickly changing environment, conventional forms of military leadership fit ever less. As NATO put it in its 2022 Strategic Concept, the defining characteristics for security in this 21st century are 'technological innovation and strategic competition.' The question that now stands before modern defense establishments is no longer whether they should change but how fast they can effectively transform into something else.

The article discusses the essential requirements for an adaptive military leadership approach in the new digital age, an approach that not only survives the challenging landscape but thrives in it. It therefore forms a reinterpretation of Heifetz's Adaptive Leadership Framework within military command, further elaborating important functions in this specific context, such as identifying adaptive challenges, regulating distress, and maintaining disciplined attention. Leadership is viewed as the agile practice of mobilizing people to take on and solve large problems while building resilience and achieving success in conditions of uncertainty, complexity, and conflict (Deep 2023). Applying this framework to modern defense organizations will show how its fundamental principles unfold into cognitive, ethical, and digital competencies required by future battle environments. Leaders need to build adaptive decision-making skills as artificial intelligence and autonomous systems gain more space. This exploration considers the reforms needed for building adaptive leaders by instituting digital ethics, systems thinking, and cross-domain operations into military education.

Methodology

The study applies a qualitative case study to trace the evolution and implementation of adaptive military leadership in the digital age. A triangulated analysis of doctrinal reviews, real-world military engagements, and leadership theory serves to develop an integrative understanding of how modern military institutions might evolve to better cultivate leadership capabilities in technologically saturated and ethically ambiguous environments. Data sources included:

- Doctrinal documents such as the 2022 Strategic Concept of NATO and U.S. Joint All-Domain Command and Control updates (Navaratna 2025);
- Case studies of recent conflicts: the Russia–Ukraine war, the 2020 Nagorno-Karabakh War, and the Israel–Iran hybrid conflict, processed through scholarly and institutional reports (Kahn 2022; Khalilzada 2024; Baram and Ben-Israel 2025);
- Adaptive leadership frameworks by Heifetz and others (Heifetz, Grashow, and Linsky 2009; Boikanyo 2025).

AI and autonomous systems literature on military application, command ethics, and leadership implications (Bankins, et al. 2024; Matli 2024; Taddeo, et al. 2022). These works were combined in an interpretive framework of themes that sought core competencies, cognitive agility, digital literacy, and moral resilience, plus institutional imperatives like decentralized command, ethical integration of AI, and a leadership development model. Thus, patterns, differences, and actionable insights spanning national and organizational borders were noted through cross-case comparison. In this way, leadership imperatives could be inductively formulated from the realities of practice, supported by theoretical logic aimed at reforming military education.

1. Technology and the Transformation of Warfare

1.1. Beyond Kinetics: The Rise of Digital Battlespaces

Modern warfare has fast transitioned into non-kinetic domains, from the electromagnetic spectrum to the cognitive domain. Over 70% of success in recent simulations is based on effective digital situational awareness and real-time data fusion, as highlighted in the update for 2024 Joint All-Domain Command and Control by the U.S. Department of Defense (Navaratna 2025). This concurs with NATO Strategic Concept 2022: Technological innovation and strategic competition are defining features of the security landscape of the twenty-first century. At the Vilnius Summit held in 2023, it was once reaffirmed that digital capabilities, artificial intelligence, machine learning, and cyber defense are critical to defense modernization (Achuthan, et al. 2024). An excellent example of how these trends play out in practice is the performance of Ukraine's military during the ongoing conflict with Russia. Even with asymmetries in manpower and equipment, it appears that Ukraine has been successful in leveraging commercial satellite communications, social media for strategic messaging, open-source intelligence, and rapid decentralization of decisions at the battlefield level (Kahn 2022; Kushnir and Chernobai 2020). This will involve not only achieving better tactical outcomes but also winning international public opinion (Kot, et al. 2024). Therefore, effective digital technology assimilation demands equally effective leaders who can make decisions in such rich-data, rapidly changing environments.

The conduct shows the edge of adaptive, innovative management housed in a structure that is digitally uplifted. In reality, the Israeli Unit 8200 offers evidence in support of hard technologies with real-time cognitive mapping of the landscape, fusing sensor input with social media interpretation to monitor hybrid threats within the complex Israel-Iran conflict (Pahlavi and Ouellet 2012). By 2024, at least 60 nations will have some version of loitering munition or combat drone technology available to them, an increased trend towards autonomous systems (Baccino, et al. 2025; Hozint.com 2025). These underscore requirements for military leaders to be tech-savvy and able to weave varied digital implements into total strategies that change as circumstances shift quickly. The multi-domain operations that mean the fusion of capabilities across land, air, sea, space, and cyberspace require leaders

who can delegate authority in decentralized structures. They should also be able to synthesize sometimes even contradictory streams of complex information to enable strategic clarity under uncertainty. Such adaptive decision-making skills must also be possessed by commanders to assess critically the directives generated by AI because it is a fallible tool subject to error, bias, and manipulation (Clark, Patt, and Walton 2021). Thus, AI literacy, algorithmic responsibility, and the ethics of digital warfare are being integrated into officer education pipelines in training programs throughout NATO and allied forces (Chen, et al. 2024).

1.2. Autonomous Systems and AI Command Support

The autonomous systems have essentially made the jump from being mere experimental tools to becoming critical operational assets. This quick transition has drastically changed the face of modern warfare. By 2024, more than 60 nations had had some form of combat or loitering drone capability (Ardiansyah 2025). These facts also reflect that the market for military AI systems worldwide is projected to grow up to $18.8 billion by 2027 (Horowitz 2019). For example, Turkey's AI-integrated KARGU-2 are drones that could autonomously find their targets, and Project Convergence 2024 of the U.S. Army, which aims at semi-autonomous coordination between air and ground robotic units (Pretto, et al. 2020; Edmonds, et al. 2021).

