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DISCLAIMER

EDITORIAL

The Editorial Board takes immense pride in presenting the 78th Issue of *Bangladesh Army Journal* to its esteemed readers. This prestigious publication continues to serve as an intellectual platform through which officers of the Bangladesh Army articulate their insights, share scholarly reflections and contribute to the expanding repository of military thought. True to its enduring vision, *Bangladesh Army Journal* remains a trusted forum for professional discourse on national, regional and global defence issues, military strategy, leadership philosophy, education and the evolving nature of modern warfare in the era of globalization.

The present issue is enriched with a compelling selection of articles that reflect the Army's commitment to intellectual growth and strategic foresight. This volume features in-depth analyses on rhetoric and narratives in modern conflict, generative artificial intelligence and cognitive reasoning in military decision-making, path to military excellence, strategic communication, professional military education, crowd-sourced intelligence, the transformative potential of digital logistics in UN peacekeeping operations, inculcating the reading habit among young officers, Bangladesh Army's AI strategy for future readiness, preparing the force for black swan events through anti-fragility and operational insights from the March-23 (M-23) offensive in Goma, Democratic Republic of Congo. Altogether, these articles embody the intellectual depth, operational experience and strategic vision of the authors, offering valuable takeaways for military professionals, researchers and strategic thinkers alike.

We remain deeply grateful to **General Waker-Uz-Zaman, SBP, OSP, SGP, psc, Chief of Army Staff, Bangladesh Army** and the Chief Patron of *Bangladesh Army Journal*, whose visionary leadership and steadfast support continue to inspire academic excellence within the military community. We also express sincere gratitude to the **Chief of General Staff** for his insight, guidance, invaluable time and suggestions given to the Editorial Board to elevate the standard of this time-honoured professional journal.

We extend heartfelt thanks to all the authors whose articulate and thought-provoking contributions have enriched this issue with depth and diversity. Sincere appreciation to all those who contributed to ensure that *Bangladesh Army Journal*-78th Issue sees the light of the day in due time. Despite the utmost editorial efforts, any inadvertent errors or omissions may remain for which we seek the kind understanding of the avid and keen readers. The Editorial Board remains firmly committed to upholding the academic and professional standards of *Bangladesh Army Journal* and welcomes constructive suggestions that will guide its continuous improvement and evolution.

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Rhetoric and Narratives in Modern Conflict: Lessons for Bangladesh Army from the 2025 India-Pakistan and Iran-Israel Conflict

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Abstract

Modern conflicts are increasingly waged in the information domain by rhetoric and narratives. Armed forces are challenged by information asymmetry as competing forces prefer to use narratives and rhetoric to gain strategic and operational advantages. The doctrinal emphasis on kinetic operations leaves Bangladesh Army vulnerable to hybrid threats, as the weaknesses in defending and disrupting strategic and operational use of rhetoric and narratives pose critical security risks. This article examines how narrative frameworks shaped the 2025 India-Pakistan and Iran-Israel conflicts, arguing that modern warfare pivots on rhetorical dominance as much as military superiority. Through qualitative analysis of public communications, online news portals, and state-sponsored messaging, the study identifies four narrative tactics that determined conflict outcomes: victimhood framing, moral legitimisation, digital amplification and deterrence storytelling. For Bangladesh Army, these conflicts underscore the urgent need to develop an integrated narrative response capability to counter disinformation while advancing narratives focusing on national interests. This paper proposes that Narrative Integration Concept (NIC), featuring a tripartite framework (Detect-Disrupt-Deliver), is suitable for Bangladesh's unique regional realities.

Keywords: Rhetoric, Narrative, Bangladesh Army, Information Warfare, India-Pakistan Conflict, Iran-Israel Conflict.

Introduction

In the digital era, pen is not mightier than the sword – pen is the sword. Interstate conflicts are increasingly becoming as much about words as they are about firepower. The four-day India-Pakistan and the twelve-day Iran-Israel conflicts have seen extensive use of rhetoric by the conflicting parties before, during and after the conflicts. Both conflicts were fought in the psychological and physical domains with matching intensity. Conflicting countries used rhetoric to maintain domestic backing, justify their attacks, and isolate adversaries. Similarly, Israel succeeded in pushing the narratives of invincibility through Western media, though Iranian missiles and drones caused significant damage by defeating the Iron Dome and David's Sling. Both conflicts demonstrated that narratives and rhetoric can be used as weapons and shields.

Emboldened with diplomatic, economic and military superiority, Israel no longer depends on 'Hasbara'- the effort to explain and justify its human rights violations against the Palestinians and aggression against its enemies.[1] In 2025, they executed a multi-layered operation against Iran

employing political leadership, government officials, private contractors and diaspora networks to frame its military aggression as necessary. Simultaneously, they portrayed Iran's leadership as aggressors endangering regional and global stability. Israel's Ministry of Diaspora Affairs conducted similar campaigns through fake social media accounts on X, spending two million dollars, and targeted US lawmakers, especially the Blacks and Democrats, to fund Israel's military and legitimise atrocities in Gaza.[2] Iran, on the other hand, tried to maintain popular support for the regime by blending religious rhetoric with nationalist themes to portray itself as the victim and Israel as the oppressor and the West as complicit.

The flow and control of information increasingly influence modern conflicts; thus, mastery in information warfare and information dominance is no longer a choice for a country seeking to win. Philosopher Martin Heidegger observes, "War begins when language fails." The ongoing information revolution is prompting military scholars to reassess military strategies, doctrines, and organizational structures in order to counter hostile rhetoric and narratives. Scholars argue that prioritizing information superiority is essential, where the potential emergence of a novel paradigm of 'control warfare' is likely to replace traditional attrition and manoeuvre warfare.[3] Arquilla argues that, by adopting control warfare, a smaller force may win against a larger force in the short term.

This study drew insights from military strategy, international relations, and information warfare and adopted an interdisciplinary approach. Discourse analysis method was used to analyse qualitative data and examine the narratives and rhetoric employed in the 2025 India-Pakistan and Iran-Israel conflicts. Starting with a brief theoretical and historical account of rhetoric and narrative, this paper later analyses the role of rhetoric and narratives in the 2025 India-Pakistan and Iran-Israel conflicts. Afterwards, a likely future conflict scenario is painted with the probable nature and influence of hostile rhetoric and narratives on Bangladesh. The paper ends by suggesting pathways for capacity building of the Bangladesh Army.

Aim

By examining how India, Pakistan, Iran and Israel employed rhetoric and narratives in the 2025 conflict, this study aims to derive actionable insights and provide guidance for the Bangladesh Army to counter and excel in the information domain.

Defining Rhetoric and Narrative

Before going into discussion of the practical examples, it is important to comprehend the concept of rhetoric and narrative. The English word *rhetoric* originates from the Greek phrase *rhêtorikê,* meaning the art of rhetoric. The *Oxford English Dictionary* shows two primary meanings of rhetoric. First, the art of effective or persuasive speaking or writing, and second, the language that is intended to influence people, but may lack sincerity or meaningful content.[4] Aristotle defines rhetoric as "the art of discovering all the available means of persuasion in any

given case."[5] After Aristotle, subsequent rhetoricians have linked rhetoric with persuasion and its three-fold elements: logos (logic), pathos (emotion), and ethos (credibility).[6] At first, '*rhetors*' were public speakers in the '*ecclesia*' of Athens. Later, at Athens and Rome, a rhetor was a teacher of public speaking, a rhetorician. Aristotle, along with Cicero and Quintilian, regarded rhetoric as "a kind of discourse, a particular sphere of discourse activity on topics that are generally subject to diversities of opinion, and on occasion, such as those provided by legislative assemblies, law courts, and public ceremonies."[7] Till 1960, rhetoric was used only in political science. However, later, philosophers and theorists suggested that besides oratory or speeches, other forms of communication can also be part of the rhetorical realm. Today, rhetoric includes almost all forms of verbal or nonverbal communication that intend to persuade. The effect of rhetoric depends equally on the content, structure, and mode of delivery. The tone, pace, and emphasis of the delivery play an important role in capturing and keeping the audience's attention.[8]

According to *Merriam-Webster Dictionary*, Narrative means "something that is narrated; a story, account," or "A way of presenting or understanding a situation or series of events that reflects and promotes a particular point of view or set of values," or "The art or practice of narration."[9] Margaret Somers defined it as "constellations of relationships (connected parts) embedded in time and space, constituted by causal employment. In politics, narratives shape collective identities and provide frameworks for understanding social and political phenomena."[10] On the other hand, Frank R. Baumgartner and Bryan D. Jones defined Political Narratives as "strategic constructions used by actors to frame issues, mobilize support, and influence policy agendas. They serve as tools for simplifying complex realities and guiding public perceptions."[11] These definitions demonstrate that narratives have a distinct role and utility in political science.

Historical Examples of Rhetoric

Before and during the battles, ancient Greek and Roman generals regularly motivated their troops using rhetoric that emphasised immortality through chivalry, ancestral heritage and the prevention of enslavement of families. Chinese scholar Sun Tzu (544 B.C.-496 B.C.) recognised the weaponisation potential of rhetoric in his treatise *Bing Fa* (Art of War). Later examples showed that rhetoric can influence millions by persuading themes like patriotism or nationalism. For instance, Abraham Lincoln (1809-1865), the 16th US President in his Gettysburg Address delivered on 19 November 1863 galvanized support for the Confederacy by saying, "Four score and seven years ago, our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal."

Again, before and during the Second World War (1939-45), Adolf Hitler (1889-1945) preached the racial superiority of the Germanic race and legitimised Lebensraum through fiery political rhetoric. Conversely, after the Dunkirk debacle, Winston Churchill (1874-1965) restored British morale with his "We shall fight on the beaches" speech in the parliament. Soon after, the

BBC radio broadcast the speech that emboldened British resolve to fight on against Germany without any possibility of surrender or negotiated settlement. Churchill wisely used alliteration and suggestive repetitions to salvage the British will to fight against German aggression.

US President John F. Kennedy's (1917-1963) "*Ich bin ein Berliner (I am a Berliner)*" speech delivered in Berlin on June 26, 1963, is a testament to the power of rhetoric. The speech demonstrated solidarity with the people of Berlin, living in the shadow of the Iron Curtain, and inspired hope and determination.[12] Later, in the 2003 post 9/11 period, US President George W. Bush (b. 1946) initiated the 'Global War on Terror' with his infamous rhetoric, "Either you are with us, or against us," which explained his policy and had a monumental global geopolitical impact. After this speech, many countries were compelled to take sides with the USA and avoid neutrality.

Historic Examples of Narratives

One of the earliest uses of narrative in conflict dates to 1274 BCE when Ramses II commissioned temple reliefs at Abu Simbel, Luxor, and Karnak depicting him victorious against the Hittite hordes. This narrative of divine-ordained invincibility deterred Egypt's enemies from invading for decades.[13] Cyrus the Great's (600-530 B.C.) use of the 'Liberator Myth' in capturing Babylon in 539 BCE (Achaemenid era) is another successful use of narrative to win a war. Cyrus propagated the storyline that Marduk (Babylon's chief god) chose him to overthrow Nabonidus from the Babylonian throne. The plot worked, and the gates of Babylon were opened for Cyrus to welcome him without any resistance. Later, Sassanid emperor Shapur I (215-270 A.D.) carved inscriptions at the Naqsh-e Rostam of captured Roman Emperor Valerian's (200-260 A.D.) kneeling, narrating Roman humiliation and propagating Persian dominance.[14] In ancient China, during the Battle of Boju (circa 506 BCE), Sun Tzu advised the Emperor of Wu to spread false tales of the Chu commander's incompetence in warfighting. In fear, Chu soldiers deserted en masse, which was later codified in the '*Bing Fa'* (Chapter 3, Offensive Strategy, Verse 2) as 'subduing the enemy without fighting.' The great Chinese Emperor Qin Shi Huang (259-210 B.C.) used the 'Mandate of Heaven' narrative to subdue Zhou and other rulers to unify China in 221 BCE.

In the medieval era, the Crusades depicted the power of narratives in preparing and waging wars. Pope Urban II (1035-1099) used 'Holy Responsibility' narratives to rally European Kings to march towards Jerusalem repeatedly.[15] To counter the crusaders, Salah ad Din Yusuf Ibn Ayyubi (1137-1193 A. D.) also used the '*Jihad'* narrative to unite the fractured Muslim forces to recapture Jerusalem. Genghis Khan's (1162-1227 A. D.) spies propagated exaggerated tales of brutality by the Mongols against resisting rulers. This propaganda was highly successful in spreading fear in the known world and the rapid expansion of the Mongol kingdom from Beijing to Budapest. Mongol invincibility was countered by Japanese priests with the '*kamikaze'* (divine wind) narrative after typhoons destroyed Kublai Khan's (1215-1294 A. D.) invading fleet.

Ho Chi Minh (1890-1969) and the Viet Cong leadership framed the Vietnam War as an anti-colonial freedom struggle. They were successful in generating massive popular support against the French and US forces. The Viet Cong portrayed themselves as freedom fighters. This line of storytelling eroded French and US morale, delegitimised the purpose of the war, and generated massive anti-war protests that ultimately forced the withdrawal of US forces. In Rwanda, in 1994, the majority Hutu extremist factions used hate radios to dehumanise the minority Tutsi population as *Inyenzi* (cockroaches) and *Inzoka* (snakes) and accused them of collaborating with foreign invaders to enslave the Hutus.[16] Hutu factions framed the resultant genocide that killed hundreds of thousands of Tutsis as 'self-defence' and 'work' necessary for their racial survival.

In Europe, Ukraine is successful in framing the annexation of Crimea by Russia on 18 March 2014 and the invasion of eastern Ukraine by Russian forces as a neo-imperialist aggression. The portrayal of heroic Ukrainian resistance at Snake Island, Azovstal, etc, forged national unity and attracted international moral support.[17] Ukraine continues to fight against nuclear-armed Russia with the sustained military and economic assistance from the West. Russia's international standing is severely damaged as it faces a global public opinion backlash and crippling international sanctions. An appropriate narrative was crucial in the recruitment of Taliban fighters in Afghanistan to fight the Americans. Contrarily, late and weak narratives failed to attract international involvement in preventing the Bosnian and Rakhine genocides.

Narratives are usually focused on specific objectives. Sometimes these objectives are negative or even evil. For example, the Western narrative of Iraq's Weapons of Mass Destruction (WMDs) led to the 2003 Invasion of Iraq. In a shameful act, President Bush and his key secretaries spread false stories of 'Niger Yellowcake' and Iraqi chemical weapons in all types of media to fulfil the objectives of regime change, grab Iraqi oil reserves and appease Israel. Another example of a false narrative is the Gulf of Tonkin incident in 1964. US President Lyndon Johnson's (1908-1973) government falsified the incident as a North Vietnamese aggression to pass the Gulf of Tonkin Resolution to authorise war powers that ultimately caused more than fifty thousand US and more than a million Vietnamese deaths. Declassified 2005 documents exposed that the US government fabricated the lies to enter the wrong war.[18]

Rhetoric and Narratives - 2025 Iran-Israel Conflict

In June–July 2025, Iran and Israel fought as hard with words as with arsenals. Iran painted the war as righteous 'resistance*'* and successful deterrence against Israel and promised to support Palestine 'until liberation.' The periodic rhetoric warned of an attack by new, improved missiles to project strength to Israeli, global and domestic audiences.[19] Iranian rhetoric relied on habitual symbols—martyrdom, sovereignty and steadfastness, where the state outlets and allied influencers amplified claims of damage in Israel and effective air defences at home.[20] Think-tank

and monitoring reports that reconstructed the 12-day conflict reveal how Tehran's narrative attempted to convert tactical losses into strategic patience: '*the next round*' would be fought with a replenished arsenal and deeper regional networks.[21] Basim Tweissi's study for the Doha Institute argues that deception -selective imagery, inflated claims and rumour cascades—was a deliberate pillar of Iran's information strategy, not a by-product reflecting a form of deterrence storytelling. [22]

Israeli narratives projected Iranian rhetoric as an existential threat. Israel's rhetoric, by contrast, framed the campaign as pre-emptive, precise and necessary for survival. Usual Israeli narratives stressed the scale and coordination of the opening attack, then highlighted degraded Iranian air defences, to shore up domestic and pro-Zionist Western confidence.[23] Israeli officials and Zionist news outlets fused kinetic attack updates with a narrative push that emphasised the right to self-defence and justification to attack Iran by linking the 7th October action of Hamas.[24] For the global common audience, finding facts in such a noisy battlespace cluttered by cyber volleys, doxxing campaigns, and rapid-fire rumour cycles by pro-Iran and pro-Israel hacktivists was almost impossible.

The net effect, as several post-war assessments note, was a contest of rhetoric and narratives where facts were altered through claims calibrated to influence foreign capitals and rally home fronts.[25] Thus, an endless cycle of zero-sum rhetoric ensued where Iran continued to label Israeli attacks as 'war crimes' and warned Israel of 'annihilation'. This led to pre-emptive strikes by Israel and left limited scope for diplomacy. Hardliners on both sides used rhetoric to marginalise domestic moderates, framing compromise as surrender. Netanyahu's warnings against Iranian citizens using the Persian language and Khamenei's calls for 'resistance until victory' hyped the hostility and accelerated retaliation cycles,[26] underpinned by deterrence storytelling from both sides.

Before, during, and after the conflict, the Competing Narratives were used by both Iran and Israel. Iran's 'Axis of Resistance' against Israel's 'Security Imperative' was the battleground of words. Iran mobilised its 'axis of resistance,' including Hezbollah and Houthis, by casting the conflict as an anti-imperialist struggle against Western-backed Israeli aggression. Iranian state media highlighted civilian sufferings and spiritual resolve to rally its regional non-state allies through victimhood framing. On the contrary, Israel exploited the Holocaust and 'besieged democracy' excuses to maintain its pro-Zionist Western support. These polarised narratives, portraying Iran as a saviour and Israel as a stronghold of democracy in the Middle East, split the global opinion and made mediation difficult.

Both the Iranian and the Israeli domestic and friendly media engaged in inflammatory activities, using the rhetoric and the narratives as instruments of propaganda. Israel employed AI-generated deepfake videos, micro-targeted ads, and shadow networks (as *The New York Times* uncovered) to manipulate US and European audiences. Similarly, Iran deployed bot networks,

loyalist influencers, and proxy channels, and spread hashtags like #WestBankResistance. However, domestic internet access was limited to stifle dissent. Contrarily, Israel used Telegram groups and deepfake videos to discredit Iran and its allies by falsely attributing atrocities. Western media purposefully amplified those through digital amplification, often without verifying facts. The extensive use of rhetoric and narratives significantly influenced the post-conflict situation of Iran and Israel domestically and globally.

After the US and Qatar brokered a ceasefire on June 24, Iran now claims its nuclear program as a core pillar of national survival and resilience.[27] The moderates and reformists in Iran are now finding it more challenging to push for renewed engagement with the International Atomic Energy Agency (IAEA) and halting uranium enrichment.[28] Iranians and many in the global audience are now convinced that Israel is not invincible and that significant retaliation is possible against Israeli aggression without facing a nuclear strike by the Israeli Defence Forces (IDF). Contrarily, Israel and the US governments continue with their triumphant narrative, calling the ceasefire a historic victory, claiming significant degradation of Iran's nuclear and missile capabilities. Iranian grievance narratives have successfully eased youth recruitment in IRGC militias, and Israeli supremacist narratives have attracted teens to join hardline settler groups. The moderate political stakeholders in the US and Israel are at a greater disadvantage in reconciling with Iran.[29] The political opinions in both Iran and Israel are now more antagonistic due to the moral legitimisation effort, and are becoming counterproductive against any normalisation effort.

Rhetoric and Narratives - 2025 India-Pakistan Conflict

Since their birth in 1947, India and Pakistan's national identity has been characterised by relentless use of rhetoric and narratives to sustain persistent enmity.[30] The four wars and inter-war years saw politicians, government officials, military leadership, academia, news media, educational institutes and even religious outfits contribute to the hostility by discrediting each other. Naturally, in the 2025 conflict, rhetoric was used as a primary weapon to spread favourable narratives, including victimhood framing and moral legitimisation.

In the 2025 conflict, Indian political leadership leaned heavily on the language of retaliation. Prime Minister Narendra Modi warned that "Pakistan will pay the price for every drop of blood spilled in Kashmir."[31] Indian officials repeatedly mentioned 'surgical strikes' and 'precision operations' to deter Pakistan and justify responses. Earlier incidents like the Pulwama and Mumbai attacks were routine additions in the Indian rhetoric to tap political consensus for punitive measures against Pakistan. During the May 2025 conflict, Indian rhetoric focused on the intolerance of terrorism, vengeful military retaliation, withdrawal from the Indus Water Treaty signed on 19 September 1960 the power of the Indian Armed Forces, and other related themes, collectively clustered as deterrence storytelling.[32]

Pakistan responded to the Indian propaganda through defensive rhetoric in an existential tone. Political leadership promptly rejected Indian accusations about Pakistan's involvement in the Pahalgam incident as 'baseless propaganda' and framed Indian strikes as reckless acts of aggression. Use of emotional language was widespread. For example, Bilawal Bhutto Zardari's stark declaration –"Either water will flow in the Indus, or their blood will"- illustrated how the conflict was framed as a fight for survival, reflecting victimhood framing. Inter Services Public Relations, Pakistan's military's media wing, ramped up these themes with strong warnings that Pakistan was ready to move up the escalation ladder, including possible nuclear retaliation. Religious symbolism referring to sacrifice and martyrdom was capitalised to unite the public. Domestically, these rhetorics served to rally Pakistan's unity and resilience against India. Internationally, those reminded global powers about the catastrophic consequences of India's adventurism. Thus, through deterrence storytelling, Pakistan's rhetorical strategy oscillated between defiance and deterrence, signalling that Indian aggression will be met with resilience and strong retaliation.

The primary aim of Pakistan's narratives was to build moral legitimacy by portraying itself as the victim of Indian aggression. Pro-State media, guided by ISPR, depicted India as the aggressor violating international law by broadcasting stories of civilian suffering due to the destruction of homes, civic facilities and religious sites.[33] Later, primarily through social media, Pakistan propagated a 'more efficient military' narrative by sharing both fake and real pictures of downed Indian jets and missile fragments. These narratives were crucial in degrading Indian morale, projecting the qualitative edge of Pakistani airpower, and convincing the USA to arrange a ceasefire. Pakistani military press briefings radiated confidence as the speakers' body language seemed positive and cheerful.

Thus, it helped the Pakistani narrative, focusing on the idea of resilience against Indian power. Internationally, Pakistan consistently propagated the risk of escalation, especially the nuclear dimension, goading the international community to intervene through digital amplification.[34] Concurrently, India's claims of Brahmos strike and resultant damages were constantly denied. Domestic and diaspora networks contributed to the social campaigns, emboldening the government narratives. Pakistan's narrative thus tried to balance pride, radiated resilience, justified military response and pursued international criticism of Indian aggression. Both Indian and Pakistani rhetoric and narratives revealed a mirror image shaped by victimhood framing and moral legitimisation.[35]

Likely Future Conflict Scenario for Bangladesh

Understandably, in the near future, Bangladesh is unlikely to face a conflict with neighbours or a distant neighbour. However, the possibility of a Black Swan flash point leading to a conflict cannot be ruled out. All future conflicts are likely to see extensive use of the 'information' instrument of national power. The likely adversary will probably craft

delegitimizing and deterrent narratives to frame Bangladesh as an irresponsible or rogue actor, combining lawfare with rhetoric targeting the domestic and international audiences. These narratives are likely to impose reputational costs on Bangladesh before kinetic engagement begins. The adversary is likely to utilise a coordinated disinformation campaign via digital platforms, designed to polarise a negative perception about Bangladesh and fracture its strategic ties with friendly great powers.[36] The other objectives may be to compel policy concessions short of armed conflict by establishing narrative dominance and narrowing Bangladesh's strategic flexibility for manoeuvre.[37]

The future conflict may also take the form of persistent grey-zone rivalry, including cyber-attacks, maritime intimidation, economic and legal coercion, disinformation campaigns and proxy operations.[38] The adversary may exploit maritime law ambiguity, conduct coast-guard swarming, and pursue economic lawfare, while complementing these with influence narratives. False attribution may intensify with the naming and shaming of policymakers. Besides, legal manoeuvres or sanctions may be utilised to mask facts on the ground and misinform domestic and international audiences without provoking formal conflict.[39] This kind of pressure may drive the decision-makers to act timidly or misstep, creating strategic flaws. Again, the inadequacy of polyglots among practitioners may lead to misreading of adversary rhetoric and responses may be delayed or flawed.

Moreover, the rhetoric and narratives of the adversary can stimulate domestic polarization by activating social media-driven echo chambers and identity cleavages. Resultantly, the leaders may be forced to step away from addressing national interest. Internationally, this reputation may be cast as unreliable or unstable, raising the costs of financing and sustaining the war effort. Operationally, successful adversary rhetoric and narratives may divert resources, restrict maritime freedom, and impose compliance burdens.[40] Gradually, a constrained situation may become normalised, eroding our strategic flexibility.[41] Significant domestic impediments, including a fragmented media ecosystem, weak institutional coherence, and low public tolerance, amid a sustained rhetorical conflict may also be faced. Politico-military-media miscoordinations, if they occur, may undermine the development of a coherent counter-narrative, which may delay a coordinated retaliation and dilute deterrence. Facing a capability asymmetry, the failure to adopt an innovative approach is likely to force us toward a narrative fate accompli, resulting in strategic restraint.

Pathways for Capacity Building of Bangladesh Army

Recognising the identified vulnerability as the first step, it is imperative to find pathways to overcome those. Before charting the pathways for the Bangladesh Army, it is essential to analyse the existing capabilities to counter potential hostile rhetoric and narratives. At the state level, Bangladesh's narrative deficit stems from three interlinked weaknesses, including a slow and reactive crisis response, dependence on global media infrastructure, and a fragmented

information warfare capacity. Collectively, these critical weaknesses diminish our ability to navigate rapidly evolving information environments.

Studies of Bangladesh's online sphere show that falsehoods often outpace official verification and correction, leaving administrators to play catch-up as rumours spread across social media networks. Journalists and fact-checkers highlight structural obstacles, such as underdeveloped infrastructure, an unclear mandate, and resource limitations, which contribute to what can be called 'rhetorical latency.'[42] This was vivid during the Rohingya-related coverage in 2017 and again in 2023. Parallelly, public communication is heavily dependent on foreign-owned social media platforms with weak moderation capability. Such reliance introduces vulnerability to policy shifts and content governance decisions.[43]

Sadly, the capacity gaps are not only technical but also institutional. A weak educational foundation and insufficient interagency coordination have made the state structurally vulnerable to narrative shocks. The Rohingya crisis showed us how the hostile networked actors can rapidly set agendas and reframe events on Facebook to outpace official response. These experiences justify why Bangladesh, especially the Army, needs an agile, well-resourced and more anticipatory narrative practice.[44]

Apropos, to mitigate the identified challenges, Bangladesh Army may select the Narrative Integration Concept (NIC) as the fundamental component of its information warfare strategy. This conceptual framework will help follow a structured approach to harmonise operational communication and civil-media transmission within the national security framework. NIC is focused on strengthening the Army's institutional capability, operational effectiveness and ultimately contributing to national resilience. NIC is anchored on three pillars – Detect, Deter, and Deliver - as discussed below:-

The **Detect** pillar emphasizes the importance of anticipatory awareness as the desired end, to avert operational and strategic surprise against hostile rhetoric and narrative as part of the enemy's disinformation and psychological operations. Achieving this requires a strong collaboration among the military intelligence community, open media, academia and volunteer networks, as a means. The suggested ways for successful implementation will involve integrated intelligence gathering, media monitoring and digital forensic analysis to map narrative trajectories. Horizon scanning will be crucial to distinguish rhetoric from genuine strategic communication and legitimate political discourse.

The **Disrupt** pillar focuses on neutralizing the influence of hostile rhetoric and narratives to defend public trust and maintain troops' morale as a desired end. Success depends on a rapid, coordinated response blending intelligence tools for proactive screening. In addition to the means required for the detection pillar, inclusion of strategic communication teams, fact-checking teams, and rapid response gatekeeping cells will

ensure success. Execution modalities will require the timely deployment and conduct of information gatekeeping, fact-checking, information correction, and confidence-building communication to mitigate the impact of the enemy's rhetoric and narratives on troops and the public.

The **Deliver** pillar focuses on offensive, advancing our own rhetoric and projecting authoritative, credible storylines that justify the Bangladesh Army's cause and undermine the enemy's narratives. Politicians, diplomats, and military leaders acting as rhetors, along with media (both domestic and friendly international media), diaspora, freelancers, and academia, will be necessary to craft proactive narratives. By combining consistent rhetoric propagation and adopting integrated storytelling to build favourable narratives, our strategic gains and operational success should be amplified, thereby curbing enemy morale and initiative.

Once materialised, the NIC will enable the Army to switch to a proactive and integrated posture of narrative management. The Army should adopt a phased approach that permits both immediate readiness and long-term sustainability. The following roadmap may help the Bangladesh Army strengthen its operational readiness against hostile rhetoric and narratives:-

Immediate Priorities: As a short-term priority, the Army should focus on building a robust information warfare capability to counter hostile disinformation campaigns. This will begin by establishing ad hoc psychological operations and information warfare cells at the Intelligence Directorate, Army Cyber Group and Army Intelligence Units. Parallelly, officers and men are to be trained to decode rhetoric and recognise disinformation patterns. Narrative analysis can be integrated into the curricula of staff colleges, war colleges, and national defence colleges. Simultaneously, media cells at headquarters and intelligence organisations should be equipped to detect and debunk deepfakes, work with civilian fact-checkers and domestic media platforms to reinforce public trust. Scopes may be explored to allow freelancers and innovators to collaborate with Army teams to brainstorm and draft working modalities. Efforts should also be made to strengthen corporations by partnering with regional media outlets and diaspora networks to amplify our viewpoints on the global stage. The short-term goal should be to reduce the narrative deficit and minimise the effect of the narrative shock from the adversary.

Mid-Term Enhancements: After a baseline capability is secured, attention must turn to resilience and adaptability in the face of evolving threats. In the second stage, the Army should focus on the infrastructural capacity enhancement and achieving personnel resilience. This should involve hardening the communication networks to detect and isolate hostile rhetoric and narratives from classic intelligence channels. In this phase, investments in cyber and psychological operations capabilities should be prioritized to

enable the Army to withstand digital and kinetic threats simultaneously. Additionally, standard operating procedures (SOPs) should be finalized for headquarters and intelligence organizations to facilitate partnerships with freelancers, universities, and technology firms. This will be crucial to developing adaptive tools against evolving disinformation campaigns. Furthermore, regular computer-aided simulation exercises combining cyber, media, and battlefield scenarios may be conducted to test the capability of cognitive resilience and stress management. These exercises will ensure that relevant personnel remain agile and effective under hybrid conflict conditions. The Army should be ready with issue-specific 'story banks' to support propagation of friendly narratives. The mid-term goal should be to achieve narrative parity and develop the capability to withstand narrative shocks.

Long-Term Desires: Ultimately, the Army's vision must extend beyond mere survival and move toward controlling the information environment. In the long term, the Army should aspire to achieve narrative dominance against potential adversaries. This will necessitate establishing a mature and permanent information warfare infrastructure that can seamlessly integrate PSYOPs, cyber operations, and intelligence analysis under a unified doctrine. This infrastructure may comprise a combination of cells in headquarters, deployed intelligence units, and dedicated sections within training institutions. This setup should not only defend against hostile disinformation. It should also shape adversaries' domestic perceptions across multiple tiers and domains. A crucial prerequisite for success will be a strong civil-military institutional framework to allow the Army's collaboration with academia, think tanks, innovators, and freelancers. Additionally, the Army should establish a repository of historical and cultural narratives that can be mobilised rapidly to serve our national interests. Moreover, the Army should conduct routine indoor and outdoor training exercises to hone its expertise in the use of rhetoric and narratives. The long-term goal of this phase should be to ensure that hostile rhetoric fails to influence domestic audiences, and our narratives persuade the enemy and the international audience.

Conclusion

Rhetorical awareness is an integral part of combat readiness in an era where algorithms significantly influence battlefield outcomes. A paradigm shift is now necessary in the doctrinal outlook to prioritize the defence and manipulation of information spaces. As artificial intelligence improves its narrative framing capability, future warfare will continue to transcend physical spheres and enemies will strive for superiority by regulating the information stream and connectivity. Thus, countries need to attain the competence to counter propaganda campaigns and publicize narratives that align with national interests.

The 2025 Iran-Israel and India-Pakistan conflicts proved that narratives critically influenced the outcome of kinetic engagements before any shots were fired. These conflicts also

confirm that narrative dominance is no longer an ancillary but an essential component for military success. Both cases demonstrated how disinformation, spread through rhetoric and narratives, can amplify tactical success into strategic advantage. For Bangladesh, these examples serve as vital reminders: in any future conflict, the battle of words may precede or even substitute the battle of guns and missiles. Thus, the strategic realities demand urgent rhetorical capacity building.

Thus, the way forward for Bangladesh must combine urgency with foresight. Therefore, Bangladesh must recognise that its greatest vulnerability lies not only in kinetic asymmetry but in narrative deficit. Future adversaries are likely to employ disinformation campaigns, lawfare and reputational attacks to weaken Bangladesh's resolve by causing a narrative shock. Through appropriate planning and focused execution, the Army should develop narrative resilience and gradually aim towards attaining narrative superiority against likely adversaries. Negligence in developing necessary capabilities will surely put us in peril.

Recommendations: The following recommendations may be considered for implementation:-

a.   Bangladesh Army may adopt the Narrative Integration Concept (NIC).

b.   Appropriate cells or sections, including a narrative repository, may be established at apex headquarters and intelligence organisations.

c.   Rhetoric and narrative analysis may be integrated into the curricula of the Staff Course, War Course and National Defence Course.

d.   The Army's partnership with universities, think tanks and innovators to be initiated and enhanced through an institutional framework.