The proliferation of such systems also raises enormous ethical and strategic dilemmas. Risks associated with a system that heavily relies on opaque decision models of AI were underlined in the 2023 Geneva Dialogue on Autonomous Weapons, which, above all, stressed the necessity of human-in-the-loop control, especially for lethal systems (Achuthan, et al. 2024; Tamburrini 2021). The challenges in accountability due to opacity in AI have led to yet another consideration: algorithmic bias and unintended consequences (Dhopte and Bagde 2023). Commanders, therefore, need adaptive decision skills to critically assess, audit, or even override AI-generated directives, bearing in mind that while powerful, AI is fallible to error, bias, or manipulation—all the more critical within complex dynamic battlefield settings where unforeseen circumstances can rapidly render pre-programmed algorithms obsolete, even detrimental.

The use of AI in military command structures also calls for a change in leadership paradigms. Leaders should perceive AI not merely as a tool but as an agent constituting complexity within a larger scheme (Simpson, et al. 2021). This means knowledge about limitations of AI, its possible vulnerabilities to adversarial attacks, and its influence on human decision-making. Therefore, training programs at NATO and allied forces are now embedding AI literacy, algorithmic responsibility, and ethics of digital warfare into the officer education pipelines to fulfill these requirements (Porkoláb 2020; Taddeo, et al. 2022). This education will make officers view critically the capabilities and limitations of AI and ensure that its use is responsible and ethical in military operations.

Beyond ethics, this integration produces strategic challenges because now, with more and more use of AI, there might be fresh vulnerabilities to cyberattacks and electronic warfare that can conditionally disable command and control systems and thus frustrate strategic objectives. Adaptive leaders must be skilled in forecasting such risks as well as in creating resilience against technological disruption (Hagos and Rawat 2022). They must also balance the benefits that come with the use of AI with maintaining human control and keeping autonomous systems to uphold strategic goals consistent with ethical principles.

2. Characteristics of the Adaptive Military Leader

The military leader of today should represent a mixture of technical understanding, ethical values, and strategic thinking. They will have to command not only the forces but also manage the integrated digital environments. Adaptive Leadership is a model of leadership that allows the person and the organization to lead in complex, dynamically changing settings. Adaptive leadership theory was founded based on the teachings of Ronald Heifetz at Harvard University and developed in the 1990s because traditional leadership models were inadequate to provide solutions for challenges that involved learning, innovation, and change. In his early work, Heifetz concentrated on leadership within political and organizational domains; however, he primarily articulated the differentiation between technical problems that can be addressed through existing knowledge and procedures and adaptive challenges necessitating experimentation, discoveries, and adjustments of values. According to Heifetz, the work of adaptive leaders involves us in three primary functions: identification of adaptive challenges, regulation of distress, and sustaining disciplined attention (Nikolaou, et al. 2007). These functions offer a guide for leaders who want to successfully maneuver through complex and unclear situations. Ronald Heifetz originally formulated this theory in the 1990s, and since then, it has evolved into a strong framework for leading amid uncertainties, changes, and systemic disruptions (Boikanyo 2025; Heifetz, et al. 2009). Adaptive Leadership was first introduced by Ronald Heifetz in his seminal book, Leadership Without Easy Answers (1994), later with co-author Marty Linsky in Leadership on the Line (2002), and with Alexander Grashow in The Practice of Adaptive Leadership (Heifetz, Grashow, and Linsky 2009). These three works spring from his work at Harvard Kennedy School, where he tried to redefine leadership as a process, not a position. Drawing extensively on systems theory, political science, and psychodynamic theory (Heifetz, Grashow, and Linsky 2009), it highlights the need to make a clear distinction between problems that can be dealt with using available knowledge and processes (technical problems) and those that cannot and hence require new learning, innovation, and value-oriented behavioral adjustments (adaptive challenges). The theory emphasizes the importance of distinguishing between technical problems, which can be solved with existing knowledge and processes, and adaptive challenges, which require new learning, innovation, and adjustments in values and behaviors (Bailey, et al. 2012).
For leaders to flourish in such conditions, they need to possess a set of crucial traits

and hence create organizational cultures that embrace innovation, flexibility, and openness (Sott and Bender 2025). Heifetz makes a distinction between technical problems that can be addressed with the knowledge and procedures already available and adaptive challenges that require innovation, learning, and even changes in values and beliefs or behavior. Therefore, "Adaptive Leadership" can be defined as "the practice of mobilizing people to tackle tough challenges and thrive" (Heifetz, Grashow, and Linsky 2009, 14). The rapid adaptation of strategies and tactics based on real-time data and evolving threats is a capability that leaders must have (Matli 2024). To harness the potential of AI effectively, leaders must develop an organizational culture that encourages both exploration and exploitation (Bankins, et al. 2024). This means promoting experimentation for new applications of AI as well as implementing validated AI applications to enhance productivity and quality of decision-making (Bankins, et al. 2024). In addition, military leaders should have the capacity to evaluate the ethical impacts of using AI (Nalin and Tripodi 2023).