Notes and References

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Brief Biography

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Harnessing Generative Artificial Intelligence for Military Decision-Making: Opportunities, Risks and the Perspective of Bangladesh Army

Brigadier General Saiful Haque Ahmed, ndc, psc

Abstract

Generative Artificial Intelligence is now appearing in almost every sector and the military is no exception. This paper looks at how such tools could help armed forces, with a particular focus on Bangladesh Army. The discussion highlights both the benefits and the risks. To set the stage, it also compares global and regional trends so that Bangladesh's position can be better understood. The opportunities are clear enough. AI can speed up intelligence work, support training simulations, help in logistics, and even draft courses of action (COA) faster than human staff alone. Each of these areas links directly to the modernization aims of Forces Goal 2030. On the other hand, there are risks that cannot be ignored. Bias in data, cyber vulnerabilities, ethical concerns and the danger of leaning too much on automated systems are real problems. There is also the issue of "hallucinations," where AI produces confident but inaccurate results. The paper ties these opportunities and risks to Bangladesh's own doctrine, stressing that any adoption must fit national principles and military values. Early steps in military AI are already visible, though still modest, and examples are given to show how such tools might help in border security, disaster response, or counterinsurgency operation. Finally, some practical recommendations are offered. These include creating a dedicated AI task force, building partnerships with both local industry and foreign partners, setting ethical rules and learning from regional cooperation.

Keywords*: Generative AI; Military Decision-Making; Bangladesh Army; AI in Defence; Opportunities; Risks; Doctrine; South Asia Security.*

Introduction

Generative Artificial Intelligence (AI) has moved very quickly from research labs to real use and militaries around the world are taking notice of it. Advanced systems, especially large language models, can now generate summaries, analysis and even suggestions that look close to human reasoning.[1] For armies, this means that staff work and decision-making in complex situations might become faster and more efficient.[2]

Under the 'Digital Bangladesh' vision and the Forces Goal 2030 modernization plan, national leaders have acknowledged the role of AI in future security.[3] Early steps, such as drafting a national AI strategy and strengthening cyber infrastructure, are already underway. But within the Army, the use of AI in decision-making is still at an early stage. This raises an important question: how can Bangladesh Army take advantage of generative AI to improve decision-making, while also being careful about the risks?

Background and Context

Generative AI in the Military: Generative AI is a type of system that creates new material - text, images, audio, or data - after studying large training sets. In the military, this could mean producing quick reports, sketching battle plans, or acting like a simulated opponent in an exercise.[3] It could also be misused, for example by creating fake content to mislead. Users have been warned from the beginning that this technology is not magic. The models do not "understand" in the way humans do, so errors are always part of the picture.

Military Decision-Making Process (MDMP): Bangladesh Army plans operations through a four-step process: (1) Mission Analysis, (2) Course of Action (COA) Development, (3) COA Analysis or Wargaming, and (4) Decision and Execution.[4] The process is driven by staff work but guided by the commander's intent. It is heavy with information, much of it time-sensitive, and officers often feel the mental pressure of trying to handle it all quickly.

AI Integration in Decision-Making: Generative AI could find a place in each of these steps.[5] At the mission analysis stage, an AI tool might gather and summarize reports or sensor data in minutes.[6] In COA development, it could throw out draft options based on past cases, which might give planners new ideas they had not considered. During wargaming, AI simulations could run through thousands of friendly and enemy moves, pointing to possible outcomes or hidden risks. At the execution stage, it could draft orders or contingency plans at speed. In simple terms, it might act like a junior officer who never gets tired, handling the background work and offering suggestions. The U.S.A. has already set up a Generative AI task force to test such tools. China also sees potential, though its planners note that it will take time to be trustworthy and that no AI system should be left to decide on life-or-death matters without strict human control.[7]

Regional Perspectives (South Asia and China): In South Asia, AI adoption is uneven, but the direction is clear. India has moved quickly. It set up an AI Centre of Excellence, deployed more than a hundred AI-enabled border surveillance systems, and created programs such as iDEX to bring in private startups. Pakistan has been more reactive, usually responding to India's steps.[8] With help from China, it has begun programs in cyber and electronic warfare, but progress is modest. China is far ahead. The PLA experiments with AI across nearly every field - command, intelligence, logistics, and autonomous systems.[9] It is even exploring AI for propaganda, cyber operations, and large training simulations. At the same time, Chinese sources openly admit problems: sanctions on advanced chips, reliability in combat, and bureaucratic hurdles. For Bangladesh, the lesson is clear enough: future wars will involve AI.

Comparative Overview of AI Adoption: The Table below summarizes the status of military AI strategies and initiatives in Bangladesh and neighbouring countries:-

Table-1: Summary of Military AI Strategies and Initiatives in Bangladesh and Neighbouring Countries

Country	AI Strategy & Doctrine	Notable Defence AI Initiatives	Key Challenges
Bangladesh	Still at an early stage. AI comes up in national digital and cyber policies, but the Army has no proper doctrine on it yet.	Some small pilot projects in intelligence and logistics. A few cyber/IT units exist, but nothing large scale.	Resources are tight, and expertise is thin. No dedicated R&D program. No ethics framework either, so progress is slow.
India	Has a national AI strategy, and doctrine is slowly being shaped to bring AI into warfare.	Defence AI Council created. Army AI Centre of Excellence up and running. About 140 AI-powered surveillance systems are already on the borders. AI is also being tested in logistics and war games.	Hard to apply AI across such a huge force. Data in many languages creates bias and system problems. Also losing trained people to the private sector.
Pakistan	No formal doctrine, only some mentions in S&T plans. Mostly reacting to India's moves.	PAF launched CENTAIC (for electronic warfare). Army Cyber Command started with Chinese support. Few research groups working on AI.	Depends heavily on China for tech. The local tech base is weak, funds are limited, and secrecy makes outside collaboration almost impossible.
China	Clear national AI strategy. The PLA talks openly about 'intelligentized warfare.' Issued its own ethics guidelines in 2023.	Huge investments in AI for drones, autonomous weapons, decision-making support, surveillance, logistics. Labs spread across all services. Tests include swarms, ships, and big simulations.	Chip sanctions from the West hurt supply. Reliability in real combat not proven. Bureaucracy and corruption slow things down. Strict political control also makes it harder to innovate freely.

Source: A. Upadhyay, *AI as a Multi-domain Enabler for the Army*, Ananta Centre Insight, 2023.

Bangladesh currently trails these regional leaders in military AI adoption, but awareness is growing. Bangladesh Army can learn from others' experiences to avoid pitfalls and chart a path suited to its needs and constraints.

Doctrine of Bangladesh Army and Readiness

The core of Bangladesh's Defence thinking has long been Total People's War.[10] In simple terms, it is about regular soldiers fighting together with the population if the country is attacked.

Seen this way, tools that increase fighting strength, like AI, fit the philosophy quite well. It does not replace people. It only gives them more support.

At the moment, there is no separate military AI policy. What exists are national-level strategies, such as the National Cyber Security Strategy 2021, that mention the need to build cyber and AI skills.[11] The Army has taken some early steps. A few cyber and IT units have been raised. Small pilot projects have been tested. They are limited, but at least they show interest and intent.

Still, the Army is far from real integration of AI in its decision-making. The gap is obvious. Infrastructure is weak, trained manpower is scarce, and doctrine does not yet cover AI. Because of this, the use of AI will remain piecemeal for now. Even, the overall direction is clear. Digital Bangladesh and the Forces Goal 2030 plan both point towards greater use of advanced technology.[12] The real challenge is pace. How fast can the Army move, and how carefully can it balance ambition with the fact that resources are not unlimited?

Opportunities for Bangladesh Army

Generative AI could be useful in a number of areas for Bangladesh Army. Some of these are obvious, others less so, but together they show why this technology cannot be ignored.

Intelligence and Awareness: Gathering information is always slow. AI can make it faster by pulling from different sources at once and giving a short picture of what is going on. For a commander this means not waiting hours for summaries. A simple tool could prepare a quick daily note, or even show a live map that updates as new data comes in. With duties spread across borders, counter-insurgency, disaster response, and peacekeeping, this kind of speed would help a lot.[13]

Planning and COA: When staff prepare plans, they must come up with options. AI can draft possible COAs, some of which may look strange but still trigger new thinking. Commanders do not need to follow them directly. The value is in the spark. War-gaming software could then run the options thousands of times, pointing out where they might fail. This gives leaders more than just gut instinct, it gives them numbers to weigh.

Figure-1: COA Generation and Planning Support
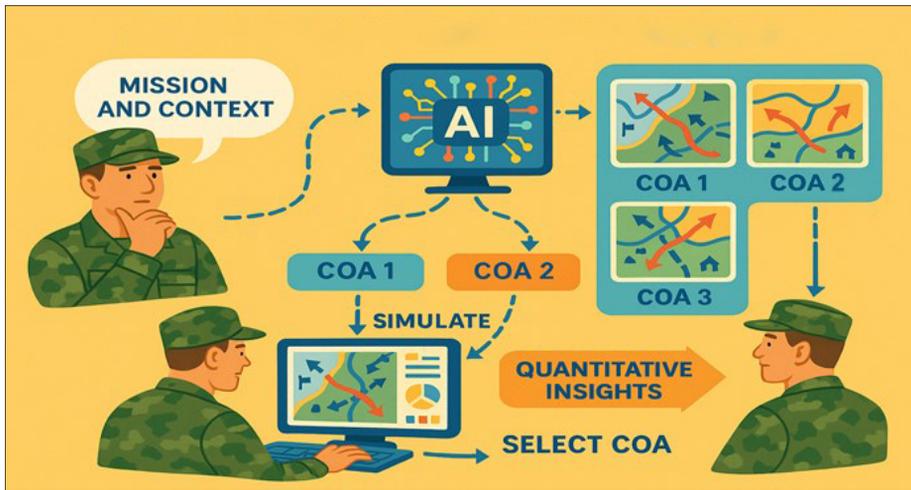
Source: Author's self-construct

During Operations: The battlefield changes quickly. AI could watch reports as they come in and alert leaders if something is off. For example, if a supply road is blocked, the system could suggest another route right away. It might also take care of small but boring jobs, like writing updates. In this way it becomes more like an aide, not a decision-maker.

Figure-2: Real Time Decision Support During Execution
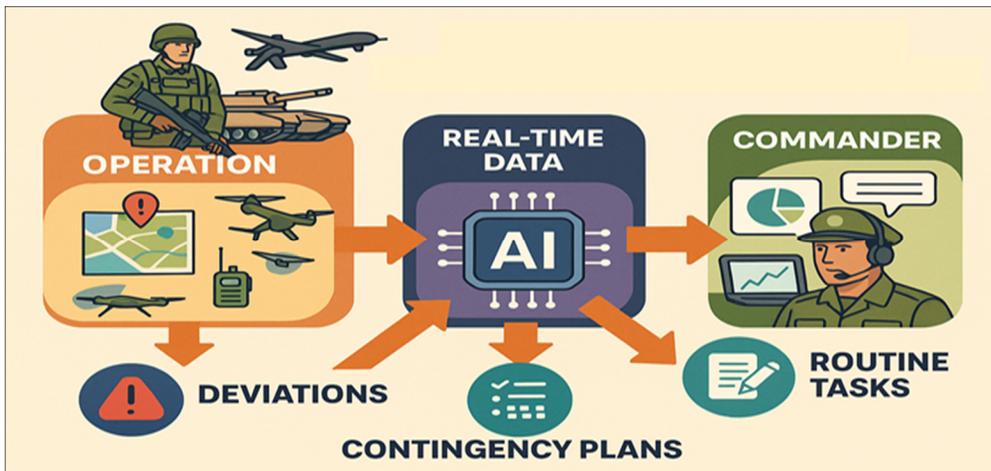
Source: Author's self-construct

Training and Logistics: Training works best when it feels real. AI can create fresh scenarios on demand, making exercises less predictable. For logistics, the same tech could suggest better routes or schedules, saving time and fuel. It is not flashy but it matters.

Cyber and Information: The digital side is critical too. AI can help defend networks, find intrusions, or scan social media for dangerous content. On the offensive side, under control, it could make deceptive material for psychological operations. Bangladesh has already mentioned AI in its plans for countering propaganda. The Army could be part of that.

Figure-3: An Illustration of an AI-enabled Military Decision-Making Process

Source: Author's self-construct

The above Figure shows that through rapid feedback loops and continuous refinement, such AI integration leads to superior situational awareness, faster decision cycles and more resilient operations. Smaller militaries can leverage these AI-driven processes to enhance decision speed and agility in the field.

Risks and Challenges

The idea of using generative AI sounds promising, but the risks are just as real. For Bangladesh, these problems are not only about machines making mistakes but also about ethics, money, and security.[14]

Reliability and Hallucinations: AI does not always give the right answer. Sometimes it just makes things up but still presents them with confidence. In war, such errors could be deadly. A wrong target or a bad piece of advice is not something you can brush aside. Another

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problem is that many AI systems are hard to explain. They work like black boxes. So a commander might get an answer without knowing why the machine reached that conclusion. In the end, people must cross-check everything, because human judgment is still the last line of Defence. Bias in training data is another issue. If the data mostly comes from foreign contexts, then the AI may suggest solutions that make little sense for Bangladesh.[15]

Ethical and Legal Concerns: War already raises moral questions, and AI makes them sharper. Who is held responsible if an AI-based suggestion leads to civilian deaths? The law says humans must stay in charge of lethal decisions, and Bangladesh cannot afford to ignore that, especially since it is a leading UN peacekeeper providing country. Another grey area is deception. AI can create fake videos or voices. Such tactics might give an edge in the short term, but they could also backfire badly, harming Bangladesh's reputation. Clear rules are needed to say what is allowed and what is not.

Resource and Infrastructure Gaps: Running advanced AI needs strong computers, secure data systems, and trained people. Bangladesh runs short of all these three. Defence budgets are limited, and training data experts takes years. Even building safe data centers costs more than most of the people realize. This means the Army cannot jump to large-scale AI use right away. It will probably have to start small, with low-risk projects, and learn step by step.

Cyber and Information Threats: Putting AI into military systems also opens doors to cyber attacks. Enemies could try to hack, feed false data, or even take control of systems. On top of that, they can use AI themselves to flood social media with fake news or fake orders. The result could be confusion or panic. The Army therefore needs strong protection measures and proper training for soldiers to spot misinformation. Otherwise, AI could become a weakness instead of a strength.

Figure-4: A Risk Heatmap for Generative AI Adoption (Probability on the X-axis, Impact on the Y-axis).
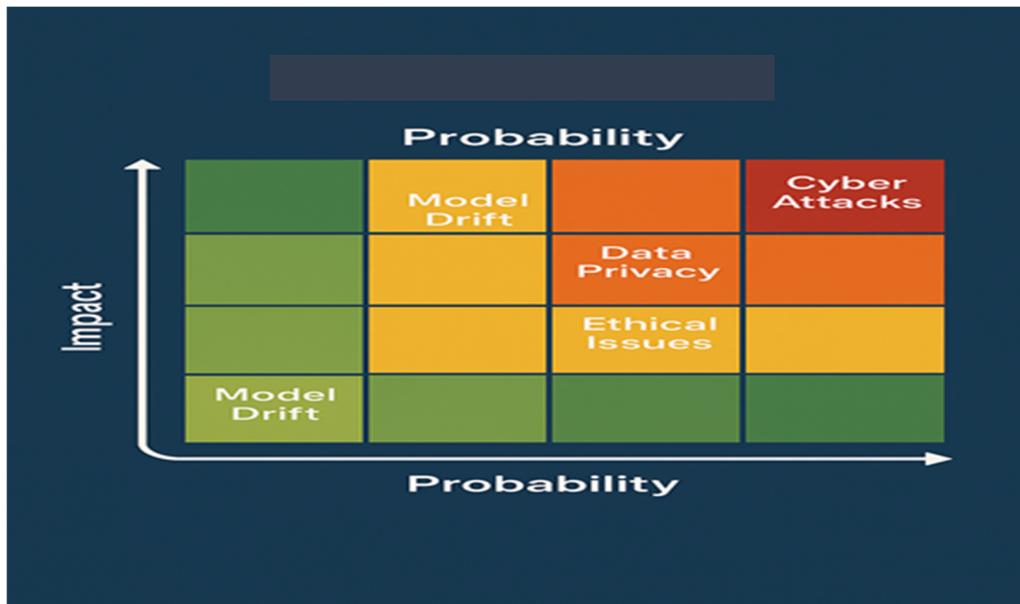
Source: Author's self-construct

The above Figure indicates that cybersecurity attacks represent a high-probability, high-impact risk, while ethical issues are medium-probability but high-impact. Concerns over data sovereignty appear as high-probability, medium-impact challenges.

Bangladesh Army Perspective and Initiatives

Bangladesh Army realises the value of AI and taking action step by step following an approach based existing doctrine.

Doctrine and Philosophy: The Army follows Mission Command, where commanders give intent and subordinates act with freedom. AI could support this by providing better information to leaders. But it cannot replace judgment. The Army stresses human-centered leadership. The old idea of Total People's War also fits here, because it allows for any tool that multiplies strength, including technology. Senior officers agree AI can help with analysis and planning, but decisions must stay with human.[16]

Training and Education: Slowly, AI is being added into professional military education. The Staff College and NDC now include sessions on future warfare that cover AI. Officers are also being trained abroad in robotics, data, and cyber courses. The Military Institute of Science and Technology runs programs in areas linked to AI. These steps are small, but they are creating a pool of officers who can handle digital tools.

Policy Development: There is no dedicated military AI policy yet. However, national cyber and digital strategies already underline the importance of advanced technology. The Armed Forces Division has organized workshops on cyber threats, where AI was part of the discussion. The Army also created a Cyber Warfare and IT Directorate to coordinate cyber Defence. This directorate is expected to guide future AI projects too.

Pilot Projects: A few experiments have already been done. For example, an intelligence unit tested a program to scan social media for security risks. Another pilot project tried using a language model to draft routine reports from bullet points. These are very modest, but they give confidence that AI tools can be helpful.

Collaboration: The Army works with partners abroad and with local institutions. Officers have attended AI-related courses in China, India, and the US.[17] Bangladeshi peacekeepers also learn about drones and data analysis during missions. Locally, hackathons and seminars have been held with IT experts. Universities like BUP are being considered for research tie-ups. Such cooperation helps overcome the limits of funding and expertise.

Overall, the Army is aware of both the promise and the risk. The approach has been careful: build awareness, train officers, run small pilots, and expand later. This way, when resources improve, AI can be integrated without breaking doctrine or values.

Hypothetical Application Scenarios

A few examples make it easier to see how AI could actually help. These are not far-off ideas. They are the kind of situations the Army already deals with.

Disaster Response: Suppose a cyclone hits the coast. AI could look at weather feeds, satellite pictures and even Facebook or Twitter posts. It might show which areas are worst hit and what should be done first. May be it suggests fixing a broken bridge so relief trucks can pass. Staff then take that draft and improve it. The point is speed. More time saved means more lives saved.

Counterinsurgency: In the Hill Tracts, insurgents often hide among villagers. AI could mix reports from patrols, informant tips, and drone images. From this it might notice a pattern: fighters regroup in certain villages after the Army leaves. Based on that, it could guess the next move and suggest a target. During an operation it could also transcribe or translate local dialect messages. That makes the response faster. Still, the commander decides what to do — the AI only gives hints.

Border Tension: At a border standoff, AI could list the possible outcomes. It may say if reinforcements arrive, escalation is likely. If not, then chances of talks improve. It might even draft a sample message for communication with the other side, based on what worked before. The

commander chooses. AI only advises. In each of these cases, AI is just an assistant. It gives faster information and more options. The human leader is always the one who decides.[18]

Figure-5: Generative AI–Enabled Military Decision Support Framework
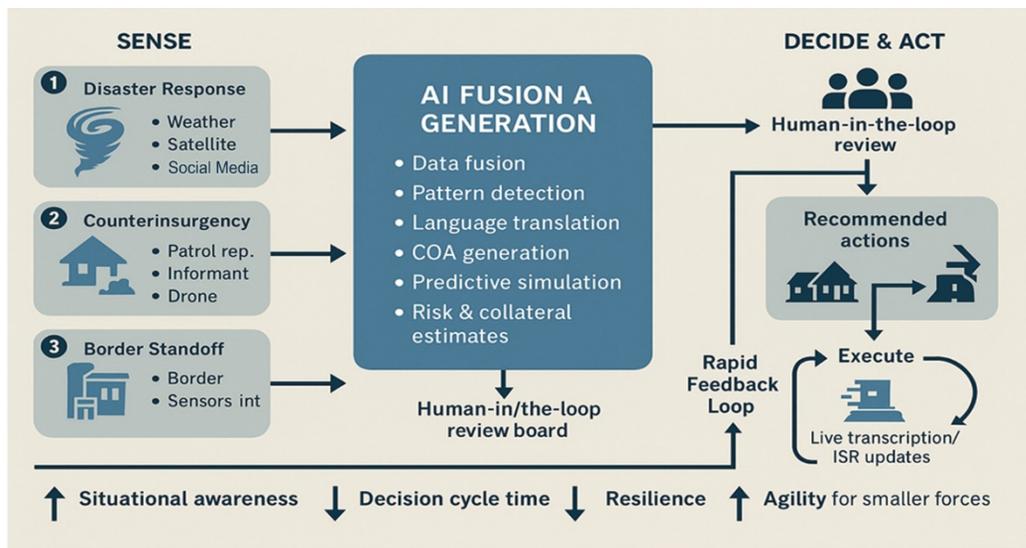
Source: Author's self-construct

The above Figure shows how AI fuses diverse inputs to generate options and predictions, enabling faster, agile decisions while keeping humans in the loop.

Conclusion

Generative AI is already shaping how militaries think about the future, and Bangladesh Army cannot ignore it. Used well, it can speed up intelligence work, provide new options during planning, make training more realistic, and improve logistics. These are not small gains. They can act as force multipliers for a country that has limited resources but high security demands.

The risks are equally serious. AI systems can make mistakes, carry bias, or fail in ways that humans do not expect. Over-reliance on them could cause more harm than doing good. There are also questions of law and ethics. For Bangladesh, which contributes strongly to UN peacekeeping, maintaining human control over all critical decisions is non-negotiable.

The Army's doctrine and history both point to caution. Mission Command relies on human judgment, and the idea of Total People's War shows the value of people over machines. This means AI must be used as an assistant, never a replacement. Small pilot projects, clear guidelines, secure systems and trained officers are the way forward.

Bangladesh's military past also shows an ability to adapt, from guerrilla tactics in 1971 to peacekeeping in many parts of the world. AI can add to that adaptability, but only if it is

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introduced slowly and carefully. The path is to start with low-risk uses, build skills and confidence, and then expand.

In short, bytes will matter as much as bullets in the battles ahead. By preparing now, with patience and foresight, Bangladesh Army can use AI in its own way, strengthening national Defence without losing control of its values and principles.

Recommendations

AI Strategy and Task Force: The Army needs a written plan for AI.[19] This plan should say where AI will be used (intelligence, logistics, training, admin).[20] It must also confirm that humans stay in control for all critical actions. A small AI task force or a centre of excellence should be created. Officers with technical skills and civilian experts can run it. Their job: test pilot projects, report results, and build links with partners.

Training and Human Capital: AI will fail without people who understand it. Officers should learn AI basics during Staff College, NDC, and MIST courses. A few need to go abroad for deeper training in data and AI. Over time, this creates a pool of "AI officers" who can guide projects. Non-commissioned ranks should also get basic training in handling digital tools.[21]

Pilot Projects First: High-risk areas should be selected later on. Safer and practical pilots projects should start first. Examples: logistics planning, maintenance schedules, flood relief routing. Small projects like these build trust. They also show senior leaders that AI saves time and money.[22]

Data and Security: AI depends on clean and secure data. The Army must digitize records, improve networks, and protect them. Strong cybersecurity is essential. Systems should always have backups so that if AI fails, operations continue.[23]

Partnerships: Local universities, IT firms, and Defence partners abroad can help. Joint hackathons, research papers, and exchange programs are practical ways to learn. Regional military cooperation is also useful to share experience.[24]

Ethics and Counter-Misinformation: Clear rules must exist for AI use. Targeting decisions always need a human check. The Army must also prepare for fake content created by others. Training and drills should include scenarios with deepfakes and propaganda. Units in public affairs and intelligence should lead this.[25]

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Brief Biography

Brigadier General Saiful Haque Ahmed, ndc, psc was commissioned into the Corps of Armoured on 19 December 1994 with the 31st BMA Long Course and has since built a distinguished career marked by command, staff, instructional and international assignments. He has served in key operational and administrative roles, including GSO-3 (Operations) in an Infantry Division, GSO-2 at Army Headquarters, Director of the Personnel Administration Directorate, and GSO-1 at HQ ARTDOC and the Armoured Corps Centre and School. As an Instructor, he contributed to the School of Infantry and Tactics and the Armoured Corps Centre and School, while also leading premier institutions such as Barishal Cadet College and Mirpur Cantonment Public School and College as Principal and also as the Director General of the Bangladesh Military Museum. On the global stage, he represented Bangladesh with distinction as Second-in-Command of the Mechanized Company BANBAT-2/5 in UNOCI, Côte d'Ivoire and as a UN Military Observer in MONUSCO, DR Congo. Academically accomplished, he holds an Honours degree in Computer Science and Engineering from Military Institute of Science & Technology and is a graduate of DSCSC and NDC. He is currently serving as the Principal, Rajuk Uttara Model College, Dhaka.

Beyond The Comfort Zone: The Path to Military Excellence

Colonel Syed Salauddin Mahmud, psc

Abstract

Military life demands discipline, courage and continuous growth. But growth does not come by staying in a place of ease and routine. The comfort zone, though safe and familiar rarely produces excellence. For officers who wish to succeed, the real journey begins when they dare to step beyond that comfort. This article, 'Beyond the Comfort Zone: The Path to Military Excellence,' explores that journey and shows how to move through different stages of challenge to achieve military excellence. In this article, the idea is explained through a well talked and popular model in civil education called 'Zone Model of Learning.' This model divides personal growth into four zones viz. comfort, fear, learning and growth zone. Each zone presents its own challenges but also unique opportunities. Military officers often face situations that test their confidence and mindset. Some remain trapped in fear or routine, while others learn to adapt, acquire new skills and eventually reach the level of growth and excellence. This article also highlights the common obstacles that hold officers back as well as offers practical ways to overcome challenges to achieve excellence. This article aims to give a clear message to junior officers who feel left behind and want to explore: success is not limited to those who begin at the top of the merit list in their career. Every officer, regardless of their initial merit, has the potential to rise if he or she is willing to accept discomfort and move forward with determination.

Keywords*: Comfort zone, Military Excellence, Personal growth, Discomfort, Determination.*

Introduction

Stepping beyond the comfort zone is essential for military professionals to achieve growth and excellence. The comfort zone can be described as a psychological space where a person feels at ease and relatively free from stress. This is a place where familiarity and predictability allow one to function with little anxiety or fear. Beyond this zone lie the fear zone, learning zone and growth zone. Naturally, humans tend to remain in their comfort zone and military personnel are no exception. While staying in comfort zone may provide ease and stability in the career but it rarely leads to success or excellence. To excel, a military professional must learn to step beyond the comfort zone. Thus, breaking the barrier of comfort zone is not only a choice but also a necessity for military excellence and professional growth.

Success in a military career does not only depend on initial merit or serial, but on how an officer learns to break the barriers of the comfort zone and move forward. Generally, in ISSB officer cadets are selected based on pre-designated physical, psychological and academic criteria. With almost the same standard, they undergo training and pass out with a Bangladesh Army (BA) number. And it is determined by the overall performance during training. Interestingly, it is often

observed that officer cadets who ranked at the top, middle or bottom of the merit list at BMA tend to maintain a similar standing in their professional careers. In practice, the top tier, whether knowingly or unknowingly manages to step out of the comfort zone and pursue excellence. While many others unaware of their true potential, remain stuck either in the comfort zone or in the fear zone. As Dweck noted, "Success in military career does not rest solely on selection or initial ranking; it is forged by the officer who continually challenges personal limits, embraces deliberate discomfort and treats every setback as fuel for growth. True excellence begins where comfort ends."[1] Initial merit provides an advantage, but true success comes from the willingness to face challenges, push personal limits and use setbacks as opportunities to grow. Anyone with courage and determination can achieve it.

In military careers, success requires consistent performance in key aspects of service. Every commissioned officer, regardless of their merit position at commissioning, carries the potential to succeed. What is needed is extra drive, guided by right knowledge to pursue growth. These minor yet significant initiatives create a lasting impression which enhances an officer's value within the unit, improves performance and ultimately paves the way for greater success and excellence in career. For that, a well talked and popular model in civil education called 'Zone Model of Learning' might be a great guiding tool, which can be helpful for junior officers to develop their careers in an organized manner.

Keeping the above issues in mind, initially this article will give a brief overview of the Zone Model of Learning. It will then provide a detailed analysis of the challenges associated with zones of learning from a military perspective. Finally, it will outline the ways forward to break or deal with the zone's barrier to achieve excellence. The focus of this write up is primarily on the officers of the Bangladesh Army especially junior officers who are lagging behind and want to excel in their careers. This article emphasizes more on personal development. The critical role of unit environment and command responsibilities or other external factors like effect of social media or family problems, etc, is kept out of the purview of this article. Besides, selected figures and examples adapted from open sources and personal experience will be incorporated to present the Zone Model in a manner aligned with military practices.

Overview of Zone Model of Learning

Zone Model of learning grew from earlier education theories. In 1930s Lev Vygotsky (1896-1934), a Russian Psychologist introduced the Zone of Proximity Development (ZPD) highlighting the gap between independent ability and guided achievement. This idea became the basis for later models. In the 1990s-2000s, Tom Senninger developed the Learning Zone Model with three stages viz. comfort, learning and panic, often used in adventure learning. The current four zone version, which adds fear and growth appeared informally between 2015-2019 and spread widely online, though its author is unknown. Subsequent paragraphs will describe four zones of learning: Comfort Zone, Fear Zone, Learning Zone and Growth Zone and their relationship with military education.

Figure-1: Zone Mode of Learning

Source: https://wellness.cooperhealth.org/learning-zone/

Comfort Zone: The comfort zone is a psychological state in which an individual experiences low level of stress and anxiety, enabling them to operate in a condition of familiarity, safety and routine. Within this state, people generally feel secure and in control, but personal growth, learning and adaptation are limited.[2] In practical terms, the comfort zone can be seen as a 'safe zone' where performance remains but opportunities for development and excellence are constrained. In the context of military, remaining in the comfort zone may allow stability in daily duties but it restricts military personnel from adapting to uncertainty, embracing challenges and developing resilience.

Fear Zone: The Fear Zone is a psychological state that individuals often encounter immediately after leaving their comfort. It is characterized by self doubt, heightened anxiety, lack of confidence and a reliance on excuses or external validation, which can hinder progress and growth.[3] In this zone people may perceive challenges as threats rather than opportunities. In military, many junior officers cross the comfort zone but get stuck in fear zone. The fear of uncertainty, which is common in military can block the thinking process of those who are mentally less robust. Therefore, it is essential for the junior officer to learn the technique to overcome the fear zone to grow and progress in their career.

Learning Zone: The learning zone is the psychological state an individual enters after moving beyond the fear zone, where they begin to acquire new skills, broaden perspectives and develop resilience.[4] The learning zone encourages experimentation, problem solving and the gradual expansion of one's abilities through exposure to novel experiences. In military the learning zone is of particular importance. At the junior level officers get the learning opportunities through different courses, cadres, STX, FTX, study periods, model discussions, etc. All these learning scopes open era of huge opportunities to build their careers.

Growth Zone: The growth zone is the manifestation of personal development and the realization of one's potential. It is where new skills, experiences and perspectives are integrated enabling us to reach heights previously thought unattainable.[5] According to Akin-Smith (1968-2021), this zone invites courage, ignites creativity and channels the inner explorer. In military, this zone is very important. Learning zone may create the base of skills and knowledge. But refinement and enhancement of those skills and knowledge basically happen at this stage. Quality over quantity is the basic motto of this zone to grow and reach excellence.

Analysis: Challenges Associated with Different Zones of Learning in Military Context

Different zones of learning are discussed separately but all are interlinked and complement each other. Again, challenges associated with each zone may also be applicable to other zones. For example, anxiety is a common challenge to overcome barrier of comfort zone. Again, it may experience anxiety in fear, learning or growth zones also. Therefore, challenges in different zones are discussed together in subsequent paragraphs:-

Not Setting up the Clear Goal of the Career: One of the major challenges junior officers face in stepping out of their comfort zone is 'not setting up a clear career goal.' Without a goal, an officer may drift without direction, like a ship without a captain. For example, Lt X knows that 'Basic Course' is the foundation for one's career. But he did not set any specific objectives. Therefore, becomes directionless, lacking initiative to make any structured plan or preparation. It is more likely that he will fall behind his peers who have prepared. U.S. Army doctrine emphasizes that true leaders always operate with a clear end state or goal in mind.[6] This setting of a clear goal provides the drive to overcome obstacles in military career.

Less Awareness of Own Ture Potential and Weaknesses: One major barrier to personal growth is not recognizing one's true potential and limitations. A person may set a goal with determination but without understanding their own strengths and weaknesses, the likelihood of success becomes meagre. As Aristotle (384-322 B.C.), the renowned Greek philosopher and polymath once said, "Knowing yourself is the beginning of all wisdom." An officer may know that theory is his strength and indoor exercises are his weakness. Yet he avoids working in the weaker area because it feels uncomfortable and needs extra effort. As a result, weakness persists.

On the other hand, recognizing personal strength allows it to be used at the right time and helps to focus on improving weaknesses. Thus, lack of self awareness regarding strengths and weaknesses remains as one of the critical challenges to break the comfort, learning and growth zone barrier.