A military leader of this era must possess, in addition to traditional requirements of technical, ethical, and strategic education, the ability to command not only forces but also integrated digital ecosystems. In short, the new military leader should be a hybrid thinker: possessing intimate knowledge of human and machine capabilities alike. They value openness, justice, and accountability for AI systems while addressing biases and ensuring data privacy. The primary responsibility involved in developing AI systems is to build a moral framework within which such systems would operate based on several fundamental ethical principles: justice, transparency, accountability, and human welfare. These individuals are deeply familiar with the capabilities and limitations of AI, understanding how algorithms can augment — but never replace — human judgment. Further, adaptive leaders need to display a high degree of cultural sensitivity awareness, especially in multinational operations. The adaptive leadership approach has been highlighted in studies concerning military and organizational dynamics as a way to deal effectively with complex and imprecise issues (Boikanyo 2025). In military leadership, these functions correspond to some specific abilities:

Cognitive agility: It involves not just apprehending new threats but rapidly assessing such elaborate circumstances so as to be able to foresee further challenges and revise strategies accordingly (Good 2014). It implies a way of thinking that welcomes change and is ready to forsake old assumptions. In other words, cognitive agility at work means the ability of leaders to switch quickly between different styles of thinking, analytical, and intuitive, and to combine varying pieces of information for making decisions (Johnco, Wuthrich, and Rapee 2013). The present war in Ukraine is an illustration of this requirement, as the commanders have had little time in which to adjust to novel technologies and methodologies of warfare.

Digital Literacy: Military leaders of today must have intimate knowledge of digital technologies and their strategic implications, besides being able to use them effectively (Antoniuk and Zasiadivko 2023). They should be able to evaluate the risks

and opportunities of new technologies that come into the military domain with all their possible applications (Türk 2023). Digital literacy is also defined as knowledge about the principles that rule cyberspace, including cyber warfare and information operations through social media for strategic messaging. It was illustrated in the Azerbaijan-Armenia clash where drone warfare with on-the-spot monitoring gave one side strategic superiority (Wu 2022).

Moral Compass: This entails making military leaders grounded in robust moral compasses because the integration of autonomous systems and AI brings to the fore significant ethical dilemmas. This means deepening the understanding of ethical principles and how they apply to complex and ambiguous situations (Uddin 2023). It also means making them promoters as a function of their leadership role of ethical behavioral culture within the military in general and specifically ensuring that all personnel are very aware of their responsibilities per international law and the laws of armed conflict (Crayne 2025; Zanglin 2017). Therefore, investment in ethical AI training is necessary to develop commanders who can handle such dilemmas.

Inspiring Leadership: Adaptive leaders share more of their authority with subordinates. They instill in them the confidence to make decisions at different levels of decentralized decision-making, trusting that the subordinates will take appropriate actions. This, therefore, entails belief in the abilities of subordinates and a readiness to embrace risk and tolerate mistakes (Huettermann, et al. 2024). In addition to delegating authority, they also ensure that resources are made available to support the success of subordinates and thereby foster an accountability culture and continuous improvement (Dias 2024). This competency has been demonstrated by Ukraine's very fast decentralization of decisions on the battlefield.

Cultural and strategic understanding: Contemporary military operations necessarily include interaction with diverse populations and multilateral partners, so cultural sensitivity and awareness must be high among leaders. That is to say, the understanding of different people's cultural norms, values, and beliefs, as well as effective cross-cultural communication (Herrero and Suengkamolpisut 2005). Adaptive leaders should also understand the strategic implications of their actions and decisions on relationships with allies and partners. Leadership in such an intense environment has to be particularly ethical (Robinson, McKenna, and Rooney 2022). In addition, military leaders are required to have excellent knowledge of the cultural, social, and political milieus (Sriharan, et al. 2022). This pertains to the knowledge of media influence, perception, and world norms over military operations. Such awareness also entails the skillful capacity to communicate with different publics and to establish relationships with key stakeholders (Moreno 2021). The Israeli military leadership shows agility by coordinating in real-time across multiple agencies, which is a demonstration of strong strategic awareness.

These skills are linked and build on one another. Developing them means taking a whole approach to military teaching and training, one that focuses on critical thinking, problem-solving, and good thinking about right and wrong (Jnitova, et al. 2021). By building these traits in their leaders, military groups can improve the way they adjust to new situations, encourage new ideas, and get good results in a more complex and unclear world. This framework enables leaders to separate the two: technical problems, which can be solved by using current know-how; and adaptive challenges, which require learning, innovation, and a culture shift. Most challenges in modern warfare fall into the second category. The distinction is critical because treating adaptive challenges as technical problems leads to misapplication of resources and approaches, and hence frustration and resistance, resulting in failure to address the issues (Pak, et al. 2020). Since Heifetz first thought of it, adaptive leadership has been taken up more and applied in many areas, like education and health care, as well as the military (Boikanyo 2025). Adaptive leadership has been prescribed for the military to lead effectively amidst changing threats and technology (Papersowl.com 2023). The fast-changing environment of modern asymmetric conflict and cyber warfare, plus the rise of autonomous systems, requires leaders who can change with the times and help their organizations be more creative.

The stress on ethical grounding shows the weight of moral reasoning and ethical decision-making in the time of self-reliant weapons and data-led war (Askew 2023). Leaders have to be ready to steer through complex ethical dilemmas and make sure that tech advances line up with ethical rules and strategic goals. Adaptive leadership helps us understand the challenges of modern warfare. It can help military leaders develop cognitive agility, digital literacy, ethical grounding, delegative authority, and cultural as well as strategic awareness to enhance their ability to adjust to changing circumstances, innovation, and decision-making ethics (Ertürk and Albayrak 2020). With this in view, as military organizations continue to face complex challenges in the security environment of the 21st century, they must increasingly apply the principles of adaptive leadership for successful operations.

3. Adaptive Leadership in Contemporary Conflicts: Case Studies

3.1. Russia–Ukraine War

The military performance of Ukraine in the conflict with Russia underscores adaptive leadership in war today. There were great asymmetries between manpower and equipment, but innovative strategies allowed for remarkable resilience and effectiveness (Sanders 2023). A major enabler of this adaptability has been the effective exploitation of commercial satellite communications, "Starlink", to maintain connectivity and coordination when under attack from Russian cyber and electronic warfare (Daly 2025). In the words of a report by The Royal United Services Institute, Starlink has provided a lifeline advantage to Ukrainian forces with unbroken

communications, better gathering of intelligence, and improved command and control capabilities (Watling and Reynolds 2022). Besides this, Ukraine waged info ops through social media for message discipline. This was described as domestic and international audience communication that garnered Ukraine support, beat back Russian propaganda, and framed the narrative on the conflict (Mejova, et al. 2023). Social media is proven by academics to be a powerful tool that can shape public opinion and tilt the course of conflicts. Ukraine's use of social media is outstanding in terms of how well it has excelled in recruiting volunteers, fundraising, and organizing humanitarian aid.