Figure-2: Effect of Fixed Mindset
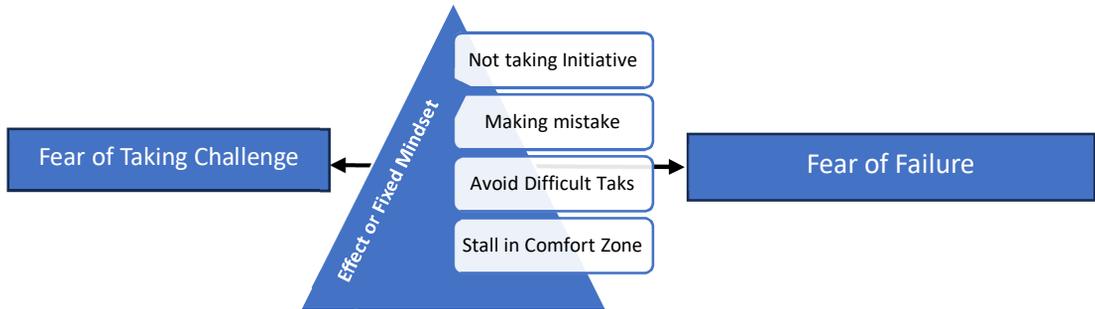
Source: Author's self-construct

Fixed Mindset: A fixed mindset is the belief that intelligence, talent or ability is permanent and cannot be changed with effort. People with this mindset always try to avoid challenges, as they fear being judged if they fail. Carol Dweck explained it clearly, "The fixed mindset makes you concerned with how you will be judged; the growth mindset makes you concerned with improving."[7] This attitude is often seen among junior officers. For example, one may think, "I am weak in study, so it is not possible for me to do well in the course." Such thoughts slowly destroy personal goals and dreams. Officers with a fixed mindset tend to avoid taking challenges and prefer to remain in their comfort zone.

Figure-3: Yerkes and Dodson's Law
(Performance, Stress and Overstress Relationships)
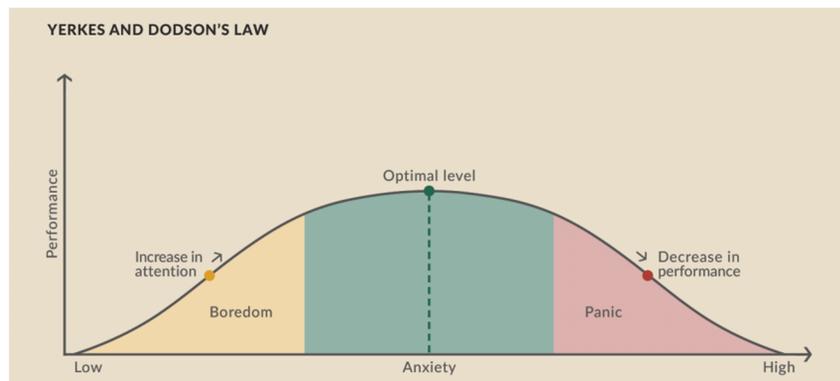
Source: R. M. Yerkes and J. D. Dodson, 'The relation of strength of stimulus to rapidity of habit-formation,' *Journal of Comparative Neurology and Psychology,* 18(5), 1908, pp.459–482.

Overstress: Stress is very common and normal in military life. Yerkes Dodson's law states that performance increases with arousal (or stress) up to a certain point, after which performance declines if stress or arousal becomes too high (means overstress) or too low. Normal stress can provide us inner strength to organize and complete tasks effectively. However, when pressure becomes too much to handle, it turns into overstress. This state is detrimental to overcome comfort, fear, learning or growth zone barriers. As the U.S. Department of Veterans Affairs notes, "Overstress can impair judgment, reduce performance and increase the risk of errors." Junior officers may face overstress during exercises, courses, inspections, visits and so on. If techniques to manage overstress are not known, it becomes a critical challenge to overcome the barrier of all zones of learning.

Not Managing Work Effectively: Poor work organization is one of the main challenges to overcome zone barriers. Success depends not only on hard work but also on proper planning, preparation and efficient presentation or execution. When these are neglected, even the sincerest effort often fails. As Stephen Covery (1932-2012), an American educator stated, "Begin with the end in mind." Without a clear plan and preparation, the action tends to be scattered. Again, if a plan is made but not followed, outcome will not be satisfactory. Therefore, without a proper work plan, success cannot be achieved in any zone of learning model.

Reluctance in Building Professional Base: A building cannot withstand an earthquake if its base and pillars are weak. In the same way, professional knowledge acts as the base, while other qualities form the pillar that supports growth. If professional base is not strong, entire career is at risk. In military, opportunities for learning are available everywhere. Hence, if one neglects these opportunities to grasp in time, the foundation will remain weak. For instance, Maj X was reluctant in his basic and other foundation courses. He later managed to get chance in Staff College. But during the course, he discovered he lacked knowledge to perform and was falling back. The reason was simple; he did not build his professional base when opportunities were available. Therefore, it is essential to build a strong professional base at the opportune time.

Few Common Challenges: There are some common challenges and states of mind that act as barriers when trying to move out of the comfort, fear, learning and growth zone. These challenges are observed in most of the events of military careers. Some examples are not taking interest, not taking initiative, lack of confidence, lack of discipline, not keeping or breaking own promise time and again, lack of motivation, low morale, etc. Each of these weakens determination and stops progress. These common challenges if not addressed, stall growth and make it difficult to break barriers beyond the comfort zone.

Ways Forward to Overcome or Deal with Zone Barrier

The challenges of comfort and other zones are discussed together as many of the challenges are common in all stages of learning. But the ways forward will be explained zone by zone so that junior officers can understand how to deal with each barrier step by step in subsequent paragraphs.

Overcoming Comfort Zone Barrier - Breaking the Inertia: Overcoming barrier of comfort zone is the first step to move towards growth. It breaks the inertia of the comfort zone and brings momentum into the career. To overcome barriers of comfort zone, following key tools may be adopted:-

Set Clear and Achievable Goals: None can jump directly from lower position to a higher one overnight. A young Lieutenant, no matter how talented, cannot suddenly become lieutenant colonel. He must pass through the system, gain experience and build the required skills. To rise further, must compete with peers and prove his worth. The best officers set a clear and achievable aim of where they want to see themselves in their career. To reach that aim, they set smaller goals at each stage. This keeps them ahead of those who move without direction. Goals give mental drive, provide focus and push to move beyond the comfort zone.

Figure-4: Identifying Strengths and Weaknesses
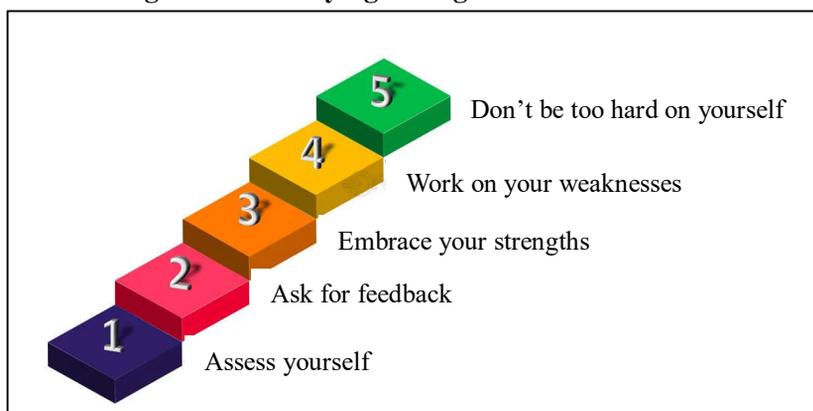
Source: Adapted from 'Identifying Your
Strengths and Weaknesses,'
Faster Capital, n.d.

Identify and Work on Own Strengths and Weaknesses: When the goal of an event is set, identifying own strengths and weaknesses to achieve the goal is very important. Self-assessment, Simple reflection or even writing down daily work can show where one does well and where lack. Feedback from seniors, peers or juniors also helps to see blind spots. Once weaknesses are known, effort must be taken to improve them.

Build Initiative and Interest: Military life rewards those who take initiative instead of waiting for instruction. We cannot overcome our weakness without taking interest and stepping forward. To build initiative, start small: ask questions, volunteer for tasks and act without being told. Doing this repeatedly turns it into habit, generates curiosity and shows interest in learning. Thereby, it helps an officer to take responsibility and step out of the comfort zone.

Figure-5: Role of Motivation in Goal Achievement

Sustaining Momentum

Fueling the Fire

Overcoming Obstacles

Cultivating Resilience

Enhancing Focus and Productivity
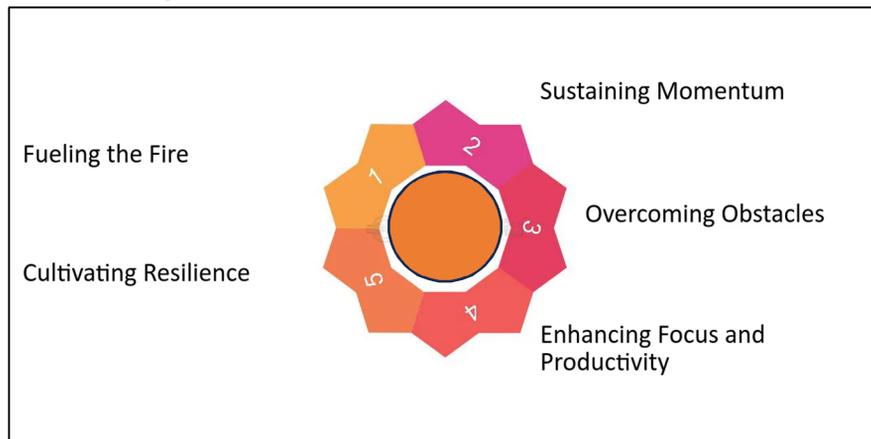
Source: Adapted from 'The Role of
Motivation in Goal Achievement,'
Faster Capital, n.d.

Develop Self Motivation and High Morale: Self motivation is the inner drive that pushes forward where no one is watching. It can fuel fire to get interest and initiative, sustain momentum, overcome obstacles, enhance focus and productivity and cultivate resilience. High morale keeps the mind steady and slow even when results are slow or challenges are tough. It can be maintained by staying positive, celebrating small successes, supporting teammates and taking care of basic needs. Together self motivation and high morale help an officer to face difficulties and step out of the comfort zone for steady movement towards their goal.

Overcoming Fear Zone Barrier-Confronting Doubt: Key issues for overcoming the fear zone barrier are as follows:-

Identify Fear and Seek Solution: The first step to identify fear in moving forward is to recognize what is holding progress back. Maxwell mentioned that fear often remains invisible until it is consciously addressed. Ignoring it or hoping it will go away only strengthens its hold. Once identified, focus on finding practical solutions like training harder, preparing better, seeking advice or trying different approaches. Taking small steps

to confront fear rather than avoiding it gradually expands the comfort zone. Each time fear is faced and action is taken, confidence grows and challenges become easier to handle. Over time, this approach strengthens resilience and enables steady progress towards personal and professional growth.

Figure-6: Illustration Showing the Comparison between a Fixed Mindset and a Growth Mindset

FIXED MINDSET		GROWTH MINDSET
• SOMETHING YOU'RE BORN WITH • FIXED	SKILLS	• COME FROM HARD WORK • CAN ALWAYS IMPROVE
• SOMETHING TO AVOID • COULD REVEAL LACK OF SKILL • TEND TO GIVE UP EASILY	CHALLENGES	• SHOULD BE EMBRACED • AN OPPORTUNITY TO GROW • MORE PERSISTANT
• UNNECESSARY • SOMETHING YOU DO WHEN YOU ARE NOT GOOD ENOUGH	EFFORT	• ESSENTIAL • A PATH TO MASTERY
• GET DEFENSIVE • TAKE IT PERSONAL	FEEDBACK	• USEFUL • SOMETHING TO LEARN FROM • IDENTIFY AREAS TO IMPROVE
• BLAME OTHERS • GET DISCOURAGED	SETBACKS	• USE AS A WAKE-UP CALL TO WORK HARDER NEXT TIME

Source: Adapted from 'The Most Important Mindset for
Long-term Success,' *Growth vs Fixed Mindset*,
SparringMind, n.d.

Growth Mindset: Growth mindset is very important and acts like magic when adopted. If someone can instill the belief, 'I can do it; nothing is impossible for me,' then nothing can stop him. This belief builds strong motivation, provides mental strength and helps to cover areas of weakness. For junior officers, practicing a growth mindset keeps them one step ahead of others. Growth mindset will help to take failure as an opportunity instead of setback. Psychologist Carol Susan Dweck (b. 1946) explained that people with growth mindset focus on learning and improvement rather than worrying about judgment. With this attitude, fear slowly fades, confidence grows and officers are better prepared to step out of the comfort or fear zone.[10]

Figure-7: Army Leadership Requirement Model
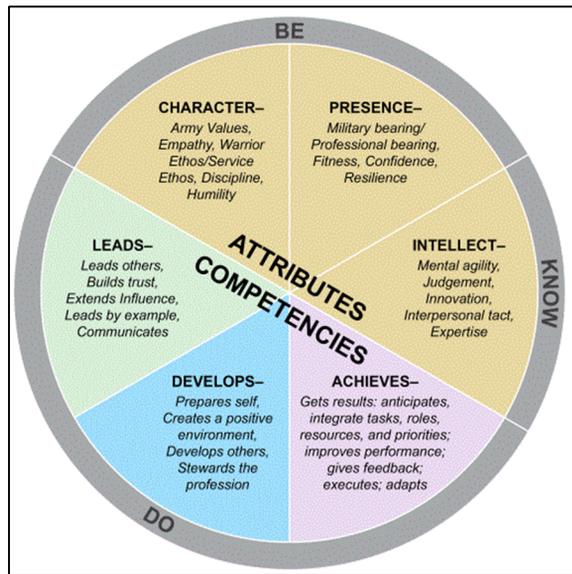
Source: Adapted from 'Interactive Leader Development Guide'
Leadership Requirements Model, Department of the Army, n.d.

Instil Confidence and Discipline: Confidence and discipline are key qualities that can shape one's mental state to perform better. Junior officers who lack confidence must understand that confidence cannot be earned instantly. To build confidence and skill, shyness and fear must be overcome. If someone is shy or fears talking in class, technique to overcome is simple. Be courageous to talk or ask questions even when your mind resists, without worrying about being right or wrong. Take control of your mind; do not let it control you. The U.S. Army Leadership Requirements Model (Figure 7) highlights discipline as a core value that ensures reliability and trust in every situation. Discipline comes from consistent habits, following routines and respecting orders. Together, confidence and discipline help to face fear and overcome the comfort and fear zone barrier.[11]

Managing Over Stress: According to Yerkes-Dodson's law, performance improves with stress up to a point, but too little or too much stress reduces efficiency. Overstress creates anxiety and fear, weakens mental strength and blocks normal thinking. As Reider reminds us, "Anxiety happens when you think you have figured out everything all at once."[12] To manage overstress effectively, staying calm, adjusting to the situation, maintaining a progressive and analytical mind are essential. Some useful strategies include planning tasks in advance, setting priorities, dividing responsibilities and being mentally prepared for sudden tasks. Redistributing work when needed will help keep stress under control.

Dealing with Learning Zone-Building Competence and Foundation: Once in learning zone means one is now ready to learn and build a strong foundation of knowledge for growth in their career. In this zone, challenges are seen as opportunities rather than threats. The key to move forward is developing competence and resilience. The following approaches explain how this can be done:-

Efficient Work Management: One of the most important steps in overcoming barriers of learning zone is managing work efficiently. Writing up the task, planning, making a work or study plan and preparing an effective routine will help to create an organized way of doing something, which will help to reduce mental pressure and stress. When priorities are clear and effort is focused, the result is better. Rozman, Tominc and Kosi found that structured work management improves performance while reducing stress. In the learning zone, this habit helps learners to stay organized, complete tasks effectively and gradually prepare themselves for the more demanding responsibilities of the growth zone.

Sustaining Motivation and Commitment: Motivation is what keeps learning going. It strengthens and keeps interest alive. Self Efficacy Theory enunciated by Bandura highlights that individuals who believe in their capabilities are more likely to persist through challenges and achieve goals. Again, commitment is the state of being dedicated to a cause and activity. To build the base of knowledge, retaining own commitment is essential. If one makes a routine for study, stay committed to execute; results will come automatically. Once effective work management is done, both commitment and motivation will add fuel to the mental state to make it happen.

Developing Mental Robustness: Mental robustness means staying focused and strong when things get tough. It requires persistence, flexibility and ability to recover from setbacks. In military, a strong mindset is vital as weak mentality officers often lose interest when criticized or fear sharing ideas. Research shows mental toughness improves persistence, reduces anxiety and supports learning. It can be built by facing challenges with confidence, accepting criticism and learning from mistakes. A robust mindset helps learners control emotions, stay committed and tackle greater challenges.

Building Knowledge and Skill: Developing a strong base of knowledge and skills is the core issue of learning zone. This is completely execution phase, which individual must do by himself. In military, the scope for learning is enormous. Formal opportunities include professional courses, study periods, classes, structured training and exercises, etc. Informal opportunities are also present in the form of mentorship, peer interaction, daily experience in the unit, etc. Despite this wide scope, many officers fail to take advantage; they take it as fatigue rather than opportunities. Junior officers should realize that if chances are missed to learn at the right time, success will be harder in future. But

knowledge cannot be built overnight. It requires hard work, strong motivation, regular practice and perseverance. Officers with a searching mind and steady effort gradually build both knowledge and skill.

Dealing with Growth Zone- Achieving Excellence

Growth Zone is the final stage of the Zone Model of Learning. At this point, ordinary skill and knowledge are not enough; what is required is expertise: possessing superior knowledge, finding better ways to do things, applying diplomacy to manage situations and mastering effective presentation and execution. In this stage, quality matters far more than quantity in the pursuit of excellence.

Key Steps to Achieve Excellence: Few key steps to achieve excellence are as follows:-

Build the Right Mindset and Spirit: Believe in yourself. Stay positive and never give up. High morale, inner drive and persistence are the foundation of excellence.

Develop Skills and Knowledge: Aim for expertise. Keep learning and sharpening natural strength. Refine skill through constant practice.

Maintain Discipline and Consistency: Excellence comes from effort. Be disciplined in approach and consistent even when no one is watching.

Master Communication and Presentation: Speak with confidence and deliver messages clearly. Think before talking; talk relevantly and to the point. Choose words wisely. Impactful communication often achieves more than lengthy explanations.

Stay Adaptable and Seize Opportunities: Be flexible in changing situations and ready to grab opportunities. Timely action often makes the difference between average and excellent.

Seek Feedback and Reflect: Learn from both success and failure. Feedback and reflection provide insights that sustain growth and improvement.

Conclusion

Stepping beyond the comfort zone is vital for every military professional who wants to grow and achieve excellence. Staying in comfort may provide stability, but it does not lead to success. Officers who step beyond comfort and face challenges move ahead in their careers. Success does not depend solely on merit at the beginning. It comes from continuous effort, courage and ability to turn setbacks into opportunities. Every officer has the potential to excel if he or she is willing to break barriers and accept discomfort. This mindset is especially important for junior officers who want to shape their future through personal drive and commitment.

The Zone Model of Learning provides a useful framework to understand how individuals move from safety and routine towards growth and excellence. It begins with comfort zone, then moves through fear, learning and finally growth. Each stage has its own challenges and opportunities. For military officers, this model provides a clear guide to understand their position and decide how to move forward. Comfort and fear zones basically focus more on mental state, whereas learning and growth zones open doors to skill development, confidence and excellence. Applying this model in military life helps officers adapt to uncertainty and achieve higher standards of performance. For junior officers, it is a useful tool to organize their career path and progress towards professional growth.

The challenges associated with different zones of learning show that personal and professional growth in the military is never a smooth path. Each zone presents its own obstacle but many of these overlap and reinforce one another. Lack of clear goals, limited self awareness, fixed mindset, overstress or poor work management can hold an officer back from making progress. Additionally, reluctance in building a strong professional base or neglecting the importance of discipline, initiative and morale further increases the difficulty of breaking barriers. Once recognized and addressed, the challenges become stepping stones for growth. Breaking zone barrier is not easy, but it is the only path to professional excellence.

Breaking the barrier of comfort zone is the first step for growth. Clear goals give direction and focus. Knowing strength helps to improve and prepare better. Taking initiative and showing interest creates habits that build responsibility. Self motivation and high morale give energy to move forward even when challenges are hard. Together, these tools help a young officer to overcome the inertia of comfort zone and build a strong path towards success in military life.

Overcoming barrier of fear zone is about confronting fear or doubt with courage and discipline. Fear must first be identified and then faced through practice, preparation and small steps forward. A growth mindset turns failure into opportunity and builds strong motivation. Confidence grows when officers face situations instead of avoiding them, while discipline creates trust and reliability. Managing stress is also vital to keep mind calm and face panic. When these qualities are practiced together, fear slowly loses its hold and a person gains the strength to move towards growth and excellence.

The learning zone is where the real foundation of professional growth is laid. It transforms challenges into opportunities and builds competence through steady effort. Efficient work management keeps tasks organized and reduces stress. Motivation and commitment fuel persistence in the long run. Developing mental robustness helps officers to face setbacks, accept criticism and stay focused under pressure. Building knowledge and skills through formal training and informal opportunities creates a solid base for future growth. Without this foundation, growth remains fragile. With it, junior officers are prepared to enter the growth zone and move steadily towards excellence in their careers.

Reaching the growth zone does not mean excellence is achieved. It only provides the platform to strive for it. Excellence demands more than ordinary effort. At this stage, quality prevails over quantity. Here, success depends on building right mindset, developing skills and maintaining discipline with consistency. Clear communication, adaptability and timely action add greater value to performance. Learning from feedback and reflecting on experiences helps sustain improvement. When these steps are followed with persistence, ordinary ability turns into expertise and lasting excellence becomes possible.

Thereby, following the 'Zone Model of Learning,' an officer, regardless of initial standing in the course, can explore opportunities in the career. This model enables him to build his career, reach his goals and achieve excellence in service.

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Brief Biography

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Dominance through Drones: Effectiveness of Unmanned Aerial Systems in Contemporary Conflicts and Their Implications for Bangladesh Army

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Abstract

Unmanned Aerial Systems (UAS), over the past two decades, have transformed warfare, shifting airpower from an exclusive, high-cost capability to a scalable asset deployable across all levels of command. Recent wars in Nagorno-Karabakh, Russia–Ukraine, Iran-Israel and other conflicts in Syria, Libya and so on, demonstrate how layered UAS employment can neutralize Air Defences (AD), disrupt logistics, and shape the tactical environment. Their effectiveness relies on integration into a broader kill chain, supported by resilient command, control, and intelligence networks, and survivability in contested electromagnetic and kinetic environments. For Bangladesh, UASs present opportunities in Intelligence, Surveillance, and Reconnaissance (ISR), border defence, rapid strike, and peacekeeping operations. An optimal approach would combine a small fleet of high-value High Altitude Long Endurance (HALE), Medium Altitude Long Endurance (MALE) platforms for strategic missions with mass-produced First Person View (FPV) and Loitering Munitions (LM) for tactical saturation. This requires investment in UAS acquisition, countermeasures, adaptable doctrine and operator training. UAS integration represents not just a technological upgrade but a doctrinal evolution—enabling medium-sized militaries to achieve decisive effects, strengthen deterrence and operate effectively in a battlespace increasingly defined by unmanned systems.

Keywords*: UAS, UAV, Drones, Loitering Munitions, Precision Strike, Surveillance, Contemporary Conflicts.*

Introduction

The Italian general and the father of strategic air power Giulio Douhet (1869-1930) very aptly avers, "Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur."[1] Though Unmanned Aerial Vehicles (UAVs) have been utilized since early 1900s to provide ISR, in the past two decades, these systems have disrupted and transformed the very nature of warfare.[2] At the beginning of this century, the conflicts in Iraq, Syria, Yemen, Libya and other similar conflicts saw increasing employment of UAS technology for military purposes.[3] However, military uses of drones and related technologies have proliferated to unprecedented heights in more recent conflicts. Drones are now central to both tactical execution and strategic planning and are no longer limited to the outskirts of military operations.[4]

In recent conflicts, three broad classes of UAVs demonstrated distinct capabilities and doctrinal implications. HALE/MALE UASs such as MQ-9 Reaper, Bayraktar TB2, and Wing

Loong II are capable of prolonged flight and the deployment of precision-guided weapons into contested areas.[5] On the contrary, compact and economical FPV drones have enabled soldiers to accurately identify high-value targets at a much lower cost and transformed small-unit tactics.[6] Finally, LMs, which are single-use weapons that integrate UAV reconnaissance with missile strikes such as the Russian Lancet and Iranian Shahed-series drones, operate between these extremes.[7] The battlefield is increasingly shaped by a combination of HALE/MALE UAVs for strategic reach, Small UASs (sUAS) for close-in tactical strikes, and LMs for opportunistic targets. All these platforms operate within a web of sensors, Electronic Warfare (EW) assets and counter-drone systems. As such, they present both challenges and opportunities for smaller and medium-sized militaries. Because smaller and medium-sized militaries may not match great powers in sheer scale, but they can take advantage of adaptability and affordability of UAVs to achieve desired effects.[8]

Drawing on recent evidence, the Bangladesh Armed Forces need to pay close attention on how to incorporate cutting-edge technology into their military strategy and approaches. Adoption of such technologies should ensure appropriate mix of platforms, effective doctrine and seamless collaboration. Requirement of a balanced combination of costly HALE/MALE systems and economical FPV drones and LMs basing on available budget, need for training and modernisation to ensure synergistic transformations in the digital battlefield are of immense importance. This study examines how insights from the wars in Nagorno-Karabakh, Russia-Ukraine and other recent conflicts might guide the Bangladesh Army in integrating UAVs, while balancing capability enhancement with economic constraints and operational requirements.

UASs and LMs: At the Cutting Edge of Technology

UAVs are defined by the Department of Defense (DoD) as "powered, aerial vehicles that do not carry a human operator, use aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely."[9] Very often, they are called Remotely Piloted Vehicle (RPVs), uncrewed aerial vehicle, pilotless aircrafts, robot planes or more commonly, drones. A UAS is "an unmanned aircraft and the equipment necessary for the safe and efficient operation of that aircraft"[10] which may include ground control stations, antennas and other ground equipment. A LM is a "expendable uncrewed aircraft which can integrate sensor-based analysis to hover over, detect, and crash into targets."[11] Israel's IAI Harpy drone was one of the first of its kind. LMs enhance targeting beyond the visible range, are generally more affordable and versatile. Over the past twenty years, there has been rapid advancement in LMs suitable for tactical applications. A FPV drone uses a method of viewing real-time video feed from an onboard camera through specialized goggles or a monitor. These platforms have low radar signature and manoeuvrability and thus are ideal for close combat and urban warfare.[12]

Case Study: The Nagorno-Karabakh War (2020)

Brief History of the Conflict: Azerbaijan and Armenia had a long-standing dispute over the region of Nagorno-Karabakh. In April 2016, they fought for four days over these disputes. In this war, Azerbaijan effectively used Unmanned Combat Aerial Vehicles (UCAVs) such as the IAI Harop.[13]

The 2020 war erupted on 27 September when Azerbaijan launched an offensive with artillery fires, drone strikes and ground assaults. However, Armenia fought back with anti-tank missiles but struggled against UAVs with its own exposed armour. Azerbaijan broke through Armenian positional defences by employing manoeuvre warfare. Eventually, Azerbaijani capture of Shusha, an important military stronghold on 08 November proved decisive. On 09 November, Russia brokered a ceasefire and deployed Russian peacekeepers. Azerbaijan consolidated major territorial gains. The war lasted for 44 days and saw approximately 4,000 deaths, mostly Armenians.[14]

Figure-1: Map of Nagorno-Karabakh Conflict-as of 01 December 2020

Source: https://www.polgeonow.com/2020/12/nagorno-karabakh
-control-map-after-ceasefire-withdrawals.html

Employment of UAVs in the Conflict: In this conflict, both sides, especially Azerbaijan, employed various types of drones and LMs effectively. Azerbaijani drones, particularly the Turkish Bayraktar TB2 and Israeli Harop, destroyed Armenian tanks, artillery, AD, logistic echelons by conducting surveillance, precision strikes and deep interdiction.

Azerbaijan skilfully integrated these drones with conventional forces and exploited Armenia's old and weak AD, lack of mobile Counter-UAS (C-UAS) systems and limited EW capabilities. Early in the war, Azerbaijan used converted An-2 aircraft as bait to expose Armenian AD and other positions for follow-on UCAV strikes. The Armenian S-300 and Buk systems failed to detect slow, low-flying drones, enabling Azerbaijan's Suppression of Enemy Air Defence (SEAD) and destruction of around 60 Armenian AD units in two weeks.[15] Having learnt from the earlier conflict, Azerbaijan built a diverse UAS arsenal from Israel and Turkey, including reconnaissance drones (Orbiter, Hermes 450/900, Heron) and LMs (Harop, Orbiter 1K, Sky Striker, STM Kargu). Armenian losses to UCAVs were estimated at $1 billion, including 287 tanks, 69 IFVs, 511 artillery pieces, 73 AD systems, and other assets. However, some independent research groups such as Oryx suggest lower figures.[16]

Table-1: UASs Used by Armenia

Name	Category/Equipment	Number	Country of Origin	Remarks
X-55	Reconnaissance UAV		Indigenous	2014
HRESH	LM		Indigenous	2018
Krunk	Reconnaissance UAV		Indigenous	2011
Orlan-10	Reconnaissance UAV		Russia	2020

Source:https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense

Table-2: UASs Used by Azerbaijan

Name	Category/Equipment	Number	Country of Origin	Remarks
Bayraktar TB-2	Tactical UCAV		Turkey	2020
Harop	LM	50	Israel	2014-2016
Orbiter 1K	LM	80	Israel	2016-2019
Orbiter 3	LM	10	Israel	2016-2017
SkyStriker	LM	100	Israel	2016-2019
Hermes-900	Tactical UCAV	2	Israel	2017-2018
Hermes-450	Tactical UCAV	10	Israel	2008-2013
Heron	Tactical UCAV	5	Israel	2011-2013
Aerostar	Reconnaissance UAV	14	Israel	2007-2012
Searcher	Reconnaissance UAV	5	Israel	2011-2013
Antonov An-2	Converted UAV		Russia	

Source: https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense

Case Study: The Russia-Ukraine War (2022 - present)

Brief History of the Russia-Ukraine War: The Russia-Ukraine conflict began in February-March 2014 when Russia launched an offensive capturing Crimea and ignited hostilities in Donetsk and Luhansk. These clashes became a frozen conflict after the second Minsk agreement in February 2015.[17]

Figure-2: Map of Ukraine-Russia War Zone (Ukraine after 2014 and before the start of the 2022 War, as of 12 August 2025)

Source: https://www.bbc.com/news/articles/cgkrn433lk2o
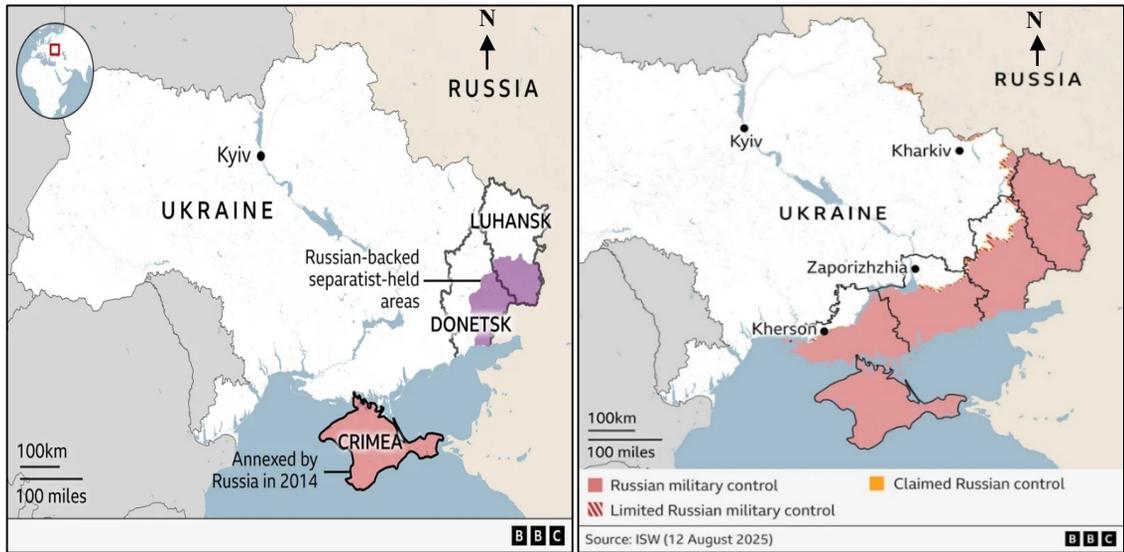
On 24 February 2022, however, Russia started a large-scale assault, initially targeting key cities including Kyiv to topple Ukraine's government. Even though Ukraine could successfully defend Kyiv, Russia took control of cities like Kherson, Mykolaiv, Melitopol and Mariupol by May 2022. Ukraine launched a counteroffensive at the end of 2022 and took back Kherson with the swift Kharkiv campaign. Because of this, the Russian momentum slowed down and by 2023, the war had turned into attrition warfare. Russia began to rely on Wagner mercenaries, but Ukrainian resilient defences compensated for Moscow's numerical advantage. During this period, technology was adopted increasingly, particularly drones and precision strikes.[18] As of August 2025, the war is still going on with a high human cost and no apparent winner.