Open source intelligence has consequently become a key factor in Ukraine's adaptive style of conflict leveraging. It easily makes use of readily available information from social media, satellite images, and other sources to glean insights on the movement, logistics, and intentions of Russian troops (Zakharchenko 2025). OSINT has enabled Ukraine to make educated guesses about what the Russians will do next and, hence, deploy resources more effectively (Kudlenko 2023). In such a trend, the study of the Atlantic Council also emphasizes how much open-source intelligence is gaining access to modern warfare with its potential of leveling the playing field between adversaries (Harper and Cross 2024). In addition, rapid decentralization by Ukraine of decisions related to the battlefield has given sufficient authority at the lower levels to commanders to act upon changing circumstances and avail themselves of opportunities as they present themselves. Decentralized command has allowed Ukrainian forces to adjust to the fluid nature of the conflict and preserve operational flexibility.

Russian rigid hierarchies and old-fashioned doctrines have blocked command flexibility, against which Russian forces find it much more difficult to adjust to an ever-changing battlefield (Dickinson 2022). It is, therefore, less adaptable because of the rigid organization of the Russian military and old doctrines (Caro 2025). Scholarly accounts attribute the failure of the Russian forces to match Ukrainian tactics to a top-heavy command structure and an apparent absence of initiative on the part of subordinate levels (Faro 2024). Such inflexibility eventually led to tactical defeats and strategic mistakes. Whilst the Russian armed forces have had specific strengths, for instance, in areas of technological advancement and mass operations, their rigid hierarchies and adherence to traditional doctrines have done much to limit flexibility (Caro 2025). Scholarly research, including highlighting the top-down command framework and lack of initiative at lower levels, suggests that these have done much to encroach upon their ability to perform effectively in the context of shifting battlefield dynamics (Faro 2024). This rigidity has resulted in operational delays and strategic miscalculations. Furthermore, influence campaigns have not been able to overcome deep-seated beliefs and negative perceptions (Demus, Holynska, and Marcinek 2023).

The rigid top-down command hierarchy of the Russian military suppresses rapid decision-making (Teixeira, et al. 2024). The hierarchy tends to suffocate initiative

among lower levels, excluding the ability of ground commanders to respond quickly to evolving circumstances. The tightly held adherence of the Russian military to outdated doctrines has proven problematic within the dynamic and fluid nature of war in the contemporary era (Caro 2025). The war in Ukraine has put to the test the weakness of such doctrines in the face of an adaptive Ukrainian strategy. Despite the advances that have been made in military technologies, the Russian military has struggled to incorporate such technologies into its command and control. This has hindered their ability to make the fullest use of digital instruments and information warfare (Mikayılov and Bayramov 2019). Innovation is also stifled as a lack of adequate encouragement of thinking and problem-solving at lower levels does not allow adaptive solutions to unexpected challenges. Tactical and strategic mistakes that turn into operational failures come from the same place: lack of adaptability. The different arms of the military are suffering from poor communication and coordination between them. This has made them unable to effectively counter Ukrainian tactics. Influence operations have so far failed to either shift public opinion or break the resolve of Ukrainians; this speaks to a deficit in understanding of the information environment as well as an inability to adapt messaging strategies (Demus, Holynska, and Marcinek 2023).

3.2. Azerbaijan–Armenia Clashes (2020 Nagorno-Karabakh War)

The 2020 Nagorno-Karabakh War is an excellent example of how adaptive leadership combined with technological superiority can change the rules of engagement in war (Iskandarov and Gawliczek 2021). Azerbaijan won not just by having a better military but through strategic and tactical flexibility in using emerging technologies (Koukoudakis 2024). Importantly, in the context of this study, it was the ability to operationalize Turkish-manufactured Bayraktar TB2 drones that delivered real-time intelligence, surveillance, and reconnaissance (ISR) capabilities and targeted precision strikes against specific Armenian military targets. These drone attacks proved pivotal in limiting 292 disruptions to adversary infrastructure and materially affecting its combat capabilities. It is important to note, however, that drone attack video recordings were also electronically communicated via social media and other digital outlets, resulting in psychological effects, influencing international perceptions, and bolstering Azerbaijan's advantages on the battlefield and in the information warfare domain (Crowley 2025).

Academic conflict analysis pivots on key dynamics. One is offered by Svante Cornell (2017), noting that Azerbaijan has actually achieved significant modern military technological—not strictly weaponry but rather drone technology—operational superiority. Continuous surveillance and strike capabilities open for Azerbaijan to bypass the Armenian defensive measures. Broader strategic adaptation entailed integrating drone warfare with conventional land forces through campaign outcomes. Analysis shows how information dominance for Azerbaijan means to combine military and media operations to shape narrative dominance of a conflict, as well as lower enemy morale; drone footage shared on

social media had extraordinary psychological effects, inflating perceptions over Azerbaijani dominance (Khalilzada 2024). Azerbaijan used it well for projecting its military success on social media, lowering Armenian morale. The command-and-control perspective indicated dynamic command structures within which the Azerbaijani dispersed units operate. Such agility, whereby vulnerabilities are discovered, results in momentum being kept throughout the conflict. The Armenian forces, however, were less adaptive and constrained by old doctrines. It significantly hindered their responsiveness by failing to apply new technologies to operations (Cheterian 2022). Therefore, this war is another evidence of the growing importance of adaptive leadership in a contemporary digital world where rapid technological transformations define the evolution of warfare (Raska 2019).

Furthermore, the utilization of real-time surveillance with drone and satellite images provided Azerbaijan with the most effective knowledge of the operating environment. This facilitated sound decisions and rapid responses to any emerging threats. Its precision-strike capability allowed it to strike necessary military and infrastructure assets with minimal collateral damage. A working, networked communications setup allowed for working and unblocked coordination between different units tied to a shared operating picture and fast information spread (Pashayeva 2023; Sobb, Turnbull, and Moustafa 2023). The Azerbaijani case shows how adaptive leadership, when mixed with technology, can lead to gaining a huge strategic edge. By giving local commanders agency to make decisions based on situational awareness, Azerbaijani forces could maintain flexibility and identified tactical opportunities as they presented themselves (Bankins, et al. 2024). It is important to emphasize that adaptive leadership was more than just using new capabilities, but instead reconfigured the way the military organization operated and made decisions. The successful integration of autonomous platforms with electronic warfare capabilities gave Azerbaijan a significant strategic advantage. These capabilities enabled the disruption of Armenian communications and mitigated air defense systems.

The Armenian military did not prove very apt in adaptive military leadership. They were facing an opponent with better technology, yet the Armenian command structure continued to be hierarchical and reactive. That meant there was little room for operational flexibility and responding on the battlefield. A rigid system like that described by Koukoudakis (2024) makes the forces unlikely to respond effectively to drone warfare against them, and when intelligence and targeting functions are integrated in real time against them. The Armenians fell back on traditional concepts of defense due to no experience with new technologies available to provide such things as AI-enabled surveillance or automated targeting systems; thus, that further reduced their capacity for adaptability at the operational level (Feldman, Dant and Massey 2019). Adaptive leadership is also about controlling information operations and civil-military communication. In this respect, Azerbaijan's perception management through controlled media certainly trumped Armenia's strategic communications, which brought public morale down considerably and international

support even lower (Chernobrov 2025). Finally, adaptive leadership means having emotional resilience and the ability to build cohesion under stress. Armenia struggled to maintain troop morale and organizational unity amid asymmetric threats, suggesting further adaptive capacity deficits. While some localized adaptive actions may have occurred, the broader strategic posture of the Armenian military revealed a lack of preparation for high-tech, hybrid warfare scenarios (Frappi 2023). Scholarly assessments thus stress the necessity of systemic reforms, including the development of decentralized leadership cultures, the incorporation of technological literacy into officer education, and the institutionalization of adaptive leadership principles to strengthen operational resilience and strategic flexibility.

The 2020 Nagorno-Karabakh War is an exemplary turning point in modern warfare. By Azerbaijan, the employment of drone warfare and real-time surveillance with Turkish–Israeli technological platforms (Koukoudakis 2024) have aptly demonstrated how adaptive leadership can decisively shape battlefield outcomes. Strategic dominance was secured for the Azerbaijani Bayraktar TB2 by media campaigns and electronic warfare, as well as autonomous systems synergized by the commanders (Rustamzade and Valiyev 2024). Exploiting rapid technological asymmetries at a pace typical in adaptive leadership theory collapsed further command through dispersed units (Crivellaro 2013; Mikayılov and Bayramov 2019). The main elements that have determined success for military operations are the factors that define how well a state can achieve technological asymmetry, decentralized unit coordination, and general information space management.

3.3. Israel–Iran Hybrid Conflict

The confrontation between Israel and Iran represents a paradigmatic example of hybrid warfare, where cyberattacks, precision strikes, proxy operations, and disinformation campaigns are deployed in conjunction. Although not a conventional war, this conflict illustrates how adaptive leadership manifests through divergent approaches on both sides (Beretas 2020). Israel and Iran have each demonstrated adaptability in ways tailored to their strategic goals, resources, and operational philosophies.

A major enabler of Israel's adaptability has been the high-level integration of cyber and intelligence technologies. Israel has leveraged its superiority in cyber capabilities to carry out both defensive and offensive operations, including cyber espionage, infrastructure protection, and cyber sabotage (Baram and Ben-Israel 2025). The pre-emptive doctrine of Israel is based on the National Security Strategy Principle, which emphasizes rapid response to perceived threats, therefore allowing swift military decisions, normally in the offensive mode. Apparently, in the future, up to 2025, covert operations, precision assassinations included, will remain as a tactical feature within that doctrine, reflecting commitments to technological sophistication with less collateral damage. Apart from that, success has been reflected with Israel in multi-agency coordination whereby military and intelligence together with civilian cyber agencies work towards real-time threat identification, cross-sector collaboration, and synchronization of

operational response supported by interagency agreements plus routine joint exercises (Nyemann and Sørensen 2019; Tabansky 2020). This is ensured through structures that allow for a fluid and dynamic adaptive response to a hybrid threat.

Iran adopted a variant model of the adaptive leadership concept within the asymmetric warfare paradigm. Iran has developed decentralized proxy forces, such as Hezbollah and Hamas, among others, who predominantly operate from their bases but share an ideological alignment within Iran's strategic objectives (Congressional Research Service 2021). Decentralized command manifests itself in allowing for localized decision-making and sustaining processes of implementing activities. The center pillar also guns up cyber warfare capability in its strategic arsenals. Infrastructure attacks against Israeli installations and disinformation campaigns to destabilize Israeli society while polarizing it are now conducted increasingly competently (Arasli 2007; Meriläinen 2025). Digital influence operations—that is, fake accounts and coordinated propaganda campaigns—have extended further wings to operational reach into actual psychological areas. Iran places primary emphasis on leveraging flexible low-cost high-impact tactics – for instance, small boat naval maneuvers as well as mine warfare, including cyber infiltration – revealing adaptive doctrine innovation derived even under resource constraints (Saikal and Vestenskov 2020). Open-source intelligence has been at play on both sides. For example, Israel employs big data analytics and social media monitoring to track proxy movements as well as the shifts in narratives, and then fuses such insights into real-time decisions (Hoffman, Neumeyer, and Jensen 2024). Iran, via proxies and non-state actors, uses the same digital channels to shape public discourse and perception in the information environment.