Employment of UASs in the Conflict: Both sides have extensively deployed a wide array of UAVs ranging from large HALE/MALE UASs to small FPV drones and LMs. From the beginning, Ukraine quickly integrated drones (i.e. TB2) for reconnaissance, artillery spotting and precision strikes. Russia subsequently adopted a similar approach by employing UAVs in ISR role and support for long-range indirect fires. Russia also employed kamikaze platforms like the Shahed-series inside Ukraine territory. By 2023-2024, Ukraine broadened its drone usage,

deploying commercial drones and FPVs for economical tactical assaults and utilizing UAVs for more effective artillery targeting and interdiction. Additionally, Ukraine employed marine drones against Russian marine assets and manned aircrafts. Russia retaliated with missile and drone strikes deep inside Ukrainian cities.[19] In 2025, Ukraine utilised swarm drones and AI to support infantry, medical, resupply and evacuation. Russia expanded FPV production and both sides used drones for deep strikes on infrastructure and military facilities in the deep as shown in the Table below:-

Table-3: UASs Used by Russia

Name	Origin	Category	Function
Zala KYB	Indigenous	Military	ISR, Kamikaze
Shahed136 (Geran-2)	Iran	Military	Kamikaze
Mohajer 6	Iran	Military	ISR, Air to ground strike
Orlan-10	Indigenous	Military	ISR, Jamming
Orion	Indigenous	Military	ISR, TA, Battle damage assessment
KBLA-IVT	Indigenous	Military	Aerial target, Reconnaissance
Forpost	Indigenous	Military	ISR
Zala 421	Indigenous	Military	ISR
Granat-4	Indigenous	Military	ISR
Orlan-30	Indigenous	Military	Reconnaissance, Surveillance
E95 (E95M)	Indigenous	Military	Aerial target, Reconnaissance
Zastava	Indigenous and Israel	Military	Reconnaissance
Tachyon	Indigenous	Military	Reconnaissance
Eleron-3	Indigenous	Commercial	Reconnaissance

Source: S. Sotoudehfar et. al, 'Drones on the frontline: Charting the Use of Drones in the Russo-Ukrainian Conflict and How Their Use May be Violating International Humanitarian Law,' *International and Comparative Law Review,* 2023, Vol. 23, No. 2, pp. 129-169.

Lessons Learnt from the Impact of UASs on These Conflicts

The wars in Nagorno-Karabakh and Russia-Ukraine may serve as critical case studies, demonstrating the diverse impacts of UAS. However, some researchers argue against UASs' overwhelming influences and opine that UAS are not standalone 'silver bullets' but powerful force multipliers when seamlessly integrated into combined arms operations.[20] In this context, relevant lessons upon careful analysis are presented below:-

Table-4: UASs Used by Ukraine

Name	Origin	Category	Function
Bayraktar (TB2)	Turkey	Military	ISR, Targeting, Strike missions
Phoenix Ghost	USA	Military	LM, Surveillance
WB Group Warmate	Poland	Military	ISR, LM
RAM II	Indigenous	Military	LM
Spectator-M1	Indigenous	Military	Reconnaissance, Search, Rescue
UJ-22 Airborne	Indigenous	Military	Intelligence, Search, Rescue
Punisher	Indigenous	Military	Strike military targets
Leleka-100 (stork)	Indigenous	Military and Commercial	Reconnaissance, Surveillance, Target acquisition
Athlon Avia A1-CM Furia	Indigenous	Military	Reconnaissance, Surveillance
R18	Indigenous	Military	Surveillance, Search, Delivery of cargo, Strike
Autel Evo II	China	Commercial	Photography, Videography, Inspection, Mapping
DJI Mavic Series	China	Commercial	Photography, Videography, Search, Rescue
Golden Eagle	USA	Commercial	Surveillance
Skydio X2	USA	Commercial	Search, Inspection, Rescue Mapping
PD-1 (People's Drone)	Indigenous	Military	Reconnaissance, Monitoring, Anti-jamming
WB FlyEye	Poland	Military	Unknown
Quantum System Vector	Germany	Commercial	ISR
RQ-20 Puma	USA	Military	ISR
Tupolev Tu-143 Reis	Soviet Union	Military	Reconnaissance, Surveillance
AeroVironment Quantix	USA	Military and Commercial	Inspection
Mini-Bayraktar	Turkey	Military	Reconnaissance, Surveillance
Switchblade 300	USA	Military	Reconnaissance, Surveillance, Target acquisition
Switchblade 600	USA	Military	LM

Source: S. Sotoudehfar et. al, 'Drones on the frontline: Charting the Use of Drones in the Russo-Ukrainian Conflict and How Their Use May be Violating International Humanitarian Law,' *International and Comparative Law Review,* 2023, Vol. 23, No. 2, pp. 129-169.

Transformation of Operational and Tactical Capabilities: UASs have deeply influenced the application of operational art, compressing the time between detection and engagement and enabling new operational designs.

Nagorno-Karabakh War: UAVs enabled ISR and precise strikes which significantly lowered risk to Azerbaijani infantry and armoured units and increased the tempo of manoeuvre warfare.[21] Azerbaijan's victory in Nagorno-Karabakh was largely attributed to its effective fusion of drones (e.g., Bayraktar TB2, Harop loitering munitions) with artillery, EW and manoeuvre units under superior Command and Control (C2).[22]

Russia-Ukraine War: Similarly, UAVs have permeated every phase of the conflict and demonstrated their effectiveness with organized C2 and coordinated fires. Ukrainian forces have conducted deep strikes with One-Way-Attack (OWA) drones and shaped multiple points on the battlefield simultaneously which blurred the lines between front and rear. Notable examples include the April 2024 strike in Tatarstan and operations like "Spider's Web."[23] Such strikes demonstrate how relatively small forces can achieve effects at great depths. Ukraine has embedded UAS organizationally by establishing the Unmanned Systems Forces for operational-level drone integration. UAS cells were developed by Ukraine at corps and division levels to coordinate drone operations. On the contrary, Russia opted for a more rigid and centralized control which proved less effective. This highlights how organizational flexibility is critical to integrate new technologies effectively.[24]

Enduring Lessons of Modern Warfare: These battles showed that fundamental military principles like attritional combat, seizing ground, and striking centres of gravity are still crucial despite the prominence of UAVs. UAVs can reveal massed formations and static positions if they are camouflaged poorly. Thus, survival in a sensor-rich battlefield requires concealment, dispersal, deception, signature reduction and rapid decision cycles.[25] Azerbaijan's success in breaking Armenia's static defences with mobile infantry and precise fire support demonstrated need for joint integration and coordinated manoeuvre, even with advanced systems. This war showed that concentrated forces may be vulnerable to UAS action but are still necessary for offensive action. Tanks remain the most resilient vehicles with mobility and firepower; however, they can be susceptible to drones without adequate AD.[26]

Cost-Effectiveness and Accessibility of Airpower: UASs can provide similar capabilities as traditional manned aircraft, but at a much lower cost. Inexpensive and readily available technology are significantly increasing the number of actors capable of accessing the air littoral (airspace between high-end fighters and the surface) and possessing the military capabilities to contest its control. This allows smaller or less wealthy states, even non-state actors, access to cost-effective precision strikes and ISR options.

Nagorno-Karabakh War: UAVs and UCAVs performed missions at a significantly lower cost than traditional manned aircraft. It highlights their value in terms of affordability and expendability.[27]

Russia-Ukraine War: The widespread use of commercial off-the-shelf UAVs and improvised strike drones by both sides underscores their cost-effectiveness and accessibility. Ukraine's use of affordable commercial and FPV drones for tactical strikes against armoured vehicles and trenches is a prime example.[28]

Persistent ISR and Enhanced C2: UASs have become indispensable tools for reconnaissance and real-time intelligence collection thus improving situational awareness. Employment of UASs can hugely complement a coordinated C4ISR system for modern armed forces.[29]

Nagorno-Karabakh War: Azerbaijan effectively utilized UAVs to provide critical real-time ISR functions which enabled faster decision making and rapid targeting. Live drone feeds enabled commanders to see the theatre of operations and make immediate strike decisions.[30]

Russia-Ukraine War: Ukraine has widely utilised all types of UASs for reconnaissance, correcting artillery fire and securing new positions. Modified commercial drones equipped with thermal imaging enabled Ukrainian forces to monitor and respond to enemy movements around the clock.[31] UAS integration has dramatically compressed the time between detection and engagement. Ukraine's flexible command through 'Unmanned Systems Forces' and UAS cells greatly enhanced C2 and compressed sensor-to-shooter loops across its military.[32]

Precision Strike and Targeting Capabilities: Targets can be hit by modern UASs with remarkable accuracy and increased attrition rates. They can also be utilised for deep strikes to achieve strategic effects.

Nagorno-Karabakh War: UCAVs played a decisive role in Azerbaijan's victory by initially targeting Armenian AD and subsequently striking armoured formations, artillery and communication lines. Particularly, Turkish TB2 was influential in destroying defences, armoured positions and fortified sites facilitating rapid ground force manoeuvres. LMs also provided cost-effective precision strike options.[33]

Russia-Ukraine War: Ukrainian commanders integrated UASs and FPVs for precision strikes deep into Russian territory. The Battle of Avdiivka and Belgorod raids in early 2024 are two of such operations. Small commercial drones are used to target high-value assets such as Russian armour, artillery and command posts. Though these systems were shorter in range than conventional strike platforms they significantly enhanced

Ukraine's operational and tactical capabilities. Moreover, Ukraine also used swarms of drones to guide artillery strikes during the Battle of Kherson against Russian forces.[34]

Information Warfare and Psychological Operations: Drone footage has become a powerful tool in information warfare to influence public perception, military morale and political narratives.

Nagorno-Karabakh War: Azerbaijan published extensive UAV footage (such as Harpy drones and TB2 strikes) and circulated high-definition footage of Armenian losses online to attain psychological and political effects. On the other hand, Armenia tried to counter with images of downed Azeri drones with limited success. Such drone-driven narratives even encouraged other countries, including Ukraine and Poland, to acquire combat-proven UAVs and LMs.[35]

Russia-Ukraine War: The Russian and Ukrainian government published footages of UAV strikes online to boost morale and shape international opinion to a great extent. Both conflicts revealed how UAS success, or even claims of success, plays a powerful role in shaping domestic and international perceptions.[36]

Waning Impacts of Medium/Large UASs and Proliferation of Small UASs:

Nagorno-Karabakh War: At the start, Azerbaijan used larger UAVs, such as TB2 with great effect. However, as the war progressed, other types of UAVs became prominent in the battles.[37]

Russia-Ukraine War: This was more prominent in Russia-Ukraine war with the progress of the battle. Ukraine's use of TB-2 drones brought remarkable success initially. However, Russian adapted with stronger EW and AD and limited the effect of TB-2s in later stages. In parallel, smaller, inexpensive drones proliferated. Commercial drones and FPVs (systems like Taiwan's Revolver 860) enabled frontline units to conduct reconnaissance, battle damage assessment and precision strikes which showed tactical versatility of UAS at all levels.[38]

Challenges to UAS and C-UAS Measures: The proliferation of UAS has exposed significant vulnerabilities in traditional AD systems and spurred the urgent development of countermeasures. Therefore, the operational utility of UAVs depends on their resilience to such countermeasures This requires not only robust hardware but also well-developed tactics, techniques and procedures (TTPs). NATO and US doctrine now emphasizes counter-sUAS as a critical pillar of AD.[39]

Nagorno-Karabakh War: Azeri drones utilised the weaknesses of Armenia's outdated and poorly coordinated AD. Some of Armenia's Soviet-era systems struggled

to detect and counter Azeri UAVs and LMs. Moreover, systems like Buk, Tor-M2 and S-300s had limited impact due to late deployment and small numbers.[40] The conflict shows that success of UASs depends heavily on the adversary's layered AD quality and C-UAS systems.

Russia-Ukraine War: The war revealed that both larger drones like the TB-2 and sUAS can take advantage of traditional AD systems if they are not properly sited and coordinated. Again, in many cases, Russian forces have employed electronic jamming to disrupt Ukrainian drone operations successfully. Ukraine also responded with mobile Short-Range Air Defence (SHORAD) and radar-guided anti-drone guns successfully.[41]

Dependence on Supporting Infrastructure: UAS is a combination of sophisticated platform, datalinks and modern computer technology. This makes them dependant on supporting infrastructure like secure communications, GPS and satellite systems.

Nagorno-Karabakh War: Azerbaijan had close ties with Turkey who supported it with UCAVs and satellite-based intelligence. On the other hand, because Armenia lacked access to sophisticated infrastructure, its drones were less successful.[42]

Need for Rapid Technological Innovation and Adaptation: Both wars showed how quickly technology is developing and how opposing armies can quickly adapt. The future of drone warfare is also expected to be shaped by AI, swarms and other sophisticated technologies. Hence, modern militaries should adopt such technological innovations and remain ready to adapt themselves accordingly.[43]

Nagorno-Karabakh War: Azerbaijan acquired the Turkish TB2 just months before the war began. Still, they could use this platform to a great effect against Armenian forces. This showed that modern armies can adopt new UAS technologies very quickly with great success.[44]

Russia-Ukraine War: As soon as the war started, Ukraine rapidly adopted and integrated UAS technologies into all levels of operations. Throughout the war, Ukraine continued to use UAS technologies for innovative purposes. Like, there are early signs of AI-assisted software being used in Ukraine to help FPV drones find targets better. Consequently, Russia adapted its AD and armour deployments and employed UASs in ever-evolving roles.[45]

UAS and Bangladesh Perspective

The experiences of recent conflicts, particularly the Nagorno-Karabakh War and the ongoing Russia-Ukraine War, provides invaluable lessons for integrating UAS into Bangladesh's doctrine and tactics, especially considering its unique geostrategic position.

Regional Environment and Neighbourhood Dynamics: Bangladesh occupies a key geostrategic position at the confluence of South and Southeast Asia. Its riverine delta also possesses extensive coastlines and hilly border regions. This varied topography has significant influences on military operations such as surveillance, manoeuvring and fire support. Again, neighbouring countries are advancing their UAS capabilities by increasing their ability to conduct reconnaissance, border management and precision strikes. This regional context shows how important it is for Bangladesh to make a strong UAS strategy as part of a well-thought-out military posture and policy.[46]

India's UAS Capabilities and Implications for Bangladesh: India is developing a sophisticated drone ecosystem to improve its ISR and strike capabilities. It deploys Israeli-origin Heron and Searcher UAVs along its borders to obtain real-time monitoring of cross-border movements. It also extended its reach into the Bay of Bengal by acquiring MQ-9B Sea Guardian drones from the United States.[47] It is pursuing innovative technologies such as swarm drones and LMs. For Bangladesh, this surveillance and strike capability has important implications.

Myanmar's Asymmetric Use of Drones and Implications: Myanmar's military has imported Chinese UAVs to use in the ongoing conflict. It was also reported that Myanmar is developing small-scale strike drones indigenously for counterinsurgency operations. The rival armed groups have also used drones against the military with limited success. This conflict now has the third most drone events documented by ACLED, after Ukraine and Russia.[48] For Bangladesh, this poses an immediate threat along the southeastern frontier.

China's UAS Capabilities and Regional Influence: Since long, China is producing cutting-edge platforms like the Wing Loong and CH-series UCAVs. It has established itself as a UAS superpower in Asia. It exports UAVs to Pakistan and Myanmar, which affects the security dynamics in Bangladesh's neighbourhood indirectly. For Bangladesh, this presents both opportunities and challenges. On one hand, close defence relations with China can provide access to cost-effective UAVs. On other hand, reliance on Chinese platforms risks strategic dependency and exposure to foreign supply limitations.[49]

Bangladesh's Current UAS Posture and Gaps: Bangladesh Armed Forces are actively pursuing for modernisation of UAS. As part of its modernisation effort, universities and startups are experimenting with prototypes which reflects the early stages of an indigenous drone industry. To fully benefit from its modernisation efforts, Bangladesh must enhance ISR coverage, C2 structures, C-UAS measures and training.

Lessons from Contemporary Conflicts for Bangladesh Army

UAS as Integral Force Multipliers: The Bangladesh Army should view UAS as critical components for augmenting the range and effectiveness of artillery, AD, EW and coastal defence. Recent wars show how important it is to set up a kill chain that clearly defines the timings and authority for sensor-to-shooter operations (UAS to fires/EW/manoeuvre). This synchronized approach will maximize lethality and efficiency. Brigades and their smaller units should have sUASs, while medium/large UASs can be used at higher levels.

C2 as the Decisive Enabler: To get the most out of UAS, effective C2 is a must. Bangladesh may set up a Joint UAS & C-UAS Cell (JUCC) under the Armed Forces Division for easy integration of UAS and interoperability. This JUCC will be responsible for developing doctrine, spectrum policy, data standards and unified training programs across the Army, Navy and Air Force. At division and lower levels, analyst cells may be established for the analysis of intelligence data. Necessary data link and integration may also follow to establish a coordinated C4ISR network.

Evolving AD and C-UAS Imperatives: The widespread use of UAS has demonstrated that traditional AD is vulnerable if not layered and properly sited. Recent conflicts showed the effectiveness of mobile SHORAD system, robust EW and adaptive procedures against diverse drone threats. Therefore, Bangladesh must prioritize a multi-layered C-UAS strategy. The Bangladesh Army needs to integrate mobile SHORAD troops organically within each army brigade. It needs to deploy 3D gap-filler radars, Radio Frequency direction-finders and Electro-Optical/Infrared (EO/IR) systems around key sites. To assess threats in real-time, these sensors need to be integrated into one C2 picture. Both soft-kill measures (e.g. jammers, GPS spoofers) and kinetic solutions (e.g., air-burst munitions, C-UAS guns, nets) need to be employed. RF sensors and portable jammers can be utilized to stop sUAS reconnaissance and to reduce collateral risk.

Managing Mass Proliferation and Ensuring Resilience: The Russia-Ukraine war saw the mass proliferation of UAVs, specially sUAS and FPV drones. It resulted drone-saturation in both offensive and defensive operations. This lesson highlights the need for sustainable logistics and rapid replacement capabilities rather than relying on a few high-end platforms. So, the Bangladesh Army should be ready for high attrition rate of UASs in future conflicts. It should prioritize affordable technological mass by developing resilient procurement and logistics chains.

Passive Survivability Still Wins Battles and Saves Lives: The Bangladesh Army needs to undergo a fieldcraft renaissance with mandatory deception drills, thermal camouflage and electro-magnetic discipline. Units need movement-by-signature training that is training on how to move under jamming conditions. Using decoys like inflatable SAMs, radars and armour can be a cheap and effective way to fight UASs.

Budgetary Constraints: Economic factors also affect the use of UAVs. Though FPV drones and LMs are much cheaper, HALE/MALE platforms require large investment. Therefore, a balance between high-end, long-endurance UAVs for strategic missions and expendable sUAS for tactical operations needs to be achieved. For Bangladesh, a small fleet of strategic drones mixed with many low-cost tactical systems may be the most appropriate solution. Bangladesh also needs to diversify supplier base and invest in domestic technological capabilities to mitigate geopolitical dependencies and fiscal strain.

Ways Forward for Bangladesh Army's UAS Integration

Drawing from the lessons on implications of UASs, the Bangladesh Army may focus on the following recommendations:-

Integration of UASs into Doctrine and Tactics

Developing a comprehensive UAS and C-UAS doctrine that covers artillery spotting, target designation and precision strikes. Such doctrine should mandate standard operating procedures, frequency and EW management, training and testing methods. All UAS related activities including organization and procurement should be guided by the comprehensive UAS doctrine.

Expanding reconnaissance UAV fleet and organize UAS/FPV platoons in every brigade. They may be equipped with night-operation kits, standardized batteries, hardened communication and rapid maintenance.

Developing a combination of UAV force with ISR, LMs and FPV swarms. The potential of manned-unmanned teaming with Army Aviation can be explored.

Enhanced ISR Capability:

Integrating UAV feeds into real-time C2 systems.

Establishing nationwide network and data backbone to disseminate intelligence to all tiers simultaneously.

A separate cell may be formed or existing intelligence analysts at formation level may be trained for fusion and analysis of UAS data.

Expanding the deployment of UASs for insurgency monitoring in the hilly terrains.

Comprehensive C-UAS Measures:

Employing mobile AD systems suitable for countering all categories of UASs.

Establishing dedicated EW units at the divisional level to counter enemy drones and protect friendly forces.

Adopting advanced camouflage, dispersion and field craft techniques to minimize vulnerability to UAV ISR and strikes.

Budget-realistic Force Design: The Bangladesh Army may scale UAS and FPV drones with thermal payloads, supported by cheap logistics. It needs to invest in layered soft-kill C-UAS kits and acquire selective UCAVs (e.g., TB2) in small numbers for ISR-strike and avoid prestige fleets. Considering affordability, the cost-aware spending sequence may be as following:-

Figure-3: Proposed Cost Aware Spending Sequence
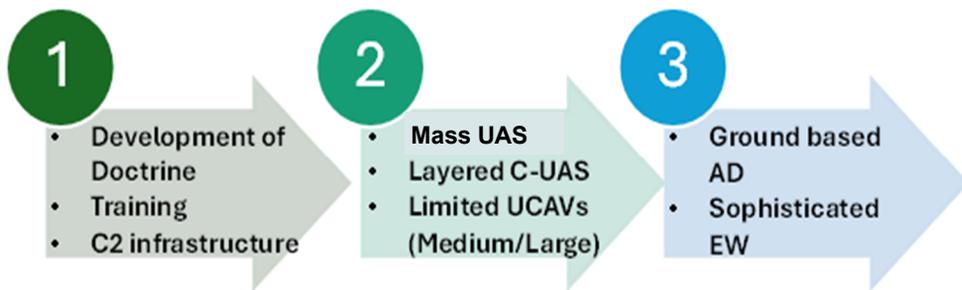
Source: Author's self-construct

Inclusion of Relevant Training:

Training and exercises should integrate UAS in real-time ISR and strike capability and increase personnel proficiency at all command levels.

Including C-UAS drills into all Army exercises to ensure that troops are skilled in operating and countering UAS threats under various conditions.

Conducting suitable deception, dispersion, decoys and thermal discipline exercises.

Developing specialized programs at military training institutes to train on joint UAV-artillery-manoeuvre integration.

Strategic Industrial Base: Collaborate with domestic industries and universities to locally produce reliable and affordable UAS and LMs.

Conclusion

The Nagorno-Karabakh and Russia-Ukraine wars have shown that UASs have significantly changed how wars are fought in the present times. These wars demonstrated how the battlefield can be significantly shaped using layered UAS. The most important things to learn from these battles are that UAS needs to be a force multiplier by connecting sensors and shooters in effective kill chains. Separate UAS troops and cells need to be established, and they should be trained appropriately. It is very important to have an AD that is layered, mobile and focused on C-UAS, with a variety of sensors and a mix of kinetic and soft-kill tactics. Investments in advanced EW technologies, along with strong procurement and logistics, are also needed.

Regionally, India's sophisticated UAS ecosystem and Myanmar's asymmetric drone use presents considerable implications. China's UAS exports to neighbouring countries also presents indirect influence. These realities highlight the need for Bangladesh to create a strong UAS doctrine supported by continuous training, upgrades and integrated forces. Even though the country has a few reconnaissance drones, a more varied and multi-layered UAS capability is urgently needed. Strategic edge for Bangladesh will not come from buying the next 'big drone,' but from institutionalizing how drones, EW, sensors and fires work together effectively. From a strategic perspective, Bangladesh needs a budget-friendly force design which focuses on affordable mass and the growth of UAS and FPV drones with robust logistics. This means that the Bangladesh Army needs to move from using basic UAS to a full integration strategy. This strategy should include layered C-UAS defences, robust C2, low-cost UAS before exquisite systems as well as a robust industrial and training ecosystem. The Bangladesh Army can improve its operational capabilities to meet the rapidly changing security environment by proactively implementing these lessons.

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Brief Biography

Lieutenant Colonel Farah Mohammad Imtiaz, BGOM, psc, Signals was commissioned in the Corps of Signals on 27 December 2001 with 45th BMA Long Course. He is a graduate of the National University of Bangladesh and recipient of Dr. Muhammad Shahidullah gold medal. He obtained B.Sc in EE&CE from MIST and is a graduate of Defence Services Command and Staff College, Mirpur. In his illustrious military career, the officer served in variety of command, instructor and staff appointments at different levels and organisations. He was the pioneer Commanding Officer of the 12 Signal Battalion and also served as Instructor Class B at Signal Training Centre and School. He also commanded Khedachora Battalion (40 BGB) and Sarail Battalion (25 BGB). He was decorated with Border Guard Obodan Medal (BGOM) and received Operational Insignia from Director General, BGB. He completed UN Mission in Ivory Coast (UNOCI) and Mali (MINUSMA). Presently, he is serving as the Acting Chief Operational Officer (Cyber Defence Wing) at Adhoc Army Cyber Group.

Leveraging Digital Transformation for Ameliorated Logistics Competency and Ensuring Logistical Self-Sufficiency for Bangladesh Contingents in Tenacious UN Peacekeeping Environment

Lieutenant Colonel Syed Fazle Muneem, Ordnance

Abstract

The theme of United Nations (UN) of peacekeeping emphasizes logistics apart from tensed operational environment since the deployment of different nations that contribute soldiers. The result of this complex environment is different forms of feeble operations and high-cost composition. The properly isolated locations, bad infrastructure and insecurity are the indicators of such complex situation. In the said context, Bangladesh contingents need to enhance their logistics opportunity and attain maximum logistics self-sufficiency via venturing into the Digital Transformation (DT). This paper will show how the process of optimizing cloud computing, artificial intelligence (AI), Big data analytics, internet of things (IoT), as well as geographical information systems (GIS) will transform the military logistics process. It provides a clear implementation framework that is concerned with the asset management, employee training and systems of Integrated Supply Chain Management. By applying these intelligent tools, the contingents may be able to accrue visionary projections. All these will assist in minimizing the dependence on external supply chain and efficient utilization of resources. This means that the contingents can reduce the risk by strategically making the right choice and planning, among the most significant obstacles, namely, the primary investment and the traditional infrastructure. For ensuring the enhancement of logistical efficiency Bangladesh contingents in the UN environment, contribution of the digital transformation is enormous.

Keywords: Digital Transformation, Cloud Computing, Geographic Information System, Operational Autonomy.

Introduction

For many years, Bangladesh contingent had been a stabilizing force for world peace. It has contributed substantially to the UN peacekeeping missions in some of the most unstable and difficult parts of the world.[1] The strong track record of Bangladeshi peacekeepers in the vulnerable Central African Republic to the dense jungle of the Democratic Republic of the Congo shows that they manifest an unswerving commitment, immense skill and perseverance on diverse operational fronts. However, the effectiveness and sustainability of these critical deployments' logistical frameworks are strongly linked. Traditional military logistics paradigms are increasingly unable to meet them in today's evolving and complex peacekeeping environment, which demands a fundamental re-evaluation and new form.

In UN peacekeeping operations, logistics is not just supply chain management; this is the lifeblood that keeps things running smoothly, protecting the troops and determines the ultimate success of the mission. The effective delivery of everything from specialized equipment, ammunition upto the medical supply, is a constant challenge in the remote and austere areas with poor infrastructure where peacekeeping forces often work. In order to maintain operational readiness and reduce dependency on outside assistance, the troop contributing countries (TCC) such as Bangladesh, must be able to move through these complex logistical environments with operational flexibility, advanced resource management and predictive capabilities.[2]

The environment where logistical resilience would be decisively strained through continuous and often very harsh demands that push limits would be well termed as the tenacious UN peacekeeping environment. Some of the features typical of these environments include geological remoteness, extreme weather conditions, lack of developed infrastructure or bad infrastructure, host conflict zones and the presence of hostile non-state elements. Such conditions bring about great challenges for distribution, storage and transportation. Moreover, due to these missions being unpredictable, introduction of radical changes in the dynamics of the operation and self-adaptation is a prerequisite for a logistical system.[3]

Thus, the objective of this paper is to critically discuss the possibility of digital transformation to significantly help the enhancement of logistical competence of Bangladesh contingents deployed in challenging UN peace management environments. What is more, it will promote a specific roadmap of attaining a higher level of logistical self-sufficiency, through the unified incorporation and the strategic acquisition of the innovative state of the digital technologies. The paper is going to represent the neediness and plausibility of being digitally-enabled logistics framework by reviewing the problems and proposing a time worthy approach towards solutions.

The Need for Improved Logistics Skills in UN Peacekeeping

The soldiers of the Bangladesh Army are well equipped with long service experience; most of them having worked in the areas where many of the logistical services are curtailed, despite they provide their high-quality civic engagement in the UN peacekeeping operations. In a similar vein, other contingents that contribute troops like Bangladesh, are also typically the heavy users of traditional and often manual logistics processes. For the most part, this includes physical inventory count, maintaining inventory management paperwork and constant monitoring of pre-set reports to oversee the supply chain.

Articulating to acquire services from local contractors or on the UN logistics networks for a prime support may also create vulnerability to spread across logistical networks compared with vulnerability to local market fluctuations and quality control problems. Sometimes lack of this reliance is unnecessary but still can jeopardize the ability of a contingent to be independent

and capable of flexible operations. The operational delays due to the delivery of essential resources affects the mission objectives. More specifically, logistical mistakes can be a part of the personnel hazard risk. As an instance, equipment breakdowns caused by failure in spares might leave the peacekeepers prone to avoidable risk; on the other hand, delayed medical supplies in an unconnected logistics area can be fatal.

This critical analysis elaborates the significance of lead efforts by Bangladesh contingent to be more logistically self-sustained in the framework of carrying responsibilities in the UN environment. Under this condition, a high degree of logistical self- sourcing as compared to the framework of the overall UN supply chain or host-country support is, not a state of complete autonomy but rather a significant reduction of reliance with external supply chains and a greater amount of internal capacity to handle, sustain and rehabilitate supplies and property. It involves coming up with the ability to drive independently with estimated demand, stock optimization inventory, maintenance, repairs and with real-time data. This reduces the external dependency as the local commanders have greater ability to make decisions regarding their logistical needs.[3]

Importantly, this idea makes a distinction between an improved level of self-sufficiency attained through enhanced internal capabilities and processes. Lastly, increased logistical effectiveness and transition to independent field are bound to enhance the operational effectiveness of the Bangladesh peacekeepers and also cement the perception of Bangladesh as a reliable, efficient and a competent presence in UN society.

Digital Transformation: A Revolution in Logistics

A revolution in logistics can be brought by the Digital Transformation (DT), which is one of the core actions of an organization, its culture and value. The transformative nature of DT in logistics has a number of significant technological pillars that enable specific capabilities to operate synergistically, which hold value together as briefly discussed below:-

Internet of Things (IoT): The Internet of Things (IoT) is an acronym that is used to define a network of objects, which have been connected physically but equipped with sensors, software and other technologies to be capable of connecting and sharing data with other systems and devices through the internet. It enables real-time tracking of the assets, their functioning and the environment elements such as temperature, humidity, etc.[4] IoT can help Bangladesh contingents with accurate inventory management, tracking the state of sensitive supplies and providing real-time location data for convoys in remote areas. This particular strategy improves the operational readiness and reduces down time.[5]

Big Data Analytics and Artificial Intelligence (AI): A voluminous amounts of data are produced by the progression of IoT devices and digital records. Big data analytics entails processing and analyzing these datasets, in order to find the patterns, insights and trends. This is fostered by artificial intelligence (AI), more specifically

machine learning algorithms, which approves the systems to experience from data, recognize relationships and generate predictions or recommendations without the need for explicit programming. AI can automate routine reporting, freeing up staff for more strategic work and identify irregularities in supply chain data, flagging possible disruptions or fraudulent activity.

Cloud Computing: Without requiring direct user management, cloud computing offers on-demand access to computer system resources, particularly data storage and processing power. Cloud solutions provide centralized data storage and accessibility from almost any location with an internet connection, which is beneficial for military logistics operating in diverse and frequently disconnected environments.[6] This guarantees that authorized users, regardless of their physical location, always have access to vital logistical information, such as inventory levels, maintenance schedules and personnel data. This makes it easier for various units, including UN logistics hubs, to plan together and share information in real time.[7]

Geographic Information Systems (GIS) and Remote Sensing: With the utilization of GIS platforms, all kinds of geographically outlined data might fill in and therefrom retrieve information and analyzing its data. With imbedded remote sensing (drone mapping and satellite imagery), GIS is able to offer better situational awareness which is needed in the logistical planning of expensive terrain.[8] It is possible through GIS to plan thorough routes, draw maps of where the assets will be deployed, determine the feasibility of the infrastructure (roads, bridges), and find the best applicable routes that will not remain in bottlenecks or encounter any number of impediments.

Digital Communication Platforms: Any type of digitally transformed logistics is dependent on a reliable and secure digital communication infrastructure. These platforms allow real-time communication between the headquarters, the operational field, the supply depots and the maintenance units. This includes sharing of documents and secure communications as well as video conferencing, all of which are significant in the synergetic logistical operations and ability to quickly respond to unforeseen situations.[9]

Adopting digital transformation in logistics has significant long-term advantages. First of all, it offers an end-to-end view of assets and improves transparency throughout the entire supply chain. Second, it greatly shortens lead times by automating repetitive tasks, optimizing routing and facilitating faster information flow. Thirdly, by actively improving inventory levels and simplifying operational procedures, DT helps to significantly lower costs. Fourthly, it promotes greater resilience, which enables logistical systems to quickly adjust to unforeseen events, disruptions or abrupt modifications in mission requirements.[10] Finally, strong digital systems by nature provide increased security and accountability through secure data storage, traceable transactions and thorough audit

trails of all assets which are critical in military operations. Bangladesh Army can radically rethink its logistical capabilities and transition to a more effective and independent operational posture in UN peacekeeping by adopting these digital innovations.

Bangladesh Army Logistics Competency Framework for Using Digital Transformation

Figure-1: Process Diagram for Digital Transformation
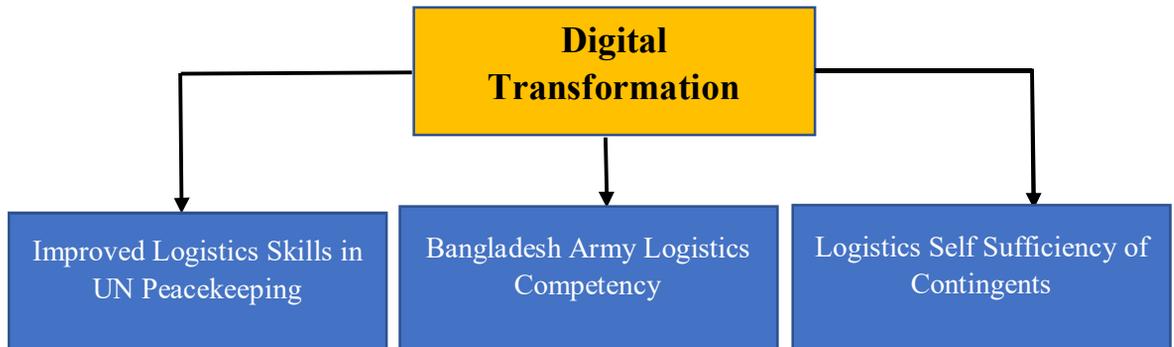
Source: Author's self-construct

A structured framework is demanded in the logistic operations aiming for acute digital transformation. In addition to provide operational excellence in UN environment, it will strengthen the own wings of Bangladesh Army also. This is a broad organizational change initiative which requires phase wise implementation strategy and a well-defined forethought. Building an effective, robust and self-sufficient logistical foundation that can endure operations in the most required environments, is the ultimate objective.

Strategic Vision and Support from Leadership

A transparent strategic vision supported by the utmost levels of leadership is the fundamental issue to any successful digital transformation. This signifies a top-down expedition to upgrade and modernize the logistics for Bangladesh contingent, which will bear a national reputation in the UN peacekeeping environment. The genesis of a special 'Digital Logistics Transformation Cell' or a comparable managing committee from Bangladesh Army would be an essential first step. This multidisciplinary group, which would include financial planners, operational commanders, logistics specialists and IT specialists, would be in charge of creating the strategic roadmap, managing its execution, guaranteeing cross-functional cooperation and assigning the required funds.

Important Domains for Digital Intervention

There are a number of crucial areas for digital intervention in Bangladesh Army logistics which are discussed below:-

Integrated Supply Chain Management System (ISCMS): A comprehensive, integrated system that digitizes and links all aspects of the supply chain is the foundation of digital logistics. This ISCMS would include the following:-

Digitalized Procurement: Using digital contract management, automated approval workflows and online portals to streamline the requisition, tendering and purchasing processes. Lead times would be shortened, transparency would be improved and UN procurement regulations would be easier to follow with this digitalized procurement.

Automated Warehousing and Inventory Management: Integrating automated inventory systems with barcode or RFID-based tracking for every stock item. This would give real-time visibility into storage locations, stock levels and expiration dates. Drone-based inventory checks and smart shelving systems could improve accuracy and efficiency even more while reducing physical labor and human error.

Optimized Distribution and Transportation: Employing sophisticated algorithms to optimize routes while taking into account variables like vehicle capacity, fuel economy, security risks and road conditions (as determined by GIS). Constant situational awareness would be made possible by real-time convoy tracking using GPS and IoT sensors, enabling prompt corrections and proactive problem-solving in the event of delays or incidents.

Integration with UN Logistics Systems: Interoperability must be a key consideration in the design of the ISCMS. Bangladesh contingents will continue to work with UN logistics for specific strategic supplies or services while striving for self-sufficiency. To guarantee coordinated efforts and efficient reporting while preventing data duplication and inconsistencies, the ISCMS should be able to exchange data with pertinent UN platforms with seamless effort.[6]

Asset Management: Mission readiness depends on the skillful steering of military assets, such as vehicles, generators, communication devices, weapons etc. Potential solutions provided by digital transformation are as follows:-

Real-time Asset Tracking: Continuous location data, operational status and usage patterns are provided by the installation of GPS and IoT sensors on all

significant assets and automobiles. This improves security, makes the optimum use of available resources and accelerates the expansion and recovery.

Predictive Maintenance: Collecting information on equipment performance using IoT sensors are part of predictive maintenance. By exploring these data, AI algorithms can relate probable component collapse before they happen, allowing for proactive maintenance plans as opposed to reactive repairs. This guarantees greater operational availability, prolongs asset lifespan and drastically lowers equipment downtime.

Warehouse and Inventory Optimization: Digital tools can support advanced storage and optimization of the level of stocks in particular with more advanced tracking as briefly focused below:-

Advanced Demand Forecasting: To forecast future demand of logistics with more accuracy, Big Data analytics and artificial intelligence are utilized to analyze past consumption statistics, mission requirement and even intelligence reports. This lessens overstocking that use up money and storage area and stockouts in necessary products.

Automated Reorder Points and Space Optimization: Automatic systems can be put in place to reorder in case a drop in stock levels below predetermined replenishment levels so that there is no shortage of stock. On the other hand, digital tools may be applied to enhance the limit of storage density and warehouse layout that is highly required in the territory of the mission, where the space is a limiting factor.

Personnel Training and Skill Development: Technology adoption becomes effective when there is a detailed training on aspects as follows:-

Digital Literacy and Data Analytics Skills: Orienting new digital resources, software interface and data input processes to every human logistician e.g. commanders to storekeepers. Arguably, the most important effect of the dominance of AI over HR personnel in the company is the development of a group of logistics officers and non-commissioned officers who can work out and interpret the reports produced by AI and prepare evidence-based decisions.

Cyber-Security Awareness and Continuous Learning: Establishing an effective cyber-security culture, train the employees and the safe use of networks to protect sensitive logistical information would be necessary. Better than that, the imbibition of the innovation and continuous improvement ethic to the corps of logistics by creating a series of regular training and adapting the trainees with new technology or systems improvement.

Implementation Phases/Roadmap

A phased approach facilitates learning, adaptation and manageable steps as outlined below:-

Phase 1- Assessment and Pilot Projects (6-12 months):

a. Conduct a comprehensive exercise of the existing digital transformation logistical processes of operation, any of which are dramatically bottlenecking, where a digital transformation is apt to make the greatest impact.

b. In case of pilot projects, a few minor and manageable areas are to be identified (such as fleet tracking of a small detachment or a set of supplies).

Phase 2- Scaled Rollout and Integration (12-24 months):

a. To focus on integrating different digital systems to create an integrated ISCMS and ensure that there is the flow of data across different modules (transportation, warehousing, procurement etc).

b To continue increasing training and capacity building.

Phase 3- Optimization and Continuous Improvement:

a. To make a continuous improvement of the implemented systems as the systems need to be reviewed and improved as per the input of the users, performance aspects and changing aspects of operations.

b. By fostering a culture of continual innovation, seek to ensure that staffs use digital tools more effectively.

Table-1: Example of a Roadmap with the Mission Activities

Year	Milestone Phase	Key Activities
2026	Phase 1: Assessment and Pilot Projects	Pilots for fleet tracking and assessment
2027	Phase 2A: Implementation of the Core System	Instal ISCMS in two contingents as test
2027	Phase 2B: Extension of Training	Training on data literacy and logistics for around 100 employees
2028	Phase 2C: Layer of Interoperability	AI-powered routing and integration with the UN system
2029	Phase 3A: Predictive Analytics	Demand forecasting and the implementation of predictive maintenance
2030	Phase 3B: Optimization and Improvement	Ensure that contingents are fully digitalized

Source: Author's self-construct

**Interoperability and Collaboration with UN Systems**

Although self-sufficiency is a significant driving-force to consider, it is necessary to ensure that the digital logistics structure of the Bangladesh contingents can network and collaborate with the overall UN logistic ecosystem. It involves adoption of data standards which makes it easier to share information, participate in the logistical planning meetings directed by UN and implementation of specific modules providing common operational prospect. Such interoperability will assist to promote better coordination of missions internally in future as the independent internal logistical abilities of Bangladesh contingents are incorporated within the operational purview of UN global peace keeping missions. In view of making Bangladesh contingents logistically prudent, this strategic dynamics will significantly enhance the ability to work boldly in most of the regions of the peacekeeping purview.

Digital Transformation Affecting Self-Sufficiency

Enhanced Decision-Making Autonomy: An unparalleled degree of situational awareness is made possible for local commanders and logistics officers by the real-time data that integrated digital systems (ISCMS, IoT sensors and GIS) provide.[12] They can obtain accurate, real-time information on inventory levels, asset locations, maintenance status and supply chain movements rather than depending on postponed reports or outside instructions. For quick action in dynamic and uncertain peacekeeping situations, this autonomy is essential.

Reduced Dependence on External Supply Chains: The need for frequent or urgent external resupply is greatly reduced by digital transformation, especially through improved inventory management and sophisticated demand forecasting. Contingents can maintain ideal stock levels, reducing both stockouts and overstocking, by precisely forecasting future requirements based on historical data, mission directives and environmental factors. By taking this proactive stance, routine needs can be met with less reliance on local or UN procurement.

Figure-2: Logistical Self-Sufficiency Process Flow
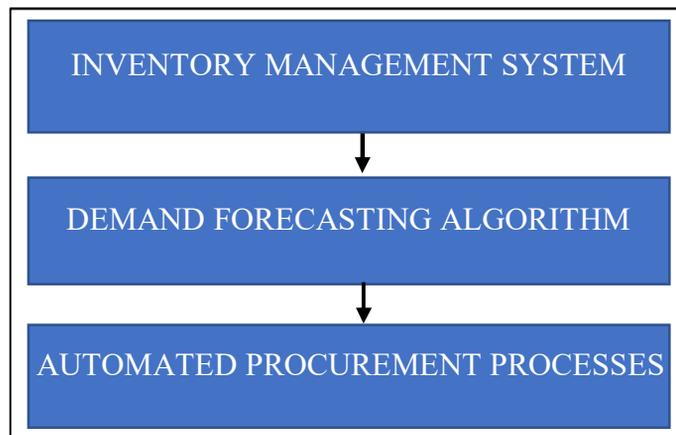
Source: Author's self-construct

Optimized Resource Utilization: Digital tools offer detailed information on how all logistical resources are being used. Accurate monitoring of operating hours, fuel consumption and performance metrics is made possible by IoT sensors on machinery and automobiles. Digital transformation guarantees that every resource contributes as much as possible to the mission by reducing waste, spoiling and inefficient deployment, promoting a lean logistics culture.

Proactive Problem Solving: The ability of digital transformation to move from reactive to proactive problem-solving is one of its most important contributions to self-sufficiency. Supply chain data can be continuously monitored by AI-driven analytics, which can spot possible bottlenecks, approaching shortages or irregularities before they become serious problems.[13] For example, an unexpected delay in a specific supply route or a sharp increase in the consumption of a certain item could cause an alert, enabling logistics staff to take early action. Because of this foresight, contingents can independently maintain mission continuity and prevent operational disruptions by implementing mitigating strategies well in advance.

Improved Maintenance and Repair Capabilities: The internal maintenance and repair capabilities of a contingent are improved by digitization. By providing them the access to digital diagnostic tools, online repair manuals, virtual training modules and remote technical support (via safe digital communication platforms) they empower the local technicians to perform more sophisticated repairs on field. Another method is predictive maintenance which involves scheduling to maintain the equipment early and get spare parts early by giving them notification of the malfunction of the equipment. It enhances the self-reliance of deployable equipment maintenance services.

Cost Savings: The cut in cost by such a digital transformation is massive because it saves maintenance and automatization of the processes. The money saved by this way are invaluable, which can be utilized in other cases of importance like training, buying special equipment or other welfare related arrangements of the staffs. The fact is that this cost saving is one of the major aspects of self-sufficiency, that is credible.

Obstacles for Reaching Self-Sufficiency and Countermeasures

Even though the advantages are strong, there are obstacles in the way of becoming self-sufficient in digital logistics, especially given the particular circumstances of UN peacekeeping as mentioned below:-[7]

Initial Investment Costs: A universal digital logistics system involving ISCMS, IoT sensors and advanced analytics systems are highly expensive to have in place.

Mitigation: Adaptation of a staged implementation plan and paying high impact areas top priority, are the arenas where starting funds are to be spent. Carrying out research of the business concept of joint venturing with technology enterprises to run pilot projects.

Seeking potential funding/support of UN initiatives intended to strengthen the capacity of Troops Contributing Countries (TCC).

Technological Infrastructure in Remote Areas: UN mission areas have insufficient power grids, robust local IT base and reliable internet connectivity, which are necessary in digital systems.

Mitigation: Important data should be sent using satellite communication. Creating some sturdy offline capabilities to process and collect data locally, and do intermittent synchronization as data would be feasible to do so. Where the digital devices are miles away, adopting renewable energy sources (such as solar power) would be beneficial.

Resistance to Change: Some of the employees with traditional background might be slow in adopting new technologies due to the fact that they are used to with handling things manually, and therefore, they perceive that the new technologies would be complicated.

Mitigation: Developing comprehensive management programs that involve the staff members in all the levels of development and implementation. Making the training convenient, pointing it on the benefits and offering a simplified use of the new tools. Establishing trust and desire to exemplify the high-profile changes. Cultivating the culture of life-long-learning and creativity.

Cyber Security Threats: As the growing digitization of processes becomes more extensively advanced, the logistical data is at risk of being targeted by ransomware.

Mitigation: Setting up of multi-layering cyber security protection measures such as robust firewalls, effective tools of intrusion detection, end-to-end encryption and stringent policies of access. Delivering Biannual vulnerability testing, penetration testing and cyber-security audits. Most importantly, training of the entire staffs group on continuous cyber-security awareness program and alongside teach them on the most effective ways to handle data.

Data Quality and Integrity: The efficiency of the digital systems depends on the quality and accuracy of data fed in them. Poor decisions and faulty insights can result from inconsistent or inaccurate data.

Mitigation: Ensuring stringent processes in data collection and validation, at the very initial stage. Introducing data verification and automated cleansing processes. Routine checks and data audits must be maintained to uphold the integrity of the logistical data.

Conclusion

Bangladesh Army's professionalism and commitment to world peace are demonstrated by its continued participation in UN peacekeeping missions. However, the effectiveness of conventional logistical frameworks is severely hampered by the complexity and persistence of modern peacekeeping environments. The importance of improving logistics proficiency and increasing logistical self-sufficiency for Bangladesh contingents always demands priority. The effectiveness of UN missions may be impacted by the acute reactive logistical processes, which can result in inefficiencies, higher expenses, operational delays and increased risks to personnel.

To address these obstacles, digital transformation is not only a choice to consider but also one of the necessary strategies. By implementing the cloud computing technology, Artificial Intelligence (AI), the big data analytics, the Internet of Things (IoT) and the enhanced geographic information systems (GIS), Bangladesh Army will have an alteration of logistical processes in the UN society. These computerized technologies ensure full time visibility, forecasting capabilities and better decision-making in the whole supply chain. These all will be accumulated to form the Integrated Supply Chain Management System (ISCMS) for the better logistical competency. The authority to execute more independently will be enabled in the Bangladesh contingents with the prior help of employee training and proper cyber security measures.

Finally, it is possible to enhance the logistical capabilities and create a path to increase logistical self-sufficiency of the Bangladesh contingents in the UN missions through the digital transformation. This tactical change will also uphold the prestigious role of the efficient peacekeepers of Bangladesh Army in the international peace and security environment.

Recommendations

The following suggestions are made for Bangladesh Army in order to successfully use digital transformation to improve logistics competency and increase logistical self-sufficiency in the UN mission arena:-

Create a Specialized Digital Logistics Innovation Hub: Assign a specific unit or cell to conduct research, development and implement digital logistics solutions. Collaboration between logistics specialists, IT specialists and outside technology partners should be encouraged by this hub.

Make the Investment in an Integrated Logistics Management Platform a Priority: Create or purchase a comprehensive ISCMS that integrates transportation, inventory, warehousing, maintenance and the procurement operations. This platform ought to be scalable, compatible with UN systems and made to function in sterile settings.

Create a Comprehensive, Phased Training Program: Provide a multi-tiered training program for all logistics staff members from field operators to strategic planners. It should include data analytics, cyber-security awareness, digital literacy and the usefulness of newly introduced digital tools.

Establish Strategic Alliances: Collaborate with leading technology firms, academic institutions and world defence units to share expertise and experience; and allow access to their valued military logistics research and development.

Establish Dependable Frameworks for Data Governance and Cyber-Security: Develop specific procedures in the gathering, storage and placement of data assuring the data security and integrity. To ensure security of confidential logistical data, perform routine audits and invest in radical security technologies in the cyber domain.

Review and Adjust Performance on A Regular Basis: Establish a continuous improvement system whereby the performance, efficiency and portage of the digital matchmaking systems is revamped periodically. Have the willingness to change; since the world logistics territory could change drastically introducing new technologies.

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Brief Biography

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Cognitive Reasoning: A Critical Competency in Military Decision-Making in Modern Warfare

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Abstract

Contemporary warfare is characterised by complexity, technology driven multi-domain and asymmetry, posing a unique decision-making challenge for military personnel in combat. Cognitive reasoning is a critical competency required by both leaders and the led to achieve a superior decision-making edge over the fog and friction of the battlefield. The study examines why cognitive reasoning is crucial for effective decision-making in modern warfare and ways that cognitive reasoning can be developed in the military. This study follows a qualitative research approach. The primary data is based on interviews of subject matter experts. The secondary data is collected from sources like books, journal articles, newspaper articles, and websites. The findings of this study suggest that the Observe, Orient, Decide, Action (OODA) Loop theory, which is widely used for effective decision-making processes in combat, primarily relies on the superior cognitive reasoning of an individual. Although modern warfare presents few challenges to decision-making, scenario-based training, experiential learning, technology integration, etc are some ways to enhance cognitive reasoning and make effective decision in combat. Therefore, military personnel need to develop and nurture cognitive reasoning to enhance the mission's success in the evolving landscape of modern warfare.

Keywords: Cognitive Reasoning, OODA Loop Theory, Situational Awareness, Modern Warfare, Decision-making

Introduction

The American Psychological Association referred to 'cognitive' as awareness, conceiving, judging, imagining and problem-solving.[1] Cognitive reasoning in combat is becoming increasingly critical and relevant in the modern complex operational environment. The evolving contemporary warfare has been characterised by complex, technologically driven multi-domain, non-state actors, blurred lines between combatants and non-combatants, and asymmetric warfare posing a unique decision-making challenge for both leaders and led.[2] Thus, superior cognitive competency is foremost critical, which goes beyond both tactical and operational acumen, demanding military men to achieve a human decision-making edge over artificial intelligence (AI) and take ethical decisions under stressful environments.[3]

The importance of cognitive reasoning in quick decision-making in the complex environment is paramount, as decisions in any conflict rely on many interrelated variables.[4] Cognitive reasoning fosters visualizing situations, calculative risks, innovation, and quick decision-making when doctrinal guidelines are insufficient and fog and friction prevail in the battlefield. In

multi-domain warfare, military personnel practicing their decision-making based on cognitive reasoning increases the chances of success in operations, making it most relevant in modern warfare.[5] Recent studies indicate that there is a strong correlation between cognitive reasoning and military personnel's performance of in combat. The studies found that soldiers having higher ability of cognitive reasoning tend to perform better in combat situations.[6]

The OODA theory is one of the famous study models which is used to describe situational awareness, primarily emphasising quick adaptation and cognitive execution. While the contemporary warfare shows reduction of error in combat, cognitive reasoning claims to be a fundamental competency to fill the gap. Historically, cognitive reasoning was always nurtured by great military leaders in different battles and quenched victory by applying it. Considering the above, this paper describes cognitive reasoning and its importance, including its relevance with OODA Loop theory. Thereafter, it analyses the challenges to effective decision-making in modern warfare. Finally, it discusses the ways to develop cognitive reasoning as a competency in this complex warfare environment.

Literature Review

The OODA Loop model, of a legendary USAF pilot and military theorist Colonel John Richard Boyd (1927-1997), is an important theory originating from the military domain that has contributed to multi-disciplinary fields.[7] Boyd's OODA Loop implies that the process of observe, orient, decide, and act is an iterative cycle.[8] The model considered situational adaptation and diversified through four phases in a cycle.[9] The researcher argued that the theory emphasised primarily situational observation rather than acting fast.[10] The OODA Loop is relevant not only in the military but also widely used by people from different sectors.[11]

The model is used in business sector for market advantages.[12] Healthcare sectors use it for quick diagnosis and medical response.[13] The crisis management groups apply this model for disaster and emergency services. Besides, this model is also used in technological integration, aviation, financial trading sports, education, etc.[14] Study suggests that OODA Loop model is deeply connected with the cognitive ability of individuals. Cognitive reasoning is a prerequisite for the successful application of OODA Loop theory.[15] Cognitive reasoning in the military is the intuitive ability of military personnel to assess a situation and take an effective decision on the battlefield

Researchers argued that cognitive reasoning enhances survivability,[16] adaptability,[17] judgement ability[18] and mission success. Cognitive reasoning augmented by technology increases the chance of the right decision and operational effectiveness in modern warfare.[19] Contemporary warfare is evolving with excessive data, frequently changing technologies and ethical decision dilemmas.[20]

The literature available are mostly written by western writers in their context. Although researchers have explained cognitive reasoning in depth, no literature has empirically discussed cognitive reasoning as a critical competency in military decision-making.

Methodology

This research utilises a qualitative research approach to analyse cognitive reasoning in the military. It also followed a descriptive research design to investigate the different characters and facets of a phenomenon.[21] Besides, narrative style is followed.[22] for the content with a view to harmonising and analysing the existing literature.[23] Primary data is gathered through Key Informant interviews (KII) with the subject matter expert and military officer serving in the Bangladesh Army. All the interviewees are interviewed by the author with both standard open-ended structured and unstructured questionnaires. The data collected from interviews is analysed to identify the relevance of cognitive reasoning as a key competency in the military decision-making in modern warfare. Secondary data is organised to identify and retrieve relevant literature. The search is conducted in ERIC, Scopus, and Google Scholar using keywords related to cognitive reasoning, OODA loop theory, situational awareness and decision-making. The result is screened, focusing on important renowned journals such as *Elsevier*, *Taylor & Francis*, *Sage*, *Wiley* and *Emerald* with emphasis on relevant recently published articles. Finally, the relevant papers are evaluated based on theme and data for discussion.

Finding and Discussion

What is Cognitive Reasoning?

Cognitive reasoning in the military is the intuitive ability to assess a complex situation on the battlefield and foster effective decision-making under pressure. In the military, based on context and process, cognitive reasoning is often termed 'military sense.'[24] The concept first evolved from a Prussian general and military theorist Clausewitz's (1780-1831) idea named 'Coup d'oeil,' meaning the quick glance, which was defined as the ability of a commander to visualise the tactical situation promptly. Thus, cognitive reasoning is the mental process that encompasses situational awareness experiential behavioural and adaptive leadership attributes, assisting in effective decision-making on the battlefield.[25] In military history, there are examples where the great military leaders used their intuitive ability and achieved success in the battlefield. In the Battle of Austerlitz fought on 2 December 1805, Napoleon Bonaparte (1769-1821), French general, statesman who rose to become the Emperor of France (1804-1815), demonstrated his cognitive reasoning, analysed the battlefield situation, and took a calculative risk by weakening his right flank to lure the Third Coalition Forces commander to attack. The Third Coalition Force Commander could not resist and attacked as his intuitive mind felt. France's force counter-attacked the Third Coalition Forces and achieved victory.[26] German General during the Second World War, Erwin Rommel (1891-1944), during the Battle of France in 1940, also showcased his cognitive reasoning. He realised that speed and aggressive tactical manoeuvre can compensate for his operational disadvantages. His intuitive decision-making, which named 7th Panzer Division as 'Ghost Division,' significantly contributed to the fight against French resistance.[27] General Giap (1911-2013) institutionalised his cognitive reasoning ability in asymmetric warfare. He understood, in the Battle of Dien Bien Phu in 1954, that only innovative actions can give

an overriding advantage to Vietnamese forces against the French. He demonstrated extraordinary innovation in logistics and operational preparation to sustain a prolonged siege and quench victory.[28]

The OODA Loop Theory

In the mid-1950s, a US Air Force pilot named Colonel John Boyd further developed Clausewitz's concept through his theory named OODA Loop (Observe- Orient- Decide- Act) which is also termed as situational awareness and primarily emphasises fast adaptation and cognitive execution.[29] It is a pragmatic decision-making model.[30] The theory is not only implemented in the military but also contributed to multi-disciplinary fields. The single loop although simple, is an iterative process of completing one loop to multiple loops in the entire decision-making cycle.[31] Boyd created a four-phase model as shown in Figure 1 below:-

Figure-1: The OODA Loop
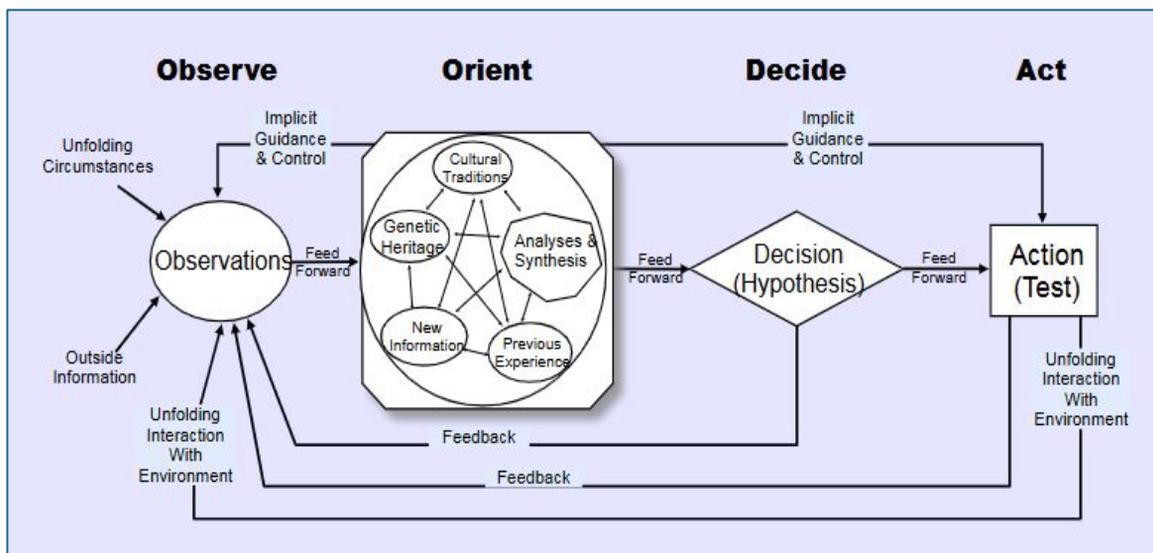
Source: Richards Hughes Jones, *Colonel John Boyd's Thoughts Disruption*, Marine Corps University, 2000.

Observe: The observe phase is about detecting changes in the environment. It is about collecting as much data as possible related to the context within the available time in hand. Situational awareness can be achieved through all means at disposal such as human and technological. The assimilation and quality of information in this phase has significant influence on the success of the subsequent phases.

Orient: The orient phase is about processing the information and data collected in the observe phase. It involves analysing the relevance and importance of the data and how it fits in the context. It also identifies potential opportunities and threats. Thus, a comprehensive understanding of the situation in this phase is vital to make an effective decision.[32]

Decide: The decision is taken based on the evaluation of the orient phase. The choice is distinct, whether to take a decision or pause. This phase involves assessment of risk, resources in hand, and selecting best course of action to achieve the objectives. Failure to take a decision is pointless and action without an effective decision is reckless.[33]

Action: The action phase is to carry out the decision as designed in Decide phase and observe the change due to the action. Since it is an iterative process, the loop again begins with 'Observe' phase as a follow up of the action taken. The after-action change in the environment is further analysed as a product of the next phase.[34]

How Cognitive Reasoning is Linked to OODA Loop

Cognitive reasoning is closely related to the OODA Loop model. The phases of the OODA Loop are primarily based on the quality of the cognitive reasoning ability of individuals Cognitive reasoning not only enables the OODA Loop but also enhances it. It is a pre-requisite for effective implementation of the OODA Loop model. The speed of cognitive reasoning ability will determine the completion of the OODA Loop cycle. It is important to understand that whoever completes the OODA Loop first will get an operational edge over the enemy.[35] Without effective cognitive reasoning, the OODA Loop model will be disrupted.

Dorina Peteva Georgieva, an Economist with the Business Enabling Environment project of the World Bank argued that cognitive reasoning influences each phase of the OODA Loop (Figure-2). The cognitive reasoning in the Observe phase assists in meaningful data collection and discards irrelevant information. In the Orient phase it synthesises, analyses, and evaluates relevant data and creates a context. Speed of data reasoning is predominantly significant in this phase. In the Decide phase, cognitive reasoning prioritises options, identifies alternatives, assesses risk, and finalises the best course of action. The effective decisions will largely depend on the quality and speed of the cognitive reasoning process. Cognitive reasoning, in the Act phase, monitors the micro-adjustment and impact of actions.

Figure-2: Relationship of OODA Loop with Cognitive Reasoning
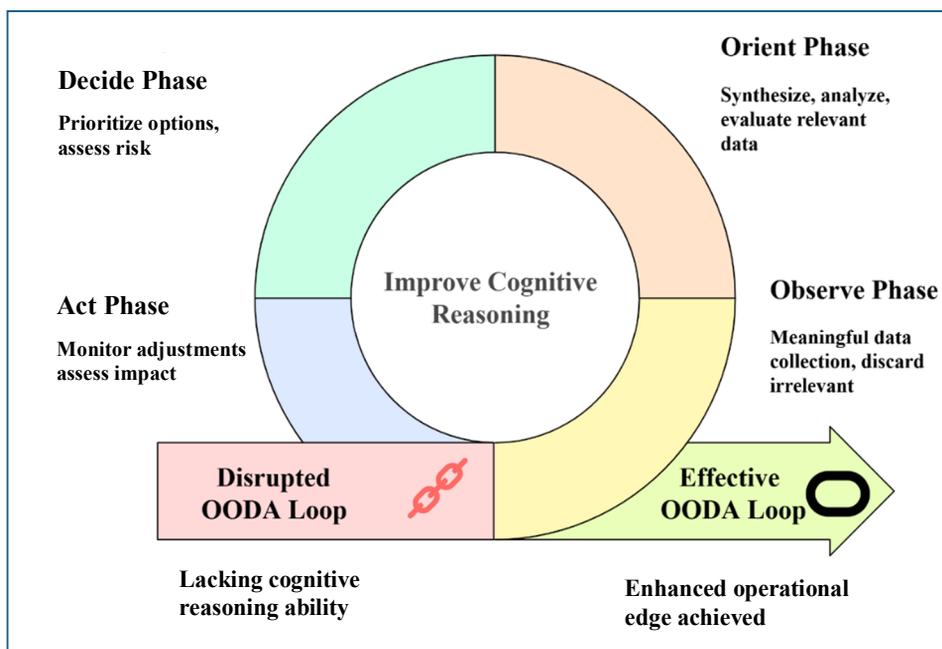
Source: Author's self-construct

Finally, it is needless to emphasise that the effectiveness of the OODA Loop can be seriously hindered by the shortcoming of cognitive ability of humans. Cognitive biases can significantly influence the decision-making process.[36] Besides, the challenges in contemporary warfare remain a critical impediment in the harmonisation between cognitive reasoning and the OODA Loop application in the operational landscape.[37]

Why Cognitive Reasoning is Essential for Military Personnel

Enhances Chance of Survivability in Battlefield: In the complex modern warfare, all military personnel must possess situational awareness and adaptability to adjust to the changing battlefield scenario.[38] Cognitive reasoning improves situational awareness and enhances decision-making faster in stressful situations. Empirical studies highlighted that military personnel with high cognitive reasoning demonstrate superior reflexes, less response time in combat and enhanced mission success.[39]

Decision-Making Under Stress: In combat, quick decision-making is essential for military personnel for mission execution. Cognitive reasoning improves battlefield visualisation, allowing individuals to process information, prioritise threats, and take appropriate decisions at the quickest possible time.[40] The researcher argued that persons with high intuitive competency have a superior ability to manage stress and can make better decisions.

Flexibility and Adaptability: Modern warfare is dynamic, and uncertainty prevails over the length and breadth of the battlefield. Cognitive reasoning facilitates operational flexibility, fostering military personnel to adapt in changing battlefield scenarios. It prevents rigidity and cultivates resilience in asymmetric environments.[41]

Operational Effectiveness: The contemporary warfare is complex and need careful planning for successful conduct of the operations, as expressed by one respondent:

> Modern warfare is multi-dimensional, and technology driven, demanding military personnel acquire more cognitive ability to outsmart technology (KII-01, Date-15/08/2025).

With the growing technological advancement, cognitive oversight is paramount in critical decision-making. Cognitive reasoning allows individuals to synchronise technology with human judgement for effective decision-making.[42]

Mission Success: Cognitive reasoning plays a critical role in mission success in all military operations.[43] It enables situational awareness, critical thinking, communication, adaptation, and effective decision-making.[44] Which facilitates positive mission outcomes.

Challenges to Effective Decision-Making in Contemporary Warfare

Understanding the Complexity of Modern Warfare: Modern warfare is multi-dimensional encompassing land, air, sea, space, and cyber domains. The result is often catastrophic if leaders fail to adapt in the complex environment.[45] One respondent mentioned that-

> The characteristic of modern warfare is changing rapidly and becoming more complex with geopolitical changes, which makes decision-making more difficult for military leaders (KII-02, Date-19/08/2025).

Information Overload: One of the major challenges in contemporary warfare is information overload. The data collection, processing, collating, and implementing the process data for situational awareness. Cognitive reasoning helps to process information into intelligence based on concept, understanding and values. The volume of information often hampers intuitive reasoning and creates cognitive fatigue in the rapidly changing operational environment.

Technological Dilemma: AI, despite many opportunities, has emerged as a challenge in warfare. The rapid advancement of AI in the military has challenged the cognitive and human value in complex warfare. Researchers argue that although AI, cyber and other digital technologies have given substantial advantages in warfare, overreliance may result catastrophe.