This hybrid environment thus highlights the complexity of modern military involvement with blurred lines between war and peace. Wu (2022) notes that prior to, during, and after the kinetic operation, critical infrastructure is paralyzed by acts in cyberspace sowing confusion. Clarke (2024) describes information operations—disinformation and propaganda— targeting morale of the population and the public presumption of unattributed sources seemingly tidily. The playing field further widens with moral ambiguity when unconventional international law non-state actors are drawn in (Raugh 2016). Constant readjustment comes into play in this hybrid warfare; this is established based on empirical evidence whereby the Iranians and Israelis adapt their tactics dynamically on all emerging fields, be they cyber intrusions or shifts in political landscapes (Hwang and Joo 2023). In line with such rapid technological advancements as AI-enabled targeting as well as autonomous drone platforms, a shift in paradigm within military leadership culture decision-making is equally demanded (Weidman 2021).

The value of resilience in such a conflict is paramount. Both nations have undertaken steps toward infrastructure hardening, enhancing the survivability of critical assets like power grids, communications networks, and command-and-control systems

(Roshanaei 2021). Cybersecurity practices—including encryption, real-time threat monitoring, and cyber hygiene education—are central to resilience in the digital battlespace (Thakur and Pathan 2020). Mitigating high morale, remaining united as a team, and showing good leadership, particularly under stress, must be part of lasting through sustained and ambiguous fight times (Beckner, et.al. 2021; Smith 2024). In both scenarios, speed and agility as adaptive leadership were seen as imperative. Leaders need to scan changing dangers, lead cross-functional teams, talk openly, and allow new thinking when unsure (Sott and Bender 2025). While Israel does well at putting top tech tools together with real-time working as one, Iran has used the spread of power to help flexible proxies who can carry out changing plans in the field.

The Israel-Iran war demonstrates how the type of leadership determines maneuvering through the maze of hybrid warfare. Both nations devised strategies and capabilities that were very different but effective in countering attacks from the other and exploiting their vulnerabilities (Eilam 2016; Smith 2020; Segell 2021). The skills needed for leadership in this digital age include the ability to use technology and understand human behavior (Hoffman, Neumeyer, and Jensen 2024), that is, drawing on big data analytics, strong artificial intelligence tools and similar high-end technologies for optimized decision making but also communicating with multiple community stakeholders in an unpredictable environment and using that skill to build trust (Tariq, et al. 2021). It is not a conventional war, but a hybrid war manifested in cyberattacks, targeted strikes, disinformation campaigns, and proxy operations. Israeli military leadership has shown agility in the high integration of technology, pre-emptive strategic doctrines, and real-time multi-agency coordination. Iran illustrates the use of proxy forces, asymmetric tactics, and digital influence operations as an adaptive structure, decentralized but ideologically anchored. These engagements show how adaptive leadership now transcends battlefields to the domains of psychology and the digital.

4. Institutional and Educational Imperatives for Cultivating Adaptive Military Leaders

Producing adaptive leaders requires, in fact, a total change in military education and culture through diverse strategic initiatives. That change is to prepare military personnel both in terms of skills and mindset to deal with the complexities of modern warfare within a context of fast technological development, hybrid threats, and irregular battlefields (Ryan 2020). Educational reform should focus more on critical thinking, problem-solving, and decision-making under uncertainty; moreover, it should promote continuous learning and adaptation. Three core pillars define this leadership paradigm*:*

Adaptability as a Strategic Imperative: The ability to respond quickly to changing conditions and the willingness to question old ways of doing things have become an imperative.

Continuous Learning as a Competitive Advantage: Because of the pace of technological and geopolitical change, leaders must be committed to learning for life, staying aware of new technologies and cross-cultural dynamics.

Resilience as a Foundation for Success: Psychological and emotional resilience supported by organizational support structures will be critical in sustaining performance under pressure.

By embedding these principles at the levels of education, training, doctrine, and organizational culture, military institutions will thereby produce leaders who can understand modern complexity better and more prepared generations to lead in today's conflicts (Albayrak and Ertürk 2021). Only through such holistic transformation can armed forces truly "win tomorrow's wars today."

4.1. Professional Military Education Reform: Integrating Digital Ethics, Systems Thinking, and Cross-Domain Operations

Conventional military education does not prepare commanders adequately to confront such multiple challenges in contemporary warfare. Reform of Professional Military Education (PME) means imparting digital ethics, systems thinking, and cross-domain operations to the curriculum (Woldenberg 2023). Digital ethics helps in understanding the emerging moral dilemmas that come with the use of AI and cyber capabilities; this ensures responsible use of technology (Chen, et al. 2024). Systems thinking will enable them to view how elements are interconnected within a system and thus anticipate some unintended consequences that can happen to make better decisions (Sun, et al. 2024). Cross-domain operations include land, sea, air, space, and cyberspace domains; therefore, leaders must learn how to integrate different domain resources for orchestrating synchronized operations in multiple domains.

4.2. Red Teaming and Scenario Simulations: Enhancing Decision-Making Under Ambiguity

Red teaming and scenario simulations are used, respectively, as complementary tools useful in making decisions amidst ambiguity and uncertainty. In red teaming, the team is tasked to challenge the plans and assumptions of an organization in a way that would identify vulnerabilities and weaknesses (Sun, Zhang, and Zhu 2022; UFMCS 2015). Scenario simulation creates a somewhat real situation where participants are forced to make decisions under pressure, thus practicing decision-making skills and learning from mistakes (Hoffman 2024). These build leaders who can think critically amid changing circumstances and make sound judgments with incomplete information.