Lack of Institutional Training: Institutional training is the base for all basic learning in the military. One respondent mentioned that-

> Institutional training plays a vital role in providing theoretical knowledge but lacks experiential battlefield learning (KII-03, Date-14/08/2025).

Although a wargame provides scope to visualise a battlefield scenario and an opportunity to take decisions depicted situation may not simulate other variables of warfare.

Ethical Considerations: The ethical aspect of decision-making in combat is important but often compromised due to technologies, as expressed by one respondent:

> In the complex warfare era, use of AI-generated lethal technology increases ethical challenges for military personnel (KII-04, Date-17/08/2025).

Collateral damage, humanitarian law, and rules of engagement remain serious ethical questions on the battlefield. Balancing quick decisions and human judgement is paramount in this issue.

Ways to Develop Cognitive Reasoning in the Military

Institutional Training: Institutional training is an important foundation for any military personnel in acquiring knowledge. It is the primary medium of learning fostering theoretical knowledge and scope of reasoning to be nurtured further through practical application on ground. Researcher argued that theoretical foundation acts as a bedrock in developing cognitive reasoning and improving situational awareness.

Scenario Based Training: Scenario based training with wargaming simulates real-time war scenarios, assisting military personnel to visualise the operational landscape. Realistic training through simulation assists in quick decision-making under stressful conditions. KII-02 argued that-

> Scenario based training enhances reflex in the battlefield, evaluation capabilities, and quick decision-making (KII-02, Date-19/08/2025).

Experiential Learning: Experiential learning is the knowledge that an individual gains from his/her experience. Military personnel develop cognitive reasoning through active participation in the first-hand learning process. Experiential learning also promotes intuition, adaptability and judgement.[46]

Mentorship and Knowledge Sharing: Mentorship and knowledge sharing are key instruments for learning and developing cognitive reasoning from senior veterans to juniors.

Veterans can share unique skills and experiences which can provide real-world perspective. They can also guide on adaptability and problem-solving.

Study Military History: It is imperative for military professionals to study and acquire knowledge from leadership attributes of great leaders and the study of different wars. It gives a comprehensive understanding of the complexity of warfare, the importance of adaptability, and quick decision-making. Overall, the study of military history fosters and develops critical and cognitive skills.[47]

Technology Integration: Incorporating technologies can enhance human perception. The use of AI, data, sensor, etc can augment contextual insights and reduce cognitive error. Integration of technology reduces time, human labour, error, collateral damages, and enhances precision. Thus, it substantially increases the efficiency in decision-making and ethical reasoning.[48]

Conclusion

Cognitive reasoning emerges as a core competency in the military with a view to understanding the criticality of contemporary warfare. Since the conflict becomes multi-domain and technologically predominant, it is important to evaluate the situation and take quick decisions under battle stress. In military history, the success of great military leaders was primarily guided by their intuitive nature. Nevertheless, challenges of modern warfare emphasise the need for proper training, learning from experience, knowledge of veterans, and adopting advanced technological advantages to enhance cognitive reasoning so that an effective decision can be taken in the fog of friction of the battlefield. Military personnel should develop and nurture their cognitive ability not only to enhance operational mission success but also to improve survivability and ethical judgement in the evolving landscape of modern warfare.

Scope for Future Research

The research has sufficient scope for future research and exploration. The following research may utilise an empirical approach, use primary data, and conduct quantitative analysis on cognitive training, AI integration and employment of retired army officers as a mentor for professional development.

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Brief Biography

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Crowd Source Intelligence and National Security: Bangladesh Perspective

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Abstract

Crowd Source Intelligence (CSI) has emerged as a distinct complement to traditional intelligence frameworks by integrating Human Intelligence (HUMINT), Open-Source Intelligence (OSINT), and Social Media Intelligence (SOCMINT). This paper ventures to harness the potential of CSI in strengthening Bangladesh's national security amid rising digital connectivity, hybrid threats and public reliance on social media. By taking insights from global experiences-including the United States, United Kingdom, India, Ukraine, Israel, and China, this paper sketches how CSI has been applied in Bangladesh. Bangladesh currently lacks a comprehensive CSI framework, relying instead on fragmented tools such as emergency hotlines, police apps and fact-checking initiatives. Thus, the study proposes a CSI framework, along with its possibilities and challenges, for Bangladesh focusing on border security, counterinsurgency in the Chattogram Hill Tracts, prevention of mob violence and combating propaganda. In doing so, this paper offers recommendations to incept a robust CSI model for Bangladesh by establishing a centralized CSI platform, deploying AI-based validation systems, enacting legal safeguards for anonymity and strengthening public-private partnerships. The findings suggest that, if implemented with accountability and strong governance, CSI can provide Bangladesh with a cost-effective, citizen-inclusive approach to address evolving security threats.

Keywords: Crowd Source Intelligence, Human Intelligence, Open-Source Intelligence, National Security, Digital Connectivity, Hybrid Threats, Propaganda, Legal Safeguards.

Introduction

As digital ecosystems evolve, the concept of Crowd-source Intelligence (CSI) has gained traction as a complementary tool for enhancing national security, and data-driven policy making. The term was first coined by Jeff Howe and Mark Robinson in June 2006 Issue of *Wired* magazine.[1] Of now, crowdsourcing is utilized in many different fields of study and is present in our daily lives.[2] Samuel Hershkovitz proposes a model for the intelligence community of the future called CROWDINT, which stands for "crowd-source intelligence that allows groups of people to collaborate with agencies," with an emphasis on collective data processing.[3] The integration of human intelligence (HUMINT), Open Source Intelligence (OSINT) and social media intelligence (SOCMINT) within the framework of CSI has notably increased the quantity of available sources for investigations, while simultaneously reducing the time and costs associated with collecting information and evidence.[4]

In the 21st-century era of hybrid conflicts, the security sector is increasingly concentrating on the potential of cyberspace, particularly in areas such as information warfare.

This involves manipulating public opinion, creating misleading information to deceive adversaries and executing intelligence and information-gathering activities related to cyberspace.[5] CSI is a scalable and cost-effective technique for acquiring intelligence in countries dealing with border conflicts, insurgency and civil unrest, especially in distant or hazardous areas. It enhances early warning systems and government's ability to respond quickly to security threats by leveraging social media and mobile devices. Therefore, CSI, a timely tool to address hybrid conflict, aggregates and analyzes real-time data from public platforms, citizen reports, and digital footprints using open-source tools and other collaborative frameworks. In 2004, it was estimated that more than 80% of the intelligence database originated from open sources.[6] Nevertheless, the percentage has increased as a result of the substantial increase in social media consumers since 2004. In this context, CSI has emerged as a hub of information and communication technology at the individual level, effectively facilitating the utilization of knowledge and experience for national security purposes, in conjunction with the growing influence of digital media. Countries have also begun to utilize it according to their security requirements. CSI is applied in the US military trials to gather signal intelligence and UK security establishment started utilizing it. China and India used it for community safety and internal security. Ukraine utilized it to track enemy activity in conflict zones, while Israel used it for geopolitical simulations to enhance national security.

Against this backdrop, this paper evaluates the potential of CSI as a distinct and cross method of intelligence to address the pressing security concerns in Bangladesh. In doing so, it identifies collective intelligence projects and inadequacies, and propose a conceptual progress that combines collective intelligence. The analysis will focus on relevant social media legislation and then demonstrate how CSI is used to protect Bangladesh's land borders with India and Myanmar, fight insurgency in the Chattogram Hill Tracts, and prevent mob violence and hate speech. In countries like Bangladesh, where internet usage and social media engagement are rapidly increasing, the potential for leveraging crowd-sourced data to inform government decision-making, monitor emerging threats, and support public safety is significant. Finally, this paper outlines a framework for using CSI to meet Bangladesh's national security needs. The focus of the study is limited to examining the security-related aspects of CSI within the security context of Bangladesh, excluding non-security areas.

The Foundations of CSI

OSINT has traditionally been complemented by informal networks of engaged citizens that have concentrated on investigations, such as neighborhood watch initiatives and public solicitations for information during criminal cases. In this context, crowd source intelligence has evolved from two investigative toolkits, which are human intelligence and social media intelligence.

Human Intelligence: A key component of CSI is human intelligence. In contrast to HUMINT, which relies solely on gathering intelligence from human sources

(such as informants, whistleblowers), CSI deploys the volunteers to play the role of informants, who share confidential information through online communities, encrypted platforms, and social media. The motivations of those volunteers include compassion, economic benefits, ideological motivations etc.[7] Technically, it is known as the 'Wisdom of Crowds' in the field of collective security theory.

Social Media Intelligence: With the rise of crowdsourced investigations on platforms like Reddit, 'X' (Twitter), Discord, and Bluesky, SOCMINT has become increasingly important. Social media is a two-edged sword: on the one hand, it may be used to gather intelligence by tracking the geolocation of images and keeping tabs on disinformation campaigns; on the other, it can cause problems with privacy, misunderstanding, and ethics. Online communities and platforms have evolved into a formidable distributed problem-solving capability because of SOCMINT.[8]

Key Characteristics and Distinctions of CSI

Gustave Le Bon (1841-1931), a French social psychologist argued that the essential element of CSI is the crowd itself, which operates as an independent entity. It exhibited individuality and autonomy, often acting in ways that were unexpected by the audience.[9] CSI employs collective intelligence, which involves shared knowledge and skills of multiple individuals working together towards a common informational goal.[10] Dr. Shay Hershkovitz identifies eight technologies critical for the transformation of contemporary intelligence: Internet of Things (IoT), 5G, big data, cloud computing, artificial intelligence (AI), blockchain, quantum computing, and crowd sourcing, the latter of which he notes is not strictly a technology.[11]

Crowdsourcing involves the collection of information, opinions, or work from a distributed group of individuals, relying on citizen participation. It offers diverse perspectives that exceed traditional institutional bureaucracy. OSINT gathers publicly available data from sources including news articles, scholarly publications, and official websites, without requiring direct public input. OSINT is characterized by its passive nature, depending on pre-existing content, while CSI is dynamic and involves active participation.[12] This approach allows intelligence agencies to analyze large volumes of publicly available data and solicit investigations.[13]

Conceptual Framework: Collective Intelligence Theory

This study highlights the concept of 'collective intelligence,' referring to the shared knowledge and skills possessed by members of a group. Collective intelligence necessitates cooperation and task-sharing among individuals to attain a common objective. This study draws on foreign evidence to illustrate this principle, demonstrating that crowdsourcing enhances national security by involving the public in data collection and analysis. Diverse groups are more effective at problem-solving due to the integration of varied perspectives, as demonstrated by Scott Page.[14] However, digital platforms provide significant benefits in data collection via an

independent digital system. Local knowledge enhances situational awareness during security events, thereby decreasing response time. This method of participatory data gathering embodies the collective security goals of shared accountability and enhanced threat management.[15]

The theoretical implications of collective intelligence can be analyzed through the case of the US submarine Scorpion, which was lost in May 1968. It is the people whose assumed data helped the authority to find the submarine. This scenario exemplifies the concept of the 'wisdom of crowds,' which posits that diverse, independent evaluations can yield remarkably precise outcomes, even in conditions characterized by uncertainty or limited data.[16]

CSI exemplifies the effective use of collective wisdom, leveraging diverse perspectives and decentralized contributions to generate significant insights to enhance situational awareness and decision-making in security contexts.[17] Crowd-sourcing conceptualizes intelligence as distributed, leveraging human insights and digital resources to efficiently tackle complex security challenges.[18]

Global Case Studies of CSI Model

The United States exhibits sophisticated CSI models, exemplified by IARPA's ACE program, which employs soldier-developed applications to improve signals intelligence (SIGINT) in military trials.[19] The Policy Lab in the UK utilizes collective intelligence to collaboratively develop security policies. India employs CSI through community policing technologies, such as the Citizen COP application, which enables individuals to report crimes and suspicious activities directly to law enforcement authorities. Ukraine utilizes CSI for monitoring combat zones, Israel applies it for geopolitical simulations and China implements to ensure the internal security of the state.

United Kingdom (Bellingcat – Global Impact with UK Origins): Bellingcat, a prominent crowdsourced organization established by Eliot Higgins in 2014, employs open data to investigate major events. An example is the MH17 inquiry, which utilized social media, satellite imagery and open-source research to establish a connection between the missile system and a Russian military unit.

United States (Capitol Riots, 2021): Following January 6, 2021 Capitol riots, online communities and private investigators utilized public footage, social media, and facial recognition technology to identify participants. This collaboration supported law enforcement agencies and highlighted the efficiency of crowdsourced intelligence.[20]

Israel (Crowdsourced Navigation App 'Waze'): The Waze program in Israel, maintained by volunteers, inadvertently displayed the locations of military bases, patrol routes and images of installations. Fake Reporter, a crowdsourcing organization, identified vulnerability in Strava that enabled individuals to track troop movements within confidential facilities. This was a leak that intelligence agencies missed.[21]

India (CitizenCOP mobile app): The CitizenCOP mobile application in India enables individuals to submit crime reports, including photographic, video, and CCTV evidence, to law enforcement while maintaining anonymity. This fosters community-driven information and significantly enhances situational awareness.[22] Safetipin and similar platforms that aggregate public perceptions of safety in urban spaces, particularly for women, contribute to urban planning and law enforcement strategies.

Ukraine (e-Enemy, Bellingcat, and InformNapalm): In Ukraine, crowdsourced intelligence tools such as the 'e-Enemy' app and volunteer OSINT networks like Bellingcat and InformNapalm facilitate citizen submissions of geotagged reports and verification of enemy troop movements. These efforts enhance real-time warzone surveillance, document atrocities and support accountability initiatives. These systems utilize social media posts, satellite imagery and public tips to monitor activities at the ground level. Their achievement demonstrates the potential for civic engagement and technology to enhance national defence and promote global openness.

China (Golden Shield and grid-style social management): China employs public reporting, neighbourhood surveillance and web monitoring to integrate open-source intelligence with crime scene investigation methodologies for internal security purposes. The Golden Shield and grid-style social management employ community watchers to establish a nationwide intelligence network aimed at monitoring activities at the micro level and maintaining stability.[23] These narratives exemplify the dual nature of CSI, wherein civilian networks can both gather vital signals and inadvertently disclose sensitive information.

Current Landscape in Bangladesh

Bangladesh has not developed any formal platform of crowd source intelligence yet. However, there are some platforms that serve as a medium for collecting crowd data, thereby developing a bridge between agencies and citizens and addressing security concerns.

Existing Crowd-based Information-Sharing Mechanisms: The 999 hotline and its associated app (Police Emergency, Ministry of Home Affairs), along with 'Hello Dhaka' (Dhaka Metropolitan Police) and 'Hello CMP' (Chattogram Metropolitan Police), facilitate the reporting of crimes, accidents and safety concerns within local communities. The collected data is utilized solely for dispatch and emergency response, lacking a centralized method for threat analysis or evaluation.

Civil-Society and Private-Sector Initiatives in Crowdsourced Reporting: Numerous digital civil society platforms serve as semi-platforms for crowdsourcing information. A limited number of groups examine the security issues associated with digital media. Independent organizations such as Decoders Lab, Disinfo Lab, BD Fact

Check and Fact Watch employ open-source research techniques to identify potentially fake or misleading information on social media. Rumor Scanner actively monitors and refutes false information in real time. However, these initiatives are not systematically integrated into the national intelligence framework.

Figure-1: Reasons that Stopped People from Reporting in the Past
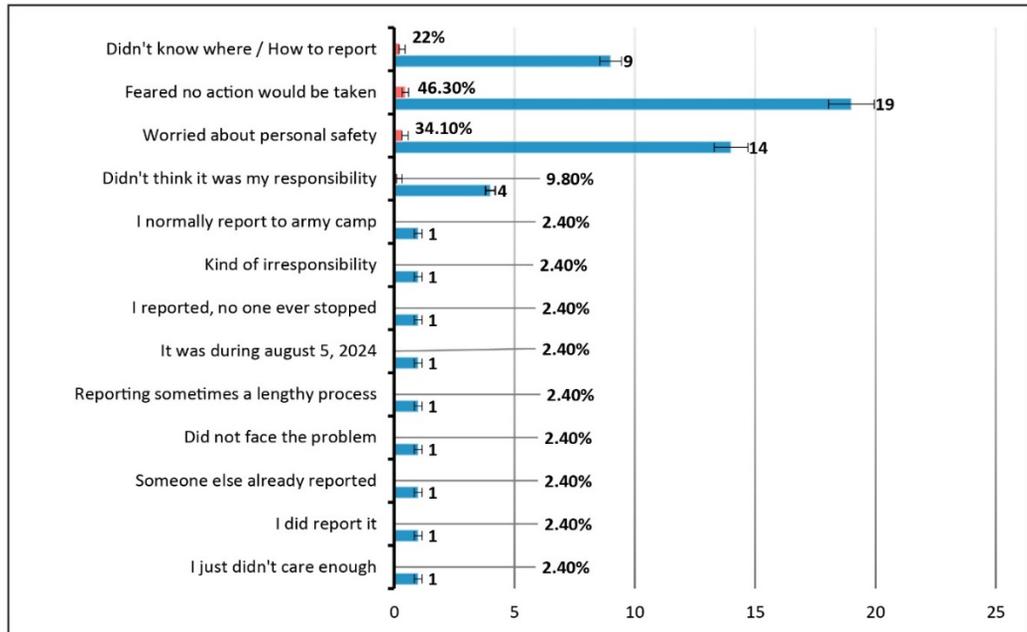
Source: Author's self-construct

The survey indicated that the primary reasons individuals refrain from reporting incidents to law enforcement include a lack of trust in the follow-up process (46.3%), concerns regarding personal safety (34.1%), and uncertainty about the reporting procedure (22%). This underscores deficiencies in public awareness and institutional responsiveness. A minor proportion of respondents (2.4%) expressed indifference or confirmed the effective dissemination of information to pertinent agencies, indicating that individuals are generally inclined to participate if institutional capacity is adequately strong to support citizens.

Role of Social Media Platform in Critical Security Situations: The majority of respondents indicated that they utilized Facebook, often in conjunction with Messenger and WhatsApp, to receive news and alerts pertaining to their neighborhood. Meta controls the leading platforms for communication; however, a subset of users also engages with Instagram, Telegram, Reddit, YouTube, X and Discord. The study indicates that individuals utilize various platforms; however, Facebook remains the most popular.

Crowdsourced reporting systems in Bangladesh should collaborate with Facebook and WhatsApp in the future to enhance usability and promote widespread participation. Key Indicators/Variables:

Independent: Trust in social media (platform use, prior reporting, perceived threat).

Dependent: Willingness to act (willingness to report, perceived effectiveness).

Descriptive analysis indicates that individuals who are more inclined to report security issues also tend to favor peer review approaches. 16.7% of respondents who supported peer review indicated a high likelihood of reporting events, while 44.4% expressed a moderate likelihood of doing so. It is notable that 50% of strong supporters exhibited a high inclination to report. The comments were largely inconsequential and the lack of dissenting voices hindered the ability to achieve a clear understanding. Individuals with greater trust in peer review are more likely to report, suggesting that participatory trust and shared responsibility may encourage action in security contexts.

CSI Framework: A Pilot Scenario for Bangladesh

Crowd Source Intelligence (CSI) is now a timely need for Bangladesh. In a rapidly urbanizing and socially dynamic country like Bangladesh, crowd-sourced inputs can provide early warnings for unrest, improve disaster response coordination, and support informed policymaking. The need for such a system has become even more urgent, given the rise in cyber threats, misinformation, and public safety incidents associated with digital platforms. The August 5, 2024, student uprising is a clear example of how the government failed to utilize cross-intelligence effectively. Despite rising online activity—protest hashtags, student posts and group messages-authorities ignored early warning signs. No effort was made to cross-verify social media data with field reports. As a result, simultaneous protests erupted across major cities, catching security forces off guard. If CSI had been in place, early detection of unrest could have led to dialogue and prevention. This failure highlights the need for a real-time, citizen-inclusive intelligence system.[24]

Early Warning for the Border Zone (India–Myanmar Frontiers): Bangladesh is encountering increased risks at its border with Myanmar due to Myanmar civil war, insurgent control, trafficking syndicates, and incidents of kidnapping. The border with India is strained due to smuggling, push-ins and border killings. This necessitates immediate and coordinated security measures. When correctly designed and confirmed, crowd-sourced mapping can improve patrol planning and resource allocation. Citizens' real-time geospatial data can help authorities identify high-risk zones, monitor flashpoints and deploy security personnel.

Combating Insurgency in the Chattogram Hill Tracts: The ongoing insurgency in the Chattogram Hill Tracts remains a critical concern due to persistent violence, arms trafficking, and conflicts between various factions, particularly insurgent and separatist groups, which threaten regional stability and border security. The data related to sensitive security issues can be integrated with GIS platforms and law enforcement systems to inform data-driven patrol routes and adaptive security measures.[25] This will advance the crowd source mechanism.

Figure-2: People's Response to The Effectiveness of Mapping Sensitive Areas by Collecting Information to Meaningfully Informed Patrol Planning
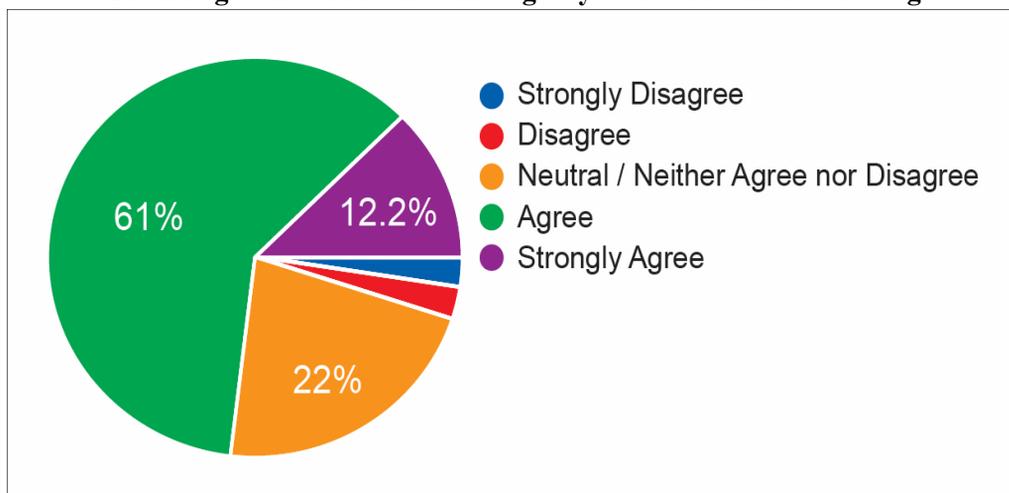
Source: Author's self-construct

A majority of respondents believe that collecting information from the general public to identify sensitive locations, often referred to as insurgent hideouts, can enhance the effectiveness of patrol planning.

Early Warning for Hate Speech and Mob Violence: Early warning systems are essential to prevent escalation and protect vulnerable populations in Bangladesh, where online hate speech is contributing to sectarian conflict and rural mob violence. An early warning interface can employ citizen report widgets and social media monitoring to issue proactive alerts. These systems must protect against malicious reporting, maintain source confidentiality, and conform to national security norms. The safe and effective operationalization of these findings requires AI and cross-agency verification at multiple levels.[26]

Countering Propaganda and Misinformation: Bangladesh requires coordinated initiatives for digital literacy and the implementation of real-time content monitoring tools, as misinformation and politically motivated propaganda disseminate rapidly on social media, frequently leading to unrest and undermining public trust. An

effective crowdsourced intelligence system should employ AI for content scanning and utilize a network of trained volunteers to verify facts in real time, thereby combating propaganda and misinformation. To ensure the accuracy of the information, peer validation and reputation rating should be employed. Anonymous reporting mechanisms are essential for ensuring user safety. Corrections should be disseminated promptly on the same platforms where misleading information is prevalent. Geo-tagged data facilitates the identification of hotspots for targeted interventions. Engaging local influencers and providing authorities with real-time dashboards would enhance collaboration and improve response effectiveness, thereby maintaining trust and social cohesion.

Legal and Institutional Challenges for CSI

CSI is a complex structural mechanism that is quite difficult to implement. In this process, policymakers encounter challenges related to the legal and institutional framework.

Accountability, Ethics and Privacy Safeguards: Citizens may be reluctant to engage with government-led CSI platforms due to concerns about potential repercussions for expressing their opinions. This reluctance is evident in the respondents' inclination to disclose: 24.4% indicated a high likelihood of reporting security issues, while 31.6% expressed a moderate likelihood. Additionally, 31.75% remained neutral, and 7.3% were unlikely to report such issues (Figure 3). This neutrality reflects uncertainty regarding outcomes and a cautious approach to engagement.

Figure-3: How likely are Security Issues (e.g. Suspicious Activity, Disaster) to be Reported
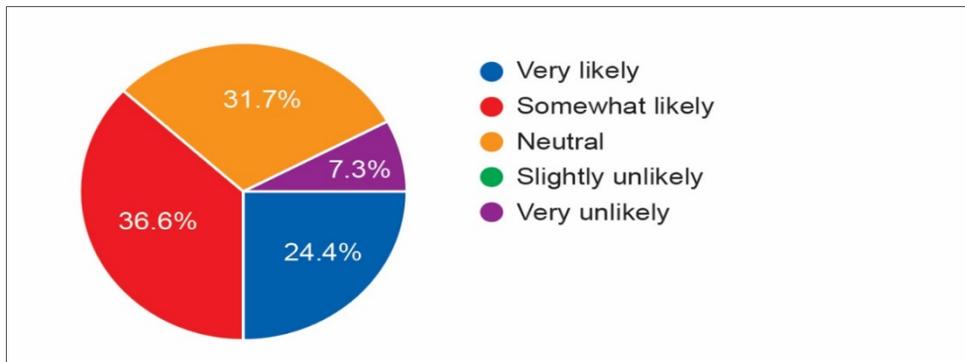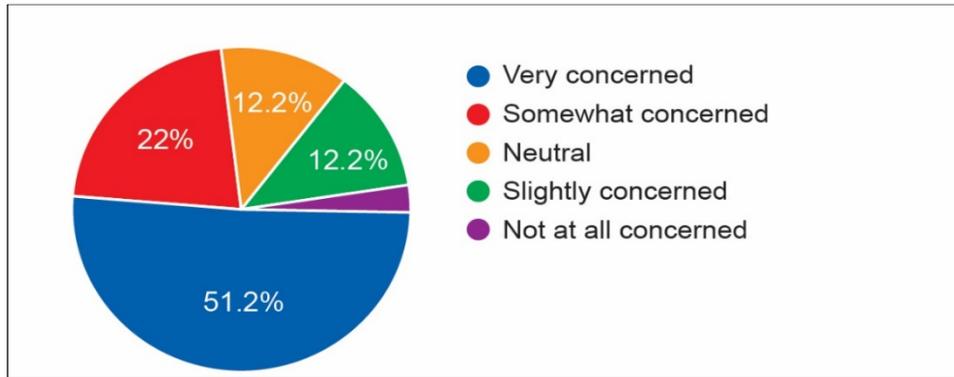

Source: Author's self-construct

Individuals exercise caution due to concerns regarding the utilization of their information. Over half of the respondents (51.2%) expressed significant anxiety regarding the use of their personal data, while 22% reported moderate concern. A mere 2.4% exhibited no concern (Figure 4). This issue pertains more to the perceived risks associated with providing assistance than to the desire to help itself. The concerns extend

beyond privacy to encompass apprehensions regarding political repercussions, potential misuse of information and ambiguous accountability.

Figure-4: The Concern of Citizens about Personal Information Being Shared When Reporting an Incident

Source: Author's self-construct

In response to inquiries regarding identity disclosure, 68.3% of participants favoured complete anonymity in reporting, 29.3% accepted limited disclosure to platform managers, while merely 2.4% consented to public identification (Figure-5). Figure 3 differs from Figure-2 in that it illustrates a design expectation: users prefer systems that incorporate anonymity as a default feature rather than merely a promised precaution.

Figure-5: Respondents' Preferences to Report Security-Related Incidents
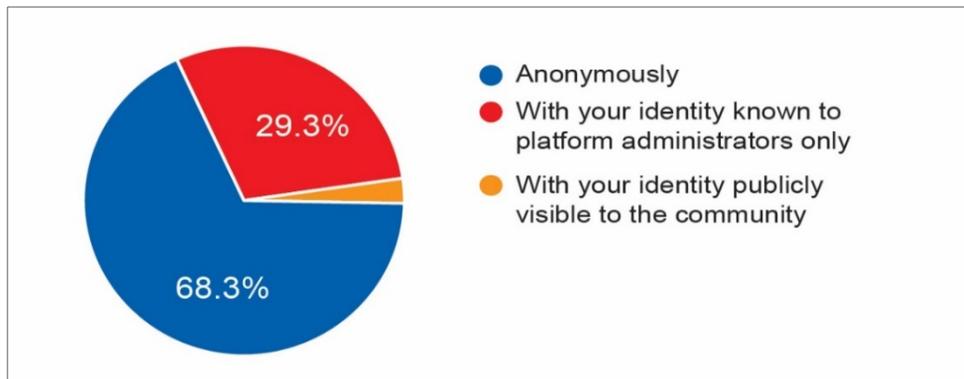
Source: Author's self-construct

The CSI system must handle the complexities of censorship politics while safeguarding the anonymity of volunteers and the security of their data.

Lack of Institutional Capacity and Coordination: Crowd-Source Intelligence (CSI) presents significant potential for national security; however, it also faces substantial challenges that must be addressed. Trust deficits and inter-agency competition often lead to the neglect of public input. Lack of trust in the law enforcement agencies and the concerns of private safety diminishes public engagement. Unlike developed countries, Bangladesh lacks in terms of Capacity and infrastructural development. Analysts must acquire proficiency in CSI and AI technologies, while contributors may lack technological expertise.[27]

Policy Recommendations

Trust is a significant factor in motivating individuals to fulfill their roles within a group. When individuals have confidence in others and believe that authorities will allocate resources judiciously and equitably, they are more likely to engage in responsible behaviour. When individuals can report without fear, they provide valuable insights regarding their communities that conventional intelligence often overlooks. This enhances system efficiency and broadens its reach. In Bangladesh, the rise of digital literacy coincides with a lack of trust in institutions. Therefore, contributors must understand the impact of their work. Feedback loops enhance motivation and foster a sense of responsibility toward the community. Furthermore, cautions that the presence of false information or customized content may overwhelm the system. It is essential to conduct thorough evaluations; however, excessive filtering may deter individuals willing to assist.

Maintaining data integrity and active participation requires a balanced approach that incorporates effective validation tools and equitable, user-friendly processes. Implementing CSI in Bangladesh requires specific policy measures.

Establishing a National CSI Platform: The government can leverage crowd-sourced intelligence to boost situational awareness and emergency response. A centralized unit under the Ministry of Defence/Home Affairs/ICT should coordinate efforts. A pilot scenario can start in high-risk areas to test reporting tools and refine the system before nationwide rollout. This unit should:

(1) Standardize data collection and validation frameworks.

(2) Integrate AI/ML tools to filter credible inputs.

(3) Ensure inter-agency data interoperability.

(4) Establish legal and ethical guidelines for citizen data use.

(5) Provide training and technical support across government entities.

(6) A strong central authority is essential for governance, data quality, privacy and operationalize insights across relevant ministries (e.g., Home Affairs, Health, Disaster Management).

However, if under the ICT division, this structure can face functional issues. There must be a separate body like NTMC.

Figure-6: Respondents' Insights on How A Well-Designed Mobile or Web Platform Could Collect Real-Time Reports of Security Incidents
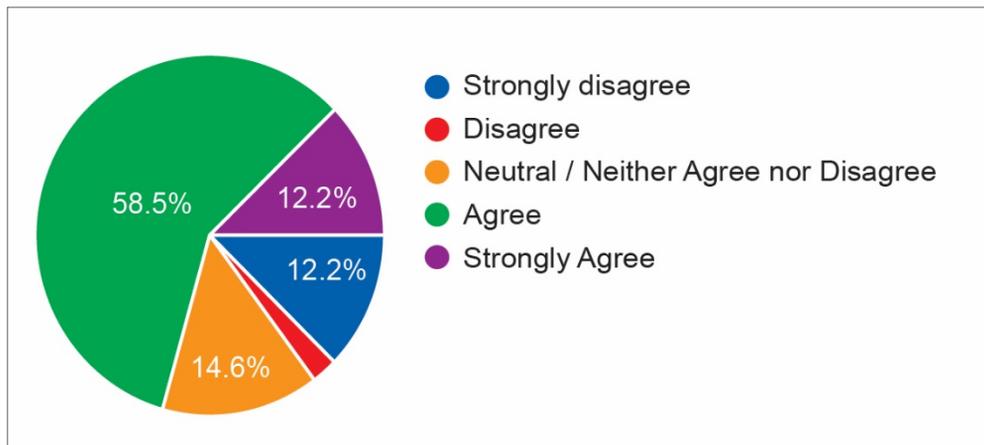
Source: Author's self-construct

Many individuals believe that a well-designed mobile or web application can effectively gather real-time reports of security concerns such as border breaches and civil disturbances (Figure-6).

The government should mandate the establishment of a secure digital platform, or a consortium of interoperable platforms, for crowd reporting. Enhancing anonymous messaging may be facilitated through collaborations with telecommunications companies and blockchain initiatives.

Safeguards and Legal Clarifications: Policymakers must clarify that involvement in CSI will not result in arbitrary DSA/CSA actions against the volunteer. Legal protections, similar to regulations for civilian witnesses in certain countries, may be established to ensure that legitimate intelligence sharing is not subject to penalties. Simultaneously, CSI is required to adhere to stringent privacy regulations to ensure the security of the data it gathers.

Filtering Social Media Analytics: Social media platforms can be rich sources of real-time public sentiment and incident reporting, but they are also vulnerable to misinformation, bot activity, and echo chambers. To extract credible information, advanced tools such as NLP-based sentiment analysis, bot detection algorithms, and

cross-verification mechanisms (e.g., triangulating with geolocation, timestamps and multiple sources) must be employed.

Education and Training: Law enforcement agencies and analysts must acquire proficiency in crowdsourcing methods. The government may collaborate with international partners such as the US IARPA or the UK's Metropolitan Police to conduct seminars, workshops and symposiums aimed at educating officers on the application of CSI. Public education holds significant importance. Individuals within communities must comprehend the importance of maintaining personal security and disseminating essential information.

Figure-7: Respondents' Preferences for Training Materials for Enhancing Crowd Intelligence Capabilities
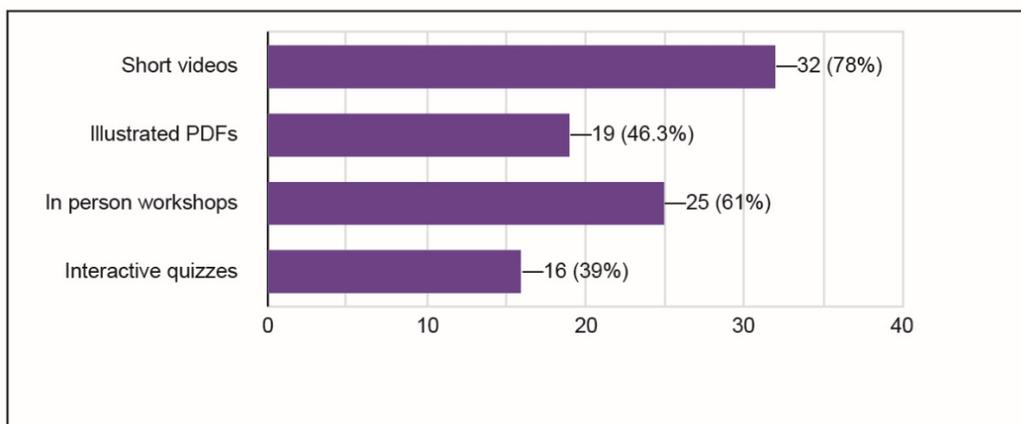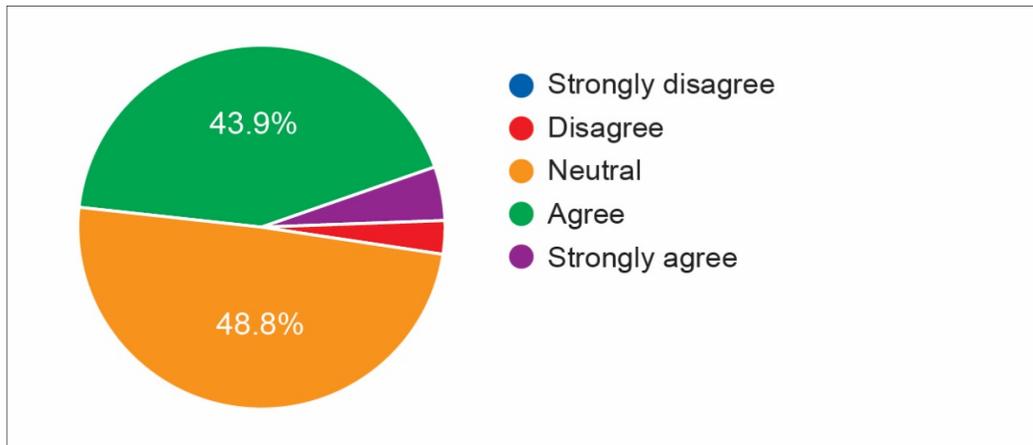

Source: Author's self-construct

Survey findings indicate that 78% of participants preferred short videos, followed by in-person seminars at 61% and illustrated PDFs at 46.3%. Interactive quizzes received the lowest preference at 39% (Figure 7). A mixed training approach that incorporates brief videos, hands-on workshops and printable guides is optimal for assisting users in navigating and contributing to a crowdsourced intelligence system.

Public-Private Collaborations: The technology sector and academic institutions in Bangladesh can collaborate effectively to drive innovation and growth. Technology-focused universities may collaborate to develop AI filters for the CSI platform. The government should collaborate with entrepreneurs to develop open-source intelligence tools, utilizing frameworks such as Kaggle competitions to address public policy challenges. International partnerships, including collaborations with the UNDP, GSMA, or proficient governments in CSI, could provide assistance with financial and technical challenges.

Potential Role of Citizens to Fight against Cyber Threats: Respondents have preferred to participate in a peer-review step online before the data is passed to security agencies (Figure 8). Citizens play a frontline role in cyber resilience.

Figure-8: Respondents' Preference to Participate In a Peer-Review Step Online Before Data Is Passed to Security Agencies

Source: Author's self-construct

Their responsibilities include the following:-

(1) Reporting phishing attempts, scams and suspicious activity to relevant authorities.

(2) Participating in digital literacy programs and peer education.

(3) Avoiding the spread of unverified content online.

(4) Collaborating in crowd-sourced cyber threat reporting platforms.

Additionally, citizen watchdog groups and ethical hacker communities can help identify vulnerabilities and support awareness campaigns. Ultimately, national cybersecurity must be a collective effort in which the government, the private sector, and citizens each have a defined role.[28] Citizen participation through CSI is only possible in an environment where people are literate and aware. However, one is prone to being 'hyped' and jumping to conclusions without thinking. So, a more 'mature' approach should be taken.

Conclusion

This study demonstrates that CSI offers Bangladesh a timely, scalable, and citizen-centric approach to strengthening national security. By examining its theoretical foundations, global applications, and the country's existing digital landscape, the paper shows that CSI can significantly enhance early-warning mechanisms, border surveillance, insurgency monitoring, and the prevention of hate speech and mob violence. The analysis highlights how collective intelligence—when supported by digital platforms, social media insights, and participatory reporting—can provide real-time situational awareness that traditional intelligence structures often miss.

However, harnessing CSI effectively requires addressing legal, institutional, and trust-related challenges. Citizens must be assured of anonymity, data protection, and freedom from punitive action, while agencies must strengthen coordination, analytical capacity, and technological capability. The recommended national CSI framework, supported by AI-driven verification, inter-agency interoperability and public-private collaboration, provides a practical path forward. Ultimately, CSI presents Bangladesh with an innovative opportunity to involve citizens as partners in national security, modernize intelligence practices and build a resilient system capable of responding swiftly to emerging threats. By utilizing contemporary analytics and engaging the populace, the findings suggest that CSI offers Bangladesh an innovative and distinct approach for the security forces of Bangladesh to enhance national security of Bangladesh.

This paper outlines the principles and application of CSI, examines international case studies and the adaptation of CSI to the legal and security framework of Bangladesh, addressing issues such as insurgent mapping, border surveillance and the mitigation of mob violence, accompanied by detailed policy recommendations and an implementation plan. By utilizing contemporary analytics and engaging the populace, the findings suggest that CSI offers Bangladesh an innovative and distinct approach for the security forces of Bangladesh to enhance national security of Bangladesh.

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Brief Biography

Lieutenant Colonel Md Hafiz Al Asad, afwc, psc was commissioned with 49th BMA Long Course on 24 December 2003 in the Corps of Signals. He has held several staff appointments within Signal Battalions and has served as both a General Staff Officer-I and General Staff Officer-II at Army Headquarters across three distinct tenures. Additionally, he has commanded a field signal unit. He obtained a Bachelor of Science degree in Electrical, Electronic and Communication Engineering (EECE) from the Military Institute of Science and Technology, where he is currently pursuing a Master's degree. He is a graduate of the Defence Services Command and Staff College, Mirpur and completed the prestigious Armed Forces War Course in 2022 at the National Defence College, Mirpur. Wearing 'Blue Helmet' he served as Signal Platoon Commander in the UN Mission in Liberia (UNMIL) and also as Staff Officer Operations and Plan in U6 Branch at Force Headquarters in UN Multidimensional Integrated Stabilization Mission in Mali (MINUSMA). Currently, he is serving as an Additional Director at the National Security Intelligence.

Professional Military Education in Bangladesh Army: Aligning with Emerging Strategic Realities

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Abstract

This study examines Professional Military Education (PME)'s effectiveness in the Bangladesh Army, concentrating on the influence of Curriculum Alignment (CA) and Instructional Quality and Methods (IQM) on educational outcomes. Hybrid warfare, cyber threats and instability in the region are some new security challenges and for these the Bangladesh Army needs PME that trains officers to think strategically and move through complex operational sceneries. This study used Strategic Human Capital Theory (SHCT) to examine the Strategic Thinking Competency (STC)'s mediating role in the relationship between educational design and Effectiveness of PME (EPME). A purposeful sampling strategy was employed and through structured questionnaires, data were collected from 212 officers, including Majors, Lieutenant Colonels and Colonels. Data analysis showed that both CA and IQM significantly enhance EPME, both directly and indirectly through STC. This confirms that officers' strategic thinking mediates the relationship between educational inputs and outcomes. All five hypotheses have been tested, generated positive results and highlighted the critical importance of curriculum design and teaching quality in enhancing PME effectiveness. The results show that adding experiential learning, scenario-based exercises and relevant operational information can make officers more equipped. The study concludes that systematic curriculum reformation and the adoption of interactive methods are essential for developing strategically competent military leaders, providing both theoretical insights into SHCT and practical recommendations for military education policy and practice in Bangladesh.

Keywords: *Curriculum Alignment, Instructional Quality and Methods, Strategic Thinking Competency, Effectiveness of Professional Military Education.*

Introduction

Professional Military Education (PME) is crucial for armed forces worldwide due to changing geopolitics, new combat technologies, and cross-border security concerns. Bangladesh is situated in the strategic confluence of South and Southeast Asia; hence it is imperative for Bangladesh Army to adapt PME to emerging strategic realities. Only a modern, forward-thinking education system can provide the inter-agency coordination, strategic vision, and cognitive agility needed on today's battlefield, which is quite different from traditional warfare. Despite modest upgrades, the Bangladesh Army's PME system still falls short of what is needed in today's complex operating environment. This emphasizes the importance of studying how PME educates officers to manage current and future security threats.

Most PME literature focuses on the US, UK and NATO.[1] PME evolve in reaction to irregular warfare, cyber operations and hybrid threats, as shown by this research. South Asian

contexts are little understood, and Bangladesh has little thorough academic research on PME. Few studies focus on training methods and ideology, but they neglect educational foundations, curriculum relevance and strategic alignment.[2]

According to Strategic Human Capital Theory (SHCT), training and education determine long-term institutional performance.[3] This research defines PME as a strategic function. The Bangladesh Army, which is increasingly involved in peacekeeping, disaster relief, and insurgency, relies on SHCT. The study uses strategic thinking competency as a mediator to explore how instructional methods and curricular alignment affect Effectiveness of PME (EPME).

Problem Statement

Academic and practical shortcomings plague the Bangladesh Army's Professional Military Education (PME). Limited PME studies focus on a specific location in Bangladesh. Existing curriculum and pedagogical methods fail to handle cyber threats, hybrid warfare and complex operational contexts, indicating an operational-strategic imbalance. SHCT states that education and training should teach higher-order abilities to enable institutions handle unpredictable situations. However, Bangladesh Army PME has not yet developed modern conflict leadership and strategic thinking skills. Thus, this research seeks to evaluate and adjust PME by examining how instructional quality and curriculum promote strategic thinking.

Research Gap

The majority of current PME scholarships stem from Western military traditions, specifically under NATO, U.S. and U.K. frameworks. Although these studies provide insights into hybrid warfare, cyber operations and irregular threats, their applicability to South Asia is constrained. In Bangladesh, research on PME is limited and frequently restricted to training methodologies or doctrines, neglecting curriculum relevance, pedagogy and strategic cognition.

There is a deficiency of empirical studies regarding officers' assessments of PME effectiveness, and insufficient focus has been directed towards curriculum alignment, instructional quality, or the mediating role of strategic thinking. The moderating influence of operating expertise has yet to be investigated. This study aims to address these deficiencies by delivering an evidence-based evaluation of PME within the Bangladesh Army, anchored in SHCT and aimed at policy-relevant improvements.

Rationale of the Study

This study holds significance from both an academic and practical perspective. Utilizing SHCT in a South Asian, non-Western defense setting effectively addresses a gap in the literature influenced by Western PME models. It offers direction for the Bangladesh Army, which requires effective PME to meet its expanding responsibilities in regional security, joint exercises, and peacekeeping. The objective of the study is to enhance officers' strategic foresight and preparedness for twenty-first-century security challenges by identifying deficiencies and proposing modifications.

Research Questions

Primary Research Question

To what extent is the Professional Military Education system in the Bangladesh Army aligned with the emerging strategic realities of the contemporary security environment?

Secondary Research Questions

- How does curriculum alignment and instructional quality and methods influence the EPME among officers in the Bangladesh Army?

- Does strategic thinking competency mediate the relationship between instructional methods and the EPME?

Research Objectives

Broad Objective

To explore and evaluate the EPME in the Bangladesh Army in relation to emerging strategic realities and recommend reformation to align PME with contemporary operational and strategic demands.

Specific Objectives

- To examine the impact of curriculum alignment and instructional quality and methods on the effectiveness of PME in the Bangladesh Army.

- To investigate the mediating role of strategic thinking competency in the relationship between instructional quality and methods and PME effectiveness.

Literature Review and Development of Concept

Curriculum Alignment with Strategic Needs

Curriculum Alignment (CA) is how well military education programs anticipate and address geopolitical shifts, hybrid warfare, and regional challenges. Misaligned curriculum creates a gap between academic education and practical needs, while integrated cyber warfare, diplomacy, and joint-force doctrines promote strategic decision-making.[4] Foresight-promoting adaptive frameworks improve officer readiness.[5] Keeping the curriculum consistent is important for combat and cognitive readiness.

Instructional Quality and Methods

IQM are how successfully teaching methods, pedagogical tactics and faculty knowledge help officers improve their strategic skills through PME curriculum. Studies show that simulation-based learning, flipped classrooms, and scenario analysis improve critical thinking and strategic decision-making.[6] Interactive, participatory pedagogies promote leadership and problem-solving in unclear situations.[7] In South Asian military, adult learning ideas and experienced teachers prepare officers for complex operational challenges.[8] Multidisciplinary perspectives and collaborative learning improve information retention and applicability.

Strategic Thinking Competency

STC allows officers to anticipate threats, analyze complex operational and geopolitical elements, and prepare ahead. It connects PME inputs like curriculum and teaching methods to operational performance. Strategic thinking helps officers move beyond tactical decision-making and assume institutional leadership. However, South Asian research shows that PME institutions often fail to explicitly promote this ability, limiting strategic knowledge use.[9] Officers are more adaptable in multi-theatre operations when curriculum and pedagogy complement strategic skills.[10]

Effectiveness of Professional Military Education

EPME examines how well officers are prepared for today's and tomorrow's strategic problems. Studies suggest that PME efficacy is closely tied to how well the curriculum changes to geopolitical trends and how successfully scenario-based learning is implemented. Inter-agency coordination and strategic foresight boost mid-career officer performance. South Asian military training programs must address hybrid warfare threats and regional conflict dynamics.

Theory and Development of Hypotheses

Theoretical Background

This research utilizes SHCT, an extension of Gary Becker's Human Capital Theory enunciated in 1964, which connects education and training to long-term strategic outcomes.[11] SHCT highlights that talent serves as a strategic asset, particularly in complex and high-stakes contexts such as the military. Strategic Investment in Talent (SIT) which cultivates competencies aligned with institutional missions; Organizational alignment which ensures that human capital is aligned with strategic objectives rather than solely with operational tasks and differentiated development which focused learning for strategic positions beyond standard tasks are the three fundamental principles.

PME effectiveness is dependent upon CA and IQ and method, with strategic thinking competency serving as a mediator and this study clearly suggests that. The theory highlights PME's dual function: fostering individual officer development and strengthening the Army's resilience, innovation, and strategic readiness—essential for operations ranging from counterinsurgency to UN peacekeeping.

Development of Hypotheses

Curriculum Alignment and Effectiveness of Professional Military Education

CA measures the EPME. Officers learn to oversee complex situations, when PME curriculum aligns with emerging strategic realities like hybrid warfare, cyber threats and regional security changes. However, mismatched curriculum creates gaps between what students learn in school and what they need to do in the work, which makes PME less effective.[12] Institutional goals and officer development aligns with courses and SHCT's approach of connecting educational investments to strategic results were supported by that. Adaptable curriculum with joint-force integration, regional diplomacy, and scenario-based training improves PME efficacy indicators including decision-making and strategic foresight.[13]

H1: CA has a positive and significant effect on the EPME.

Instructional Quality and Methods and Effectiveness of Professional Military Education

IQM determine how well knowledge is taught, learned and used in strategic circumstances and that affects PME. Students gain critical thinking by the help of quality education through simulations, case studies and scenario-based learning, flexibility and leadership skills needed for modern military operations.[14] Traditional lecture-based strategies often fail to prepare officers for modern security's impulsiveness and complexity.

Environment created by teaching methods that incorporate adult learning concepts, diverse perspectives and problem-solving helps students hold and apply strategic knowledge.[15] This alignment between education and real-world demands improves PME and prepares officers to use strategic anticipation and decision-making.

H2: IQM have a positive and significant effect on the EPME.

Strategic Thinking Competency and Effectiveness of Professional Military Education

STC is a very important connection between military education and how well it works. PME helps officers to learn how to spot dangers, figure out how to deal with complicated circumstances and come up with plans for the future, which proves the usefulness of PME.[16] PME runs the risk of staying theoretical and not connected to real-world operations if it doesn't work on this skill.

When curricula and education actively promote STC, research confirms that officers' transition from strategic problem-solvers to strategic leaders capable of managing hybrid warfare, collaborating with other agencies, and addressing evolving security threats.[17] STC enhances the efficacy of PME by ensuring that students' education equips them intellectually and tactically for real-world goals.

H3: STC has a positive and significant effect on the EPME.

The Mediating Role of Strategic Thinking Competency

STC links CA and IQM to PME Effectiveness. An aligned curriculum and high-quality instructional methods are the structural and educational basis of PME, but officers must develop strategic thinking skills to fully realize their efficacy.[18]

A curriculum based on new security realities gives officers vital information, but without STC, it may remain theoretical. IQM can help officers think critically and participate more if they learn to plan ahead, appraise situations, and respond strategically. Educational inputs become advanced competencies through STC, allowing officers to use their learning in impulsive and complex operational contexts.[19] STC measures PME efficacy by how successfully information is transferred into strategic foresight, adaptive leadership and decision-making.

H4: STC mediates the relationship between CA and the EPME.

H5: Strategic thinking competency (STC) mediates the relationship between Instructional Quality and Methods (IQM) and the effectiveness of Professional Military Education (EPME).

Figure-1: Conceptual framework
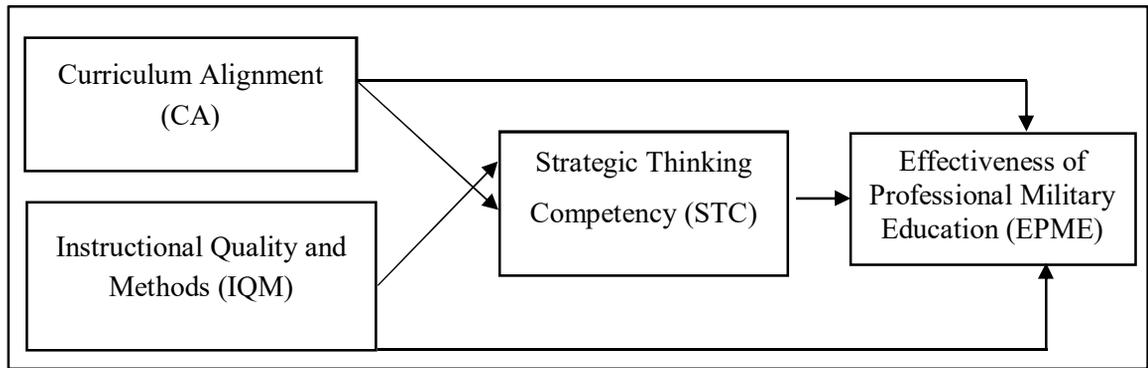
Source: Author's self-construct

Methodology

Research Design

This study employed a quantitative cross-sectional research methodology to investigate the links among CA, IQM, STC and EPME within the Bangladesh Army. The study employed a standardized questionnaire to assess officers' views, experiences and cognitive competencies related to PME. The study facilitated the evaluation of both direct and indirect impacts of educational inputs of PME results, yielding practical information to guide curriculum development and instructional methodologies.

Population and Sampling

The research population contained of officers in the Bangladesh Army holding the levels of Major, Lieutenant Colonel and Colonel who had experience with or exposure to PME programs. A purposive sample technique was applied to identify participants who fulfilled these predetermined criteria, ensuring that respondents have proper knowledge and expertise to offer knowledgeable observations. A total of 212 officers participated, satisfying the suggested criteria for Structural Equation Modeling (SEM) analysis and ensuring satisfactory statistical power to investigate the proposed correlations among CA, IQM, STC and EPME.

Measurement Instruments

Data were gathered applying a standardized questionnaire of 20 items, with five items allocated to each category, assessed on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). CA assessed the relevance, coherence, and alignment of the PME curriculum with current strategic demands, whereas IQM evaluated instructional efficacy and strategies. The mediating variable, STC assessed officers' proficiency in scenario analysis and strategic decision-making. The EPME assessed overall officer preparedness, operational readiness and professional competence. All items were derived from approved sources and are included in the Appendix.

Methods of Data Analysis

The data gathered were examined utilizing Statistical Package for the Social Sciences (SPSS) and SmartPLS. Partial Least Squares Structural Equation Modeling (PLS-SEM) was utilized to evaluate the reliability and validity of constructs and to examine the proposed correlations among variables. The analysis commenced with the measurement model to ascertain construct validity and reliability, subsequently progressing to the structural model to assess direct and indirect linkages, including the mediating effect of STC. Regression analysis was performed to substantiate hypothesis testing. This methodology yielded robust empirical information to inform PME curriculum modifications, instructional improvements and officer development methods.

Data Analysis

Demographic Profile

The poll included 212 Bangladesh Army personnel of various ranks, years of commissioned service, and PME institutes. The bulk were Majors (59.91%), followed by Lieutenant Colonels (29.25%) and Colonels (10.85%).

Figure-2: Officers Participated in Survey
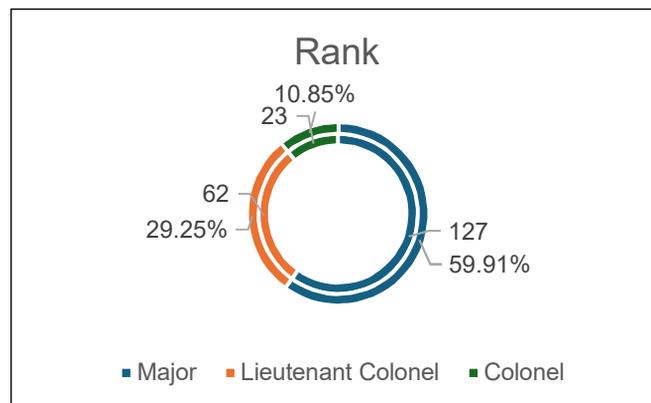
Source: Author's self-construct

As mid-career officers are primarily involved in PME programs and operational leadership, the sample is significantly concentrated at this level, which is suitable considering the study's focus on PME efficacy.

For commissioned service, most respondents had 8–13 years (68.87%), with lesser proportions in 14–19 (18.40%), 20–25 (9.43%), and 26+ (3.30%). This distribution shows that the sample is mostly officers in the early stages of strategy and leadership development, which coincides with PME's goal of preparing them for higher responsibility.

Figure-3: Officers Participated in Survey
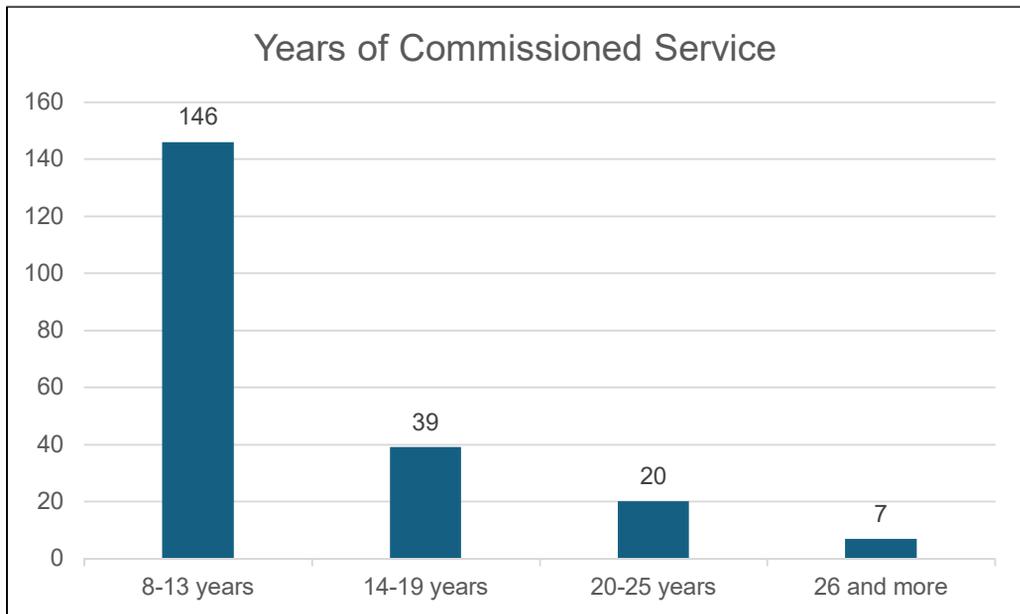
Source: Author's self-construct

The Bangladesh Military Academy (BMA) and other entry-level institutions (50.47%), the Armed Forces War Course (AFWC) (21.70%), the School of Infantry and Tactics (SI&T) (14.62%) and the Defence Services Command and Staff College (13.21%) were the most recent PME institutions attended. This distribution balances basic and advanced PME colleges to reflect the officer corps' different educational backgrounds.

Table-1: Demographic Profile of the Respondents

		Frequency (N=212)	Percent (100%)
PME Institution	Bangladesh Military Academy — 107; School of Infantry and Tactics — 31; Armed Forces War Course — 46; Defence Services Command and Staff College — 28		
Rank	Major	127	59.91%
	Lieutenant Colonel	62	29.25%
	Colonel	23	10.85%
Years of Commissioned Service	8-13 years	146	68.87%
	14-19 years	39	18.40%
	20-25 years	20	9.43%
	26 and more	7	3.30%
PME Institution (most recently attended)	Defence Services Command and Staff College	28	13.21%
	Armed Forces War Course	46	21.70%
	School of Infantry and Tactics	31	14.62%
	Bangladesh Military Academy	107	50.47%

Source: Author's self-construct

Measurement Model

Factor Loading, Reliability and Convergent Validity Analysis

Factor loading shows how well survey questions relate to their concepts. Simple correlations or standardized loadings assess item reliability. Twenty questions were first constructed to assess latent characteristics such curricular alignment, instructional quality and technique, strategic thinking ability, and PME efficacy in this Bangladesh Army PME research. Factor loadings in Table 2 measured most constructs well. For model strength, many components with low loading values that didn't fulfill Cronbach's Alpha (CA), Composite Reliability (CR) and Average Variance Extracted (AVE) reliability standards were deleted.

The CA and CR approaches checked reliability. A CA value over 0.7 is recommended for internal consistency.[20] In this study, construct CA values ranged from 0.748 to 0.887, demonstrating dependability. Along with CA, Composite Reliability (CR) was evaluated because it accounts for indicator weights and is often more reliable.[21] All constructions had CR values over 0.7, suggesting good internal consistency. AVE aided convergence by measuring latent concept variation relative to measurement error. All AVE values exceeded 0.5, proving convergent validity.[22]

Table-2: Item Loading, Convergent Validity and Reliability

Constructs	Items	Loading Value	CA	CR	AVE
Curriculum Alignment (CA)	CA1	0.719	0.801	0.836	0.618
	CA2	0.729			
	CA3	0.834			
	CA5	0.851			
Instructional Quality and Methods (IQM)	IQM2	0.802	0.847	0.848	0.621
	IQM3	0.767			
	IQM4	0.792			
	IQM5	0.769			
Strategic Thinking Competency (STC)	STC1	0.805	0.874	0.879	0.726
	STC2	0.84			
	STC3	0.876			
	STC4	0.755			
	STC5	0.886			
Effectiveness of Professional Military Education (EPME)	EPME1	0.851	0.852	0.859	0.772
	EPME2	0.912			
	EPME3	0.913			
	EPME4	0.788			
	EPME5	0.811			

Source: Author's self-construct

Discriminant Validity

After confirming convergent validity, discriminant validity was tested to ensure that each study construct was conceptually and empirically distinct. CA, IQM, STC and PME effectiveness measure unique aspects of PME due to discriminant validity.[23]

The Heterotrait-Monotrait (HTMT) ratio directly compares inter-construct correlations to the AVE, making it more robust than older techniques. In small samples or non-normally distributed data, HTMT is useful. One researcher defines strong discriminant validity as an HTMT score below 0.85. But another allows 0.90.[24]

Table-3 shows that all HTMT values in this investigation were below 0.85, indicating discriminant validity. The constructs are unique enough to support the measurement model's robustness and their suitability for structural model analysis.

Table-3: Heterotrait-Monotrait (HTMT) ratio

	CA	IQM	STC	EPME
CA				
IQM	0.396			
STC	0.695	0.418		
EPME	0.443	0.872	0.505	

Source: Author's self-construct

Explanatory Power of the Model

Table-4 presents the results of the current model's explanatory power analysis. The independent variables in the current model account for 60.9% and 66.8% of the variation in the dependent variable, with R2 values of 0.609 and 0.668, respectively. The R2 score is sufficient, with values of 0.75, 0.50, and 0.25 denoting strong, moderate, and weak predictive power, respectively.[25] The current model accounts for almost 50% of the variation in the dependent variable attributable to the independent factors, indicating moderate explanatory power.

Table-4: Results of R-Square

	R-Square	R-Square Adjusted
STC	0.609	0.604
EPME	0.668	0.661

Source: Author's self-construct

Structural Model

Results of Direct Path Analysis

Table-5 displays the outcomes of all direct paths, including coefficient values (β), standard deviations, t-statistics, and p-values for each hypothesis. The acceptance or rejection of hypotheses is contingent upon the significance of p-values. The observation is significant at $p < 0.05$, indicating that curricular alignment (CA) (H2: CA → EPME, $\beta = 0.129$, SD = 0.059, t = 2.163, p = 0.031) positively influences the effectiveness of Professional Military Education (EPME). Instructional quality and methods (IQM) (H3: IQM → EPME, $\beta = 0.150$, SD = 0.049, t = 3.082, p = 0.002) exhibit a substantial positive influence on EPME. Furthermore, the strategic thinking competency (STC) (H4: STC → EPME, $\beta = 0.182$, SD = 0.064, t = 2.838, p = 0.005) demonstrates a significant and affirmative impact on EPME.

Table-5: Results of direct path analysis

H	Path	(β)	SD	T statistics	P values	Results
H1	CA -> EPME	0.129	0.059	2.163	0.031	Supported
H2	IQM -> EPME	0.150	0.049	3.082	0.002	Supported
H3	STC -> EPME	0.182	0.064	2.838	0.005	Supported

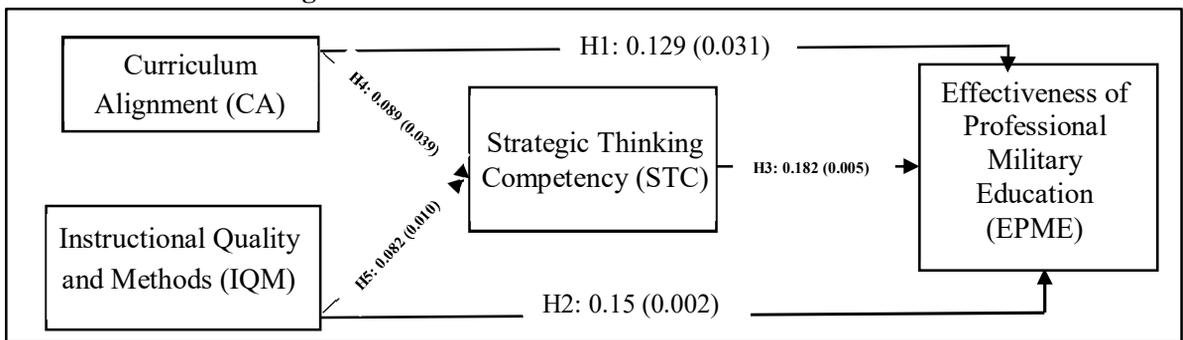Source: Author's self-construct

Results of Indirect Path Analysis

The mediation study investigated the function of STC in connecting CA and IQM with the EPME. The findings indicate that both indirect pathways were statistically significant. CA exhibited a notable indirect effect on EPME via STC (H4: CA → STC → EPME, β = 0.089, SD = 0.043, t = 2.063, p = 0.039), hence substantiating the mediating function of STC. Likewise, IQM demonstrated a notable indirect influence on EPME via STC (H5: IQM → STC → EPME, β = 0.082, SD = 0.032, t = 2.566, p = 0.010). These findings indicate that STC serves a vital mediating function, underscoring the necessity of CA and the enhancement of instructional methodologies to augment the overall efficacy of PME.

Table-6: Results of Specific Indirect Effect

H	Path	β	SD	T Statistics	P Values	Results
H4	CA -> STC -> EPME	0.089	0.043	2.063	0.039	Supported
H5	IQM -> STC -> EPME	0.082	0.032	2.566	0.010	Supported

Source: Author's self-construct

Figure-4: Results of Path Coefficient with P-value

Source: Author's self-construct

Findings and Discussion

This study proves that CA, IQ and methods, and strategic thinking competencies affect EPME in Bangladesh. Both direct and mediated effects were significant, showing how structural and instructional elements affect officers' PME learning results.