Red teaming and scenario simulations help leaders to test their assumptions and discover any vulnerabilities in the process of decision-making under very realistic conditions, with pressures that might even intensify the actual climate of making decisions. The learning process, which involves an active challenge to established

wisdom and taking alternative viewpoints, creates for the leader a much more nuanced perception of complicated situations as well as heightened anticipation of possible developments that may indeed catch one by surprise. Even more genuine and effective is the merging of virtual reality and augmented reality technologies in such simulations whereby, within safe confines, participants can experience first-hand the fallout from their decision (Pleban, et al. 2002).

The combination of human skills and the use of AI-based tools will make for improved protection against attacks, showing how they form a tag team in today's security (Iyer 2024). Furthermore, across sectors, joint educational and training exercises help improve interoperability as well as integrated preparedness through methods like horizon scanning and decision theaters used for educating strategic analysts and training decision-makers (Knutsson and Mårtensson 2015). Even realistic cyberwarfare exercises that have been developed using a framework that emphasizes realism in environment, adversary, communications, tactics, and roles assure valuable, relevant training (Dobson, et al. 2017). These exercises are held with individuals from many different functional areas within an institution to be as close to a real experience of cyber-attack and response as possible (Colbert, Kott, and Knachel 2020). The same systems that organizations have employed to coordinate their crisis responses and deliver decision support can now be modified so as to simulate and game the real crises to rehearse appropriate responses (Walker, Giddings, and Armstrong 2011).

4.3. Interdisciplinary Learning: Blending Engineering, Political Science, and Behavioral Studies

Adaptive leadership calls for great familiarity with a wide range of disciplines, from engineering and political science to behavioral studies. Interdisciplinary learning makes the leader view technical, political, and human aspects; such holism allows the leader to perceive these three dimensions in the context of conflict (Lindsay and Friesen 2020). Such interdisciplinary learning draws keener insights from various fields, offering well-rounded, adaptive military leaders (Kochavi 2022). To that end, cross-disciplinary collaboration and knowledge sharing at military education institutions help realize more holistic understandings of complex challenges, thereby fostering innovative solutions. Military technology capability and constraints can be best judged by engineering knowledge (Krylova, et al. 2019). Political science sheds light on the political processes within which conflicts unfold as well as the interests motivating different actors (Horowitz 2020). Behavioral studies assist a leader in understanding how humans behave so that they might better influence or motivate their subordinates.

4.4. Leadership Labs: Creating Experimental Environments for Agile Command Exercises

In such leadership labs, an experimental environment is offered wherein agile command can be practiced. In a safe and secure environment, leaders get to sharpen their skills. Certainly, advanced technology would serve this purpose, virtual reality

or augmented reality simulation of the battlefield conditions (Uckelmann, et al. 2021). In it, participants can try out different styles and methods of leadership; feedback is provided on their performance, and they learn from the experience. Leadership labs foster a culture of experimentation and innovation in which leaders may challenge established wisdom about warfare and even create new approaches (Kjærgaard and Meier 2022).

4.5. Partnerships with Tech Sectors: Integrating Innovation Hubs and Defense Start-Ups into the Training Pipeline

Links to the tech sectors, pulling in innovation centers and defense start-ups into the training process, help share new ideas and methods (Watts, et al. 2023). These deals help get new technologies and skills so leaders can stay in front of changes that happen fast in a world of constant technological growth (Zervas and Stiakakis 2024). Innovation centers show a group helping link military people with scholars and industry professionals. Defense start-ups bring new ways to solve military problems; more often, they bring new thoughts and different ways. This teamwork is most important for keeping a lead in today's digital world (Steiro and Torgersen 2020). The combination of these teaching methods helps military leaders become flexible and good at dealing with the tricky modern times. This also allows leaders to successfully bring in new technologies, think deeply, and create a workplace culture that encourages new ideas (Bresler 2018). These institutional and educational mandates together produce adaptive leaders capable of operating effectively in chaos and helping to define the future of conflict. Through these reforms, military organizations would develop an adaptability culture, a learning culture, and a resilience culture—well-prepared to take on the new challenges of the 21st century.

5. Recommendations for Building Future Commanders: Institutionalizing Adaptive Leadership

To really make adaptive leadership a part of military groups, there is a need to take many steps all at once and bring about changes in doctrine, hand over more decision-making power, spend on ethical-AI training, build feedback cultures, and make sure leadership growth matches strategic foresight (Joshi 2025; Liseanu 2023). These tips together try to build a nimbler, stronger, and more creative military force that can deal with the challenges of today's warfare.

5.1. Update Doctrine: Reflect the Realities of AI, Cyber, and Hybrid Warfare

Military doctrine should reflect the metamorphic impact of AI, cyber operations, and hybrid warfare. Doctrines are often inadequate in addressing new challenges, and that is their great weakness. In turn, new doctrines should guide ethical and legal frameworks for AI in War alongside strategies for cyber defense and measures to counter disinformation (Taddeo, et al. 2022). They should also advance the principles of hybrid warfare, which is the integration of conventional and unconventional methods of achieving strategic ends.

5.2. Decentralized Decision-Making: Train Mid-Level Leaders to Act with Autonomy

In today's rapidly evolving operational environment, centralized decision-making can be a bottleneck. Decentralizing decision-making empowers mid-level leaders to act with autonomy, enabling them to respond quickly and effectively to changing circumstances (Mittal 2018). This requires providing mid-level leaders with the necessary training, resources, and authority to make decisions on their own initiative (De Smet, Hewes, and Weiss 2020). It also requires fostering a culture of trust and empowerment, where leaders are encouraged to take risks and learn from their mistakes.

5.3. Invest in Ethical-AI Training: Prepare Commanders for Moral Dilemmas

The increasing use of AI in warfare raises significant ethical concerns. Military organizations must invest in ethical AI-training to prepare commanders for the moral dilemmas they may face when using AI-powered systems (Taddeo, et al. 2022). This training should cover topics such as bias in AI algorithms, the potential for unintended consequences, and the responsibility for the actions of autonomous weapons systems. It should also emphasize the importance of human oversight and accountability (Davidovic 2023).

5.4. Create Feedback Cultures: Promote Reflection, Iteration, and Innovation

A culture of feedback is essential for promoting reflection, iteration, and innovation within military organizations. Leaders should actively solicit feedback from their subordinates, peers, and superiors (Lythgoe 2024). They should also be open to criticism and willing to learn from their mistakes. Feedback should be used to identify areas for improvement and to develop new and better ways of doing things. Furthermore, organizations should create mechanisms for sharing best practices and lessons learned across different units and departments.

5.5. Align Leadership Development with Strategic Foresight: Use Future Scenarios to Shape Current Practices

Leadership development should be aligned with strategic foresight, using future scenarios to shape current practices. This involves identifying potential future threats and challenges and developing leaders who are capable of anticipating and responding to them. Scenario planning exercises can be used to explore different future scenarios and to identify the skills and capabilities that will be needed to succeed in each scenario (Rhoods and Babor 2018; Star, et al. 2016). This information can then be used to develop leadership development programs and to ensure that leaders are prepared for the challenges of the future. By implementing these recommendations, military organizations can cultivate a culture of adaptive leadership, ensuring that they are well-prepared to meet the challenges of the 21st century (Akturan 2024). This will involve a continuous process of learning, adaptation, and innovation, as the nature of warfare continues to evolve.

Conclusions

The increasing complexity of modern warfare calls for a change in military leadership. As discussed in this paper, future adaptive leadership, which entails strategic flexibility, operational agility, and technological fluency, is increasingly becoming the determinant of effectiveness in the digitalized world. From comparison across Ukraine's war, Nagorno-Karabakh's conflict, and Israel–Iran's hybrid confrontation, one finds that institutional as well as immediate adaptation does not give room for a preponderance but rather ensures survival.

The Ukrainian case shows how a military organization under severe resource constraints can generate asymmetric advantages through decentralization, fast digital integration, and creative applications of commercially available technologies. Ukraine's success in maintaining resilience in operations and disruption against a much more powerful adversary demonstrates how adaptive leadership can reconfigure the balance of power through innovation and improvisation and by empowering tactical-level commanders.

In the 2020 Nagorno-Karabakh war, Azerbaijan perfected the art of combining drone warfare with ISR integration, and ground forces joined digitally — a fact not very much appreciated. It was not just a matter of technological superiority but rather having the foresight to strategically reposition traditional tactics on the basis of real-time data as well as narrative control. This example does reaffirm that adaptive leadership is more than just responding to change – it is about getting ahead in the process of shaping the tempo, perception, and outcomes of conflict.

The Israel–Iran confrontation represents the evolution of warfare into a hybrid landscape in which military engagements become deeply intertwined with cyber operations, proxy networks, and information warfare. In this sense, organizational adaptability can be defined as the ability of a state to carry out multi-agency preemptive actions enabled by technology. On the other hand, organizational adaptability can also mean the capacity to use decentralized proxies, asymmetric tactics, and influence operations like Iran's to avoid direct confrontation – and to exploit ambiguity in any system. Therefore, adaptive leadership by both Israelis and Iranians must move beyond the battlefield into the digital, cognitive, and informational spaces.

It is in the pattern of military organizations that foster initiative, decentralize authority, and institutionalize learning that assist best navigation in a volatile and uncertain environment. Leadership in Digital Age Operations does not lead from the front or by technical expertise but requires synthesizing information, anticipating disruption, and leading evolving systems under pressure. The study brings out clearly

how adaptive leadership moves from being a theoretical construct to an operational imperative in contemporary security environments. It further shifts the emphasis onto dynamic leaders and institutions rather than static doctrine as determinants of future military effectiveness. Cultivation of adaptability at all echelons of command as warfare moves across physical, digital, and psychological spaces will be not only a determinant of tactical success but also an enabler of strategic endurance.

Recommendations for Future Research

While this work initiates an inquiry into adaptive military leadership in the digital age, further queries remain:
Future studies need to render factors such as cognitive agility, ethical reflexivity, and resilience within military cohorts measurable to quantitatively assess their impact on decision-making effectiveness under stress as well as on the group.

Adaptive leadership will manifest differently in centralized versus decentralized structures. Therefore, comparative analyses between NATO members, emerging powers, and hybrid warfare practitioners (such as Ukraine, Azerbaijan, and Israel) will reveal the contextual factors at play in successful adaptation.
As curricula integrate AI literacy, systems thinking, and digital ethics, longitudinal studies will be needed to determine whether such curricula measurably increase leadership adaptability in deployments.

Future research should explore how AI-generated battlefield insights influence leadership judgment, especially in ambiguous ethical scenarios. This includes studies on human-in-the-loop systems and the psychological effects of AI-assisted command.
Experimental environments using VR/AR and red teaming should be systematically studied to determine how immersive training affects adaptive capacity, ethical reasoning, and strategic foresight among officers.

The adaptive leadership approach is under consideration in multinational and joint operations, with further emphasis on how adaptive leadership translates across cultural and doctrinal lines, given NATO's greater emphasis on interoperability. This will enable scholars and defense practitioners to jointly advance a general theory of adaptive military leadership that is both intellectually rigorous and practically consequential in shaping leaders for the conflicts of the 21st century by broadening empirical inquiry.

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