The findings show that PME is more effective when the curriculum is closely tied to the military's operational and strategic goals. Researchers argue in SHCT that planned talent investments boost long-term results for institutions. CA prepares Bangladeshi officers for hybrid warfare and counter-terrorism, which they face in national defense and international peacekeeping.[26] PME combines strategic information with hands-on training to support national security and international responsibilities.

Quality instruction was also crucial to PME success. Quality teaching and pedagogy are essential to turn learning goals into real abilities.[27] Modern teaching methods including case-based learning, simulations, and technology-driven instruction help bridge theory and practice. This study emphasizes the need for faculty development and instructional materials in Bangladesh, where PME schools are incorporating interactive and technology-enhanced methods.[28]

STC was shown as a direct contributor and mediator in the study. Officers who can analyze complex events, predict long-term effects, and use critical thinking boost PME results. Some state that strategic thinking is a sophisticated cognitive ability essential for leadership. Strategic thinking competency serves as a mediator, indicating that well-structured curricula and quality education are most effective when they promote critical thinking and foresight.[29] During UN peacekeeping missions, officers in Bangladesh have to combine short-term tactical needs with long-term geopolitical concerns.[30]

The findings indicate that PME is effective in Bangladesh due to the integration of well-structured programmes, quality training and strategic thinking. This indicates that strategic human capital, obtained by education and training, enhances organizational adaptability. A comprehensive framework that equips Bangladeshi officers for contemporary military and international security operations encompasses the alignment of the curriculum with current requirements, the improvement of pedagogical approaches and the cultivation of strategic competencies.

Policy Implications

PME works best with linked curriculum and skilled instructors. SHCT is enhanced. The findings support SHCT's claim that concentrated education smartens people and institutions. STC links schools' advanced cognitive abilities to strategic thinking. The Bangladesh Army's usage of SHCT illustrates that it can be employed across cultures and that non-Western defense institutions need different human capital models. These findings advise studying institutional culture, conflict

exposure, regional security changes, and formal education's involvement in strategic human capital.

Practical Implications

Results show Bangladesh Army PME reformation is needed. Aligning the curriculum shows that training materials may be updated to include hybrid warfare, regional conflicts and unusual security threats. War games, simulations and entertaining teaching approaches stimulate critical thinking and teamwork to improve education. STC thinks knowledge leads to success, thus leadership programmes may emphasize strategic thinking, adaptability and tough judgments. Officers with varied amounts of field experience may require multiple learning methods to achieve job-relevant training.

Conclusion

This study examined the impact of curricular alignment, instructional quality, and strategic thinking competency on the outcomes of Bangladesh Army PME. PME effectiveness is directly enhanced by curriculum alignment and instructional quality and methods, but STC serves as a mediator. This proves that structured programs, effective instruction, and the cultivation of higher-order cognitive skills enhance PME. SHCT was boosted by these connections as these demonstrates that education and training enhance the effectiveness of the Bangladeshi Military.

To make PME better because of hybrid warfare and instability in the region, The Bangladesh Army should adjust its curriculum. Interactive methods, scenario-based exercises and war games should be used to teach strategy. Training for leaders needs to be based on what officers have done in the field. Lastly, PME solutions should be able to adapt to new security threats thanks to ongoing study and assessment mechanisms. These changes could assist Bangladeshi PME get officers ready for difficult military and peacekeeping tasks, making the Army more strategically ready and resilient both at home and abroad.

Limitations and Future Research Directions

This study's Bangladesh Army focus may limit its applicability to other militaries. Self-reported data may also be biased responses. Cross-sectional designs limit causal interpretations of observed connections. Future research should use longitudinal approaches to assess the long-term effects of PME reforms, comparative studies across military institutions or countries, and objective performance data to validate self-reported outcomes to improve robustness and applicability in defense education.

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Brief Biography

Lieutenant Colonel S M Zobaer Alam, psc was commissioned on 28 June 2004 in the corps of Infantry with 50th BMA Long Course and joined 2nd Bangladesh Infantry Regiment. Besides Commanding 9 East Bengal Regiment, he served in 9 Bangladesh Infantry Regiment (Mechanized) and 79 East Bengal Regiment (Division Support Battalion). He served as Brigade Major of 309 Infantry Brigade and 203 Infantry Brigade (Khagrachari Region). He is a graduate of Defence Service Command and Staff College, Mirpur. Presently, he is serving as Chairman of The Department of Business Administration (General), Bangladesh University of Professionals (BUP). He is also pursuing PhD research study programme under BUP.

Strategic Communication and Information Operations: A Unified Doctrinal Approach for Comprehensive Operational Environments

Lieutenant Colonel S M Saleh Bin Safi, SGP, psc, Infantry

Abstract

In contemporary warfare, the clash of armaments has evolved into a perpetual contest of influence where perception, narrative, and credibility determine outcomes. This paper proposes a unified doctrinal framework integrating Strategic Communication (SC) and Information Operations (IO) as complementary instruments to achieve information dominance across cognitive, informational, and physical domains. SC serves as the narrative architecture aligning words and actions, while IO delivers the operational capabilities—cyber, electronic and psychological—to shape or disrupt adversarial decision-making. Drawing on both historical and modern illustrations, including Sherman's campaign, Russian information warfare, and China's Strategic Support Force, the study demonstrates how narrative supremacy yields strategic advantage. It further analyzes the contemporary threat landscape marked by hybrid warfare, proxy manipulation, and technologically amplified propaganda. The study concludes that success in the information domain hinges on narrative coherence, audience-sensitive engagement, adaptive two-way communication and leadership ownership of the messaging process. When SC and IO are seamlessly integrated, information transcends its supporting role to become a decisive instrument of power—enabling operational legitimacy, cognitive dominance and enduring national resilience in the conflicts of the twenty-first century.

Keywords: Strategic communication (SC), Information Operations (IO), Narrative Coherence, Proxy manipulation, Cognitive Dominance and Hybrid Warfare.

Introduction

Modern warfare has become a blend of physical confrontation, covert action and dominance of technology. There is no clear definition of winning or losing, and right or wrong now. Some wars are even being fought silently in the form of information dominance, without any official declaration. Today's world is now much more inclined and influenced by information and communication system rather than just weaponry and forces. Modern times dominance concept is not just physical confrontation, but to influence opinions and control behaviour and decision making process through words and actions. In the words of Herodotus (484 BC-425 BC), "The most hateful human misfortune for a wise man is to have no influence."[1]

It is a matter of concern now for military leaders to evaluate the dynamics of this arena as information and narratives govern emerging frictions. This generation framework is not influenced by mere physical exploitation or munitions; rather gets shaped by some perceptions and stories

which are welcoming by the common forum of the world. The map of power is silently redrawn by the convergence of perception and technology, where persuasion is more important for success than dominance. In this setting, mastery of this field becomes necessary for relevance in the changing face of warfare rather than a choice.

This paper will analyze the evolution, correlation, convergence, and integration of SC and IO achieve information superiority. It will also examine the existing and emerging threats in the information environment, and propose practical measures for institutionalizing these capabilities within military and non-military framework.

Aim

The aim of this paper is to recommend some practical measures for effective integration of SC and IO within the military and non-military framework to achieve and sustain information superiority.

Concept of SC and IO and their Correlation, Convergence and Integration

Strategic Communication: The wide-ranging nature of SC implies that no single definition will suffice. Chatham House Report on Strategic Communication and National Strategy defines Strategic Communication as "A systematic series of sustained and coherent activities, conducted across strategic, operational and tactical levels that enables understanding of target audiences and identifies effective conduits to promote and sustain particular types of behavior."[2]

Christopher Paul defines it as "Coordinated actions, messages, images, and other forms of signaling or engagement intended to inform, influence, or persuade selected audiences in support of national objectives."[3]

Information Operations (IOs) are the "integrated employment of Information related capabilities, during military operations, in concert with other lines of operation, to influence, disrupt, corrupt, or usurp adversarial decision-making while protecting oneself."[4]

Information Environment: The Information Environment (IE) comprises three interacting dimensions:

> **Physical**- Hardware, infrastructure and communication systems.
>
> **Informational**- Data, networks and message flow.
>
> **Cognitive**- Beliefs, emotions and perceptions of target audiences.

Dominance across these layers requires coordinated control of narrative, technology, and human understanding.

Information Related Capabilities (IRCs): IRCs can be broadly understood in two distinct ways i.e. Information Content (Influence) and Information Flow (Reach). Commonly accepted IRCs are listed below, however, it is by no means definitive and continues to expand.[5]

Electronic and Cyber Warfare: Sophisticated exploitation of electromagnetic spectrum and cyber space to disrupt enemy's information systems while retaining own freedom of action to influence adversarial decision-making while shaping perceptions of target audience.

Psychological Operations and Perception Management: The process of selectively manipulating information to influence emotions, motives and perceptions of a range of target audience for behavioural change.

Public Relations and Media Operations: Public Relations is the dissemination of public information and projection of community service activities. Media Operations encompass engagement with private media in the form of visits, press release, press conferences and interviews.

Visual Information and Combat Camera: This is use of still/motion imagery to support kinetic and non-kinetic operations. Combat Camera differs from media operations by exclusive access to operations and areas out-of-bounds to private media.

Civil Military Operations and Social Manoeuver: These encompass a wide range of developmental and civic activities for attaining stability and normalcy while energize social space in support of military operations.

Key Leader Engagement: A command function at all levels by which military leaders shape operational environment through sustained engagement with a diverse array of leaders in an Area of Operation.

Military Diplomacy: This is the application of military capabilities towards specific diplomatic objectives which may include training, advise-assist and peace-keeping missions.

Physical Destruction: Application of combat power to destroy or degrade enemy forces and information systems/infrastructure.

Physical and Operational Security: Protection of individuals, equipment, installations and materials along with denial of critical information to enemy pertaining to current and projected operations.

Counter Information Operations: Efforts against espionage, subversion, sabotage, disinformation and propaganda conducted by hostile intelligence agencies and violent non-state actors.

SC and IO - Correlation and Convergence: Strategy is about how (the way) leaders will use the capabilities (means) available to achieve objectives (ends). Understanding and engaging key audiences is meant to change perceptions, attitudes, beliefs and ultimately behaviours to help achieve military (and in turn national) objectives.[6] It is apparent that CA is a 'way' to achieve an information effect on the cognitive dimension of the information environment (the required 'end'). CA employs multiple 'means' and these means should be restricted only by the requirement to achieve the desired information effect on the target audience. A simple comparison of both is shown in the Table given below:-

Table-1: Comparison between SC and IOs

Attribute	Strategic Communication	IOs
Target	Key audiences (friendly, neutral, adversarial)	Adversarial human automated decision-making
Effect	Understand, Engage and Influence	Disrupt enemy's decision-action loop while protecting own
Dimension	Cognitive and Physical	Cognitive, Informational, Physical
Primary Capability	Key Leader and Public Engagement, Perception Management, Military Diplomacy	Electronic and Cyber Warfare, Counter IOs, Physical/Operations Security, Psychological operations

Source: Author's self-construct

Functional Relationship of SC and IOs: SC is the more broadly overarching concept targeting key audiences and focusing on cognitive dimensions. IO is an integrating function, whereas, targets adversarial decision-making capability which may be in cognitive, informational and /or physical dimensions of information environment. It can be understood in the Art and Science paradigm of warfare or any social science. At the heart of every SC is a Strategic Narrative which is projected and propagated through Actions and Words; which is essentially SC. A variety of kinetic and non-kinetic actions duly enabled by specific IRCs will be employed in support of a Narrative. The supportive Themes and Messages will be launched through multiple forms of Media and Audience Engagement to justify military operations and project success. Complementary Operational and Informational End-States is achieved by a synergistic employment of various Media and Technical IOs contributing towards realization of Strategic Narrative.

Strategic Communication and Elements of National Power: SC, is manifested through all Elements of National Power: Diplomatic, Information, Military and Economy (DIME) to accomplish national objectives.[7] SC is an interactive process and coherent set of activities which includes the following:-

Knowing: Identities, attitudes, behaviours and cultures; media trends and information flows; influential networks; political, social, economic and religious motivations.

Figure-1: Strategic Communication
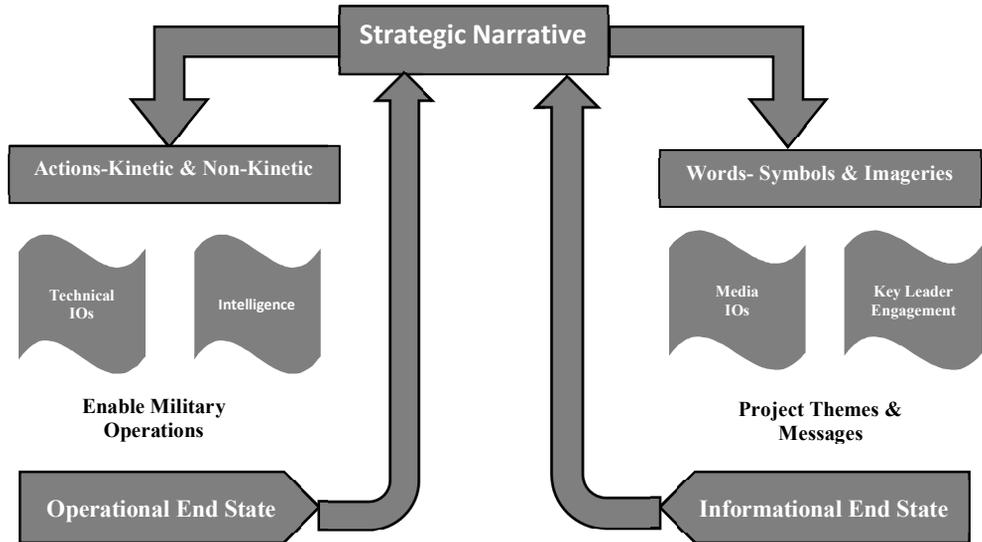
Source: Author's self-construct

Advising policymakers, diplomats and military leadership on public opinion and implications of policy choices.

Engaging in a dialogue of ideas between people and institutions through programs that support national interest.

Influencing attitudes and behaviour through communication strategies support by a broad range of government and civil society activities.

Measuring the impact of activities.

Instances of Integration of SC and IO with Military and Non-military Operations: Effective integration of SC and IO transforms information from an auxiliary function into an operational force multiplier, enabling dominance in the cognitive domain. Some of the notable instances of SC and IO integration in Military and Non-military environment and thereafter, contemporary approaches to SC and IO are stated below:-

Military Applications:

Punitive Campaign of the infamous Sherman's March to the Sea during American Civil War effectively broke the resistance of seceding states and led to a Union victory.

In 1870, Otto von Bismarck (1815-1895), most famous in history for his role in German and also Chancellor of the German Empire (1871-1890), incited the French into a highly unfavourable war against Prussia, just by manipulating the reported text of one telegram.

Resolute military operation with popular support and swift resettlement of civilians during Operation broke myth of terrorists paving the way for disruption of terrorist network and sustainable security in tribal areas.

Focused intelligence-based operations, minimum civilian disturbance and whole-of-nation approach facilitated phenomenal success of Operation while signifying an irreversible transition towards peace and stability.

Non-Military Applications:

SC is not exclusive to conflicts and finds relevance in political, corporate and social domains.

Election Campaigns are built around communication of carefully crafted political messages to influence opinion and seek victory. Brexit is a classic case in which narrative of sovereignty delivered an unexpected victory.

Nearly all major businesses rely on advertisements and publicity campaigns to enhance client-base and increase revenues. Quality Assurance and Customer Service are means to retain the clientele and preserve reputation.

Social Campaigns like #MeToo, Student March, Black Lives Matter and Lawyers Movement propel 'Identity Politics' aimed at non-violent revisionism.

Contemporary Approaches to SC and IO: The overall concept adopted and successful integration of SC and IO by two global superpowers (Russia and China) are stated below:-

Russian Information Warfare: For Russia, 'information war' is an inclusive concept covering use of information as a tool, or a target, or a domain of operations. Consequently, Russian IO concept carries within itself a wide variety of IRCs, as shown opposite.[8]

Figure-2: Information Warfare

Source: Author's self-construct

PLA Strategic Support Force (SSF):   As part of China's military reform SSF was raised in 2015 to integrate Space, Cyber and Electronic Warfare capabilities into PLA operations SSF as an independent service, concentrating all IO and technological capabilities under one command. It is unique as compared to US model which disperses IO capabilities in different services. Apart from SSF, China co-opts a large pool of civilian activists known as 'Internet Water Army' to support its IO campaigns.[9]

Figure-3: PLA SSF
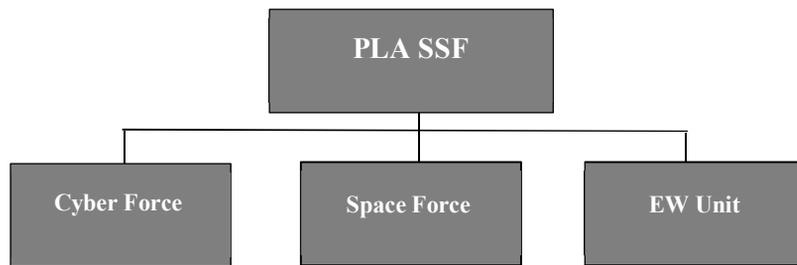
Source: Internet Water Army

SC and IOs - Current and Projected Threat Picture

Information Environment: Currently Information Environment is analyzed on Operational Environment variables (PMESII) which shows following vulnerabilities:-

Political

(1)   Unstable and weak political institutions.

(2)   Dynastic politics and discordant multi-party system.

(3)   Political influence in governance and law enforcement.

(4)   Political support for crime and militancy.

Military

(1)   Triple Stretch - Conventional, Sub-Conventional and Internal Threats.

(2)   Limited access to military hardware and technologies.

(3)   Rising conventional asymmetry and cutbacks in military budgets.

(4)   Challenging neighbourhood and border disputes.

Economic

(1)   Constraints on development budget and flawed revenue collection.

(2)   Water, energy and food insecurity along with climatic challenges.

(3)   Conflicts over resource distribution.

Social

(1)   Cultural and ethnic cross-currents vs national ideology.

(2)   Corruption, crime, lawlessness and lack of social justice.

(3)   Religious extremism, sectarianism polarization and militancy.

(4)   Human security challenges; poverty and unemployment.

Information

(1)   Corporate-driven media and weak state control/regulation.

(2)   Prejudice of State Authority and weak institutions.

(3)   Rise and penetration of Social Media and insecure Cyberspace.

Infrastructure

(1)   Disparate infrastructural development between disproportionate federating units.

(2)   Deficient communication infrastructure and limited industrial base.

(3)   Primitive health and education facilities.

Hostile Narratives: A country confronts a multitude of information operation threats, within and without; exploiting domestic dynamics and external compulsions.[10]

External threat mix has hostile narratives hurled by international and other regional countries as under:-

(1)   Intimidating the nation to submit to regional power and regress on national interests failing which a destructive war will be waged.

(2)   Depicting the nation as a failing state, on verge of implosion.

(3)   Projecting national politico-military leadership as incompetent.

(4)   Villainizing the nation as a national security state where governance, politics and foreign policy are controlled by military establishment.

(5)   Calling the nation an irresponsible nuclear state vulnerable to fall to extremist elements, leading to a global catastrophe.

(6)   Portraying a dangerous revisionist state which is epicenter of terrorism, religious extremism, drug and human trafficking.

Internally, political disharmony, poor governance and foreign sponsored sub-nationalism, domestic adverse narrative are as under:-

(1)   Diluting ideological basis and national pride by media manipulation, cultural invasion and incursion in educational institutions.

(2)   An unbridled, incoherent and outsized print, electronic and social media which often works at cross-purpose to national interests.

(3)   Creating a sense of economic deprivation and political repression in to cause centrifugal sub-nationalist movements.

(4)   Religious extremism with sectarian leanings to impose an abhorrent version of Islam waging terrorism against the state.

(5)   Cyber-espionage and cyber-enabled influence operations for manipulating public opinion and promote political and social controversies.

(6)   Declaring national mega projects controversial and exploitative.

(7)   Divisive literature to create political rifts, propagate extremist ideologies and promote social re-engineering.

Future of Strategic Communication and IOs

Narrative-Led Kinetic Operations: Information Operations have transitioned beyond traditional role towards a much more assertive one. Information is now both enabler and driver of kinetic operations. Law Enforcement Operation in Karachi is one such example, having been enabled by information ascendancy. It achieved informational effect over national narrative thus enabling return of normalcy.

Non-Kinetic Revisionist Proxies: Revisionist proxy movements are incited and sustained in target countries for 'managed chaos' and 'regime changes.'[11] Social activists, religious demagogues, financial tycoons, diplomats, political pressure groups and even academies can act as foreign proxies for propagating inimical narratives. 'Arab Spring' in Middle East and 'Color Revolutions' in Eurasia are latest examples of foreign sponsored revisionist movements through proxies.

Cyber-Enabled Hybrid Warfare: Cyber warfare is being applied way beyond usual hacking and data theft. Cyberspace is being exploited to manipulate digital content, disrupt public service and paralyze governmental functions for specific effects. Russian occupation of Crimea on 27 February 2014 through a cyber-enabled hybrid war is a recent case.

Technology-Intensive Propaganda: Exploitation of modern technology allows a persistent perception management campaign. Fake news, photoshop and altered videos produce highly sellable propaganda content. Social media hypes up such propaganda via 'viral trends,' hash-tagging and automated bots. Russian meddling in US Elections illustrates enormity of technology-intensive propaganda.

Data Theft - Population Profiling-Social Re-Engineering: A large amount of personal data is available online due to proliferation of smart phone applications. This data is being exploited for population profiling and targeted messaging for commercial purposes. Lately, this is being exploited to carryout perception management and even social re- engineering against ideological and nationalistic ethos as shown by the Cambridge Analytica, Aggregate IQ and Facebook data theft scandals.

Ways Forward for Effective Integration of SC and IO

SC as a Leadership Function: At its core, SC is a leadership duty rather than just a staff job. Every commander at every level needs to personally embrace its tenets and make sure their subordinates follow suit. It should influence the force's mentality and direct routine behaviour as well as operational planning. Leaders need to be disciplined in their communication because their words, actions, and silences all convey important messages. The commander's consistency in both

message and action is the first step towards building a unit's credibility. Hence, SC becomes an intrinsic part of command climate and professional ethics.

Coherent Narrative: Every decision taken must be aligned with the coherent narratives which result in related military and non-military objectives. All military and non-military outfits must keep integrity of their information environment with strict narrative discipline focusing towards their mission/ objective accomplishment. A single narrative can dominate the information domain and network, if that is well-believeable, simple and effective to get adopted.

Credibility of Communication: The most important aspect of SC is the credibility. Every single message/narrative must be too simple yet descriptive that all internal and external audiences can easily render those while decision-making. Only credibility can make a simple message into a force multiplier for the existing information domain.

Audience Sensitivity: For a single message/narrative to become effective, first and foremost thing is to be comprehension of the audience, including their nature and behavioral patterns. Messages must be targeted to some audiences upon customization basing on the locality, culture, lifestyle etcetera. The purpose should be to influence common people's decision making process which ultimately gives dividend in operational goal accomplishment.

Two-Way Communication Process: SC always works keeping in note of the opinion of both sides' of the coin. Narrative are not only being created and circulated but also a good plaform of feedback system is also being maintained. In operational environment, most effective communication system is that one which can maintain this two-way approach too smoothly.

Relevance of Messages: All communication approaches must be updated with the time, place, and circumstances in and around. SC teams must constantly evaluate the operational environment and modify narratives in real time if they want to stay effective. While poorly timed or irrelevant messaging damages trust and wastes money, well-timed messaging can challenge the enemy's view or change public opinion. Reiterating impact and validity on the information battlefield, communication becomes an active tool of combat power when it is in harmony with present circumstances.

Communicative Value of Military Action: Every military action inevitably sends a message beyond its tactical intent. In the linked information world of today, even minor interactions can have strategic repercussions. As a result, commanders have to consider how different audiences might view each operation. Cognitive dissonance results from behaviors that contradict stated narratives. In addition to kinetic outcomes, units should consider 'Communication effects' when planning. These days, communication is just as important as the physical aspect.

Mission-Oriented Communication: SC and IOs must support the mission and intended information end-state of the commander.[12] Every message should help accomplish both strategic and operational goals. During planning, communication effects like legitimacy, reassurance, or

deterrence must be pre-defined. Coordination with operations and intelligence guarantees coherence of effort. As the mission changes, messages ought to flow naturally. Success in communication ultimately equates to mission success.

Sustained and Adaptive Process: SC is an ongoing operational loop rather than a singular occurrence. Every step of the process includes planning, carrying out, evaluating and improving. It is crucial to regularly analyze audience sentiment and media feedback. Flexibility and institutional learning are required for this process. The tone and narrative must evolve with the operational environment. Psychological dominance and long-term influence are guaranteed by consistent communication.

Conclusion

IO and SC work together to influence perception and decision-making in order to accomplish military and non-military goals. IO uses electronic, psychological, and cyber tools to influence or disrupt adversaries, while SC unifies words, actions, and symbols under a single narrative.[13] In terms of the physical, informational and cognitive aspects of the information environment, they are all dominant. Whereas IO produces operational effects through coordinated actions, SC concentrates on audiences and narrative credibility. When they are combined, information becomes a force multiplier, guaranteeing strategic legitimacy and cognitive superiority. By directing public opinion and policy, SC supports all facets of power at the national level, including diplomatic, informational, military, and economic. Examples from both the past and present, such as Sherman's campaign and the Russian and Chinese models, show that understanding perception and narrative is now just as important as winning on the battlefield.

The contemporary battle has evolved into a hybrid contest of information dominance and confusion. Technology, political stubbornness and economic backdrops make things even more complex. Potential adversaries always take shield of false narrative to break public trust and influence internal peace environment. Internally, various online platforms, biased media or influencing narrative from adversary adopt the dividend method tactfully to disturb the unity of effort. Future wars will be more biased on information and technology rather than physical confrontation. Winning these wars will be dictated by dominance over shadows and silicon rather than steel.

The first and foremost step to get better output from SC and IO is a strong leadership.[14] Commanders at all levels must understand the importance of communication system and must consider their effects while taking any decision. Success comes once words and actions are aligned at all levels. Therefore, most important part here is trust-people must believe unconditionally what has been said and act accordingly. At the same time, imformation comes out with best output, once it is shared with integrity. Every single message must fit with the changing condition of time, space and most importantly people's mind and behaviour. Afterall, in modern warfare, information and communication are not only just support, rather core factors to shape minds and determine outcomes.

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Brief Biography

Lieutenant Colonel S M Saleh Bin Safi, SGP, psc was commissioned in 28 Bangladesh Infantry Regiment with 53 BMA Long Course on 20 December 2005. He is a graduate of Defence Service Command and Staff College, Mirpur and Command and Staff College, Quetta, Pakistan. He served in four Infantry Battalions and held all the regimental appointments within his capacity. He commanded 35 BIR (Support Battalion) as pioneer Commanding Officer. As staff, he served as ADC to GOC at Headquarters 33 Infantry Division and as Brigade Major of 26 Infantry Brigade. He also served as General Staff Officer, Grade-1 in General Staff Branch, Army Headquarters. He served as Instructor in Tactics Wing of School of Infantry and Tactics. He also served as Platoon Commander in Bangladesh Military Academy. Apart from the mandatory courses, he attended Junior Command and Staff Course in Canada. He also had a stint of service as a Guest Directing Staff in Canada. He participated in the United Nations Peacekeeping Mission in Democratic Republic of Congo as Mechanized Platoon Commander and Central African Republic as Military Staff Officer-Chief U1 (Pers) in Force Headquarters, MINUSCA. He was awarded with Sena Gourab Padak (SGP) for rendering remarkable contribution in Operation Uttaran at Chattogram Hill Tracts. Presently, he is serving as Additional Military Assistant to the Chief of Army Staff at CAS Secretariat, Army Headquarters.

Importance of Inculcating Reading Habit among the Young Officers of Bangladesh Army: Challenges and Way Forward

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Abstract

Reading habit, an avowed noble virtue of human characteristics broadens the new horizons of knowledge. Reading builds up confidence, reduces stress, reshapes the human character and also converts a man into a perfect human being with super human qualities. This article put an attempt to examine the critical need for developing a reading habit among the young officers of Bangladesh Army to enhance their professional competence. For a young officer, reading is essential for cultivating critical thinking, strategic insight evolve with broader understanding of military history and contemporary security dynamics. However, cultivating reading habit among young officers is not an easy affair rather run with multi-level challenges due to social dynamic changes. To overcome the challenges a potential approach is highly required. Accordingly, the core concept of way forward involves integrating mandatory reading sessions into the daily routine, modernizing library facilities with digital resources, and forming comprehensive reading lists that align with different career stages. Last but not the least, by fostering a vibrant reading culture, the Bangladesh Army can up bring a new generation of intellectually agile and qualified leaders, prepared to navigate the complexities of modern warfare and national security.

Keywords: *Reading Habit, Knowledge, Human Qualities, Professional Competence, Critical Thinking, Strategic Insight, Digital Resources, Comprehensive.*

Introduction

Reading is a man's bulwark against his solitude, his window of life and also his pure company of unending delight. It's a fundamental skill that files the yesterday and tomorrow into now playing a pivotal role in the academic advancement and personal maturation of individuals.[1] It is considered as the most valuable and idiosyncratic deal to approach life effectively as well as efficiently creating new insight and new window of wisdom. Generally, people are always encouraged to develop reading habits at an early age, to be exposed with lot of things around the world. However, it is one of the most important components for continued education, for the acquisition of new knowledge and skill, for gaining information through media, especially newspapers, books, television, radio and computers. As reading habit helps to improve language skills, communication skills and sharing knowledge through information and idea, the appeal of reading habit remains unaltered since its inception in early age.[2] Therefore, cultivating a reading habit in professional career advancement is crucial as it enhances knowledge, develops critical thinking and communication skills and also fosters adaptability to constant change in workplace.[3]

Military is one of the noble professions around the globe. The honour, pride and professional challenges attract young generations to join this profession with great passion. However, after long robust military training joining units in professional arena, in many cases, the young officers lose reading inspiration rather thirst for knowledge in course of time.[4] This occurs due to excessive professional responsibilities or uneven pattern of regular activities of a young officer. This very incident must be an disappointing factor for a regular army in regards to produce great captains or professional officers compatible for future battle field challenges. Therefore, fostering a robust reading habit among the young officers of Bangladesh Army is an essential landmark for professional development as well as effectiveness in the 21st century.[5]

Young officers are the treasures of Bangladesh Army. Reading habit expands their understanding of military history, strategy and tactics; offering invaluable lessons from past successes and failures. Beyond purely military subjects, exposure to diverse fields like international relations, economics, science, and philosophy will lead young officers to cultivate critical thinking, analytical skills, and a broader worldview.[6] These are crucial for decision-making, particularly in joint and multinational operations where cultural nuances and political sensitivities play significant roles. Furthermore, a strong reading habit enhances communication skills both written and verbal which are vital for effective leadership, report writing, and presenting complex ideas clearly which lead them to become an efficient military leader.[7] In an era of hybrid warfare and information operations, the ability to discern truth from propaganda and to synthesize vast amounts of information is of paramount importance. However; this skill is significantly honed through extensive reading. Therefore, fostering reading habit is an investment in the intellectual capital of the Bangladesh Army, creating more capable, versatile, and forward-thinking leaders ready for future challenges.[8] Herein, the primary objective of this study is to perform an analytical review of the factors that could potentially affect the young officers of Bangladesh Army when inculcating a reading habit. However, the specific objective of the study is (i) to find out the personal level factors for young officers of Bangladesh Army put barriers to make them habitual readers, (ii) to investigate the institutional level factors that hinders the reading habit of young officers and (iii) to explore some plausible solutions to inculcate reading habit among young officers of Bangladesh Army.

Methodology

The article is a review-based study work based on objective approach. However, a systematic review of literature was carried out from well-established English literature as well as open source documents. Some keywords like reading, habit, army etc. were used to search related article, magazines and online literature. These data are mainly descriptive. Literature review of various manuals, journals, books, newspaper articles, internet materials and news features are the main data sources of this article. Data and information were collected from both primary and secondary sources. An open-ended questionnaire was also supplied to the focused group. The

methodology is descriptive as well as analytical. However, utilizing existing literature, the research delves into an established knowledge and insights to form a comprehensive understanding of the subject.

Historical Background of Reading

John Locke (1632-1704), the renowned English philosopher observes, "Reading furnishes the mind only with material of knowledge; it is thinking that makes what we read ours." Reading, the process of interpreting written symbols to extract meaning, has a rich and complex history deeply entwined with the evolution of human civilization and language.[9] The progress of reading and writing cycle can be framed with three stages like- early stages of written communication, evolution of writing systems and; spread and standardization.[10] However, the origins of reading can be traced back to ancient civilizations where early forms of writing emerged. Around 3500 BCE, Mesopotamia saw the development of cuneiform, an early writing system primarily used for administrative purposes which were mainly based on visual reading relying on symbols and pictures to transfer a message Afterwards the Proto-Sinitic script, the first known alphabetic writing system was introduced. Over time, the Proto-Sinitic script evolved into the Phoenician alphabet by around 1050 BC and became the parent script for many modern alphabets. The advent of the printing press in the 15th century by Johannes Gutenberg (1398-1468) revolutionized reading.[11]

Before this, books were painstakingly hand-copied, making them expensive and rare. This created a powerful feedback loop i.e. more books led to a greater incentive for people. By the 19th century, with the rise of public education, reading became a fundamental skill for the masses, solidified by the standardization brought about by the print revolution. In 19th and 20th centuries public educational institutions were been established and reading habit becomes more so personal in nature. Therefore, silent reading became a norm. In 21st century, with the advancement of modern technology innovations of new reading tools like E-readers, tablets, smart phones, audio books etcetera made digital reader group reshaping the reading habit.[12]

Figure-1: Reading Habit Tree (Ancient Age to Modern era)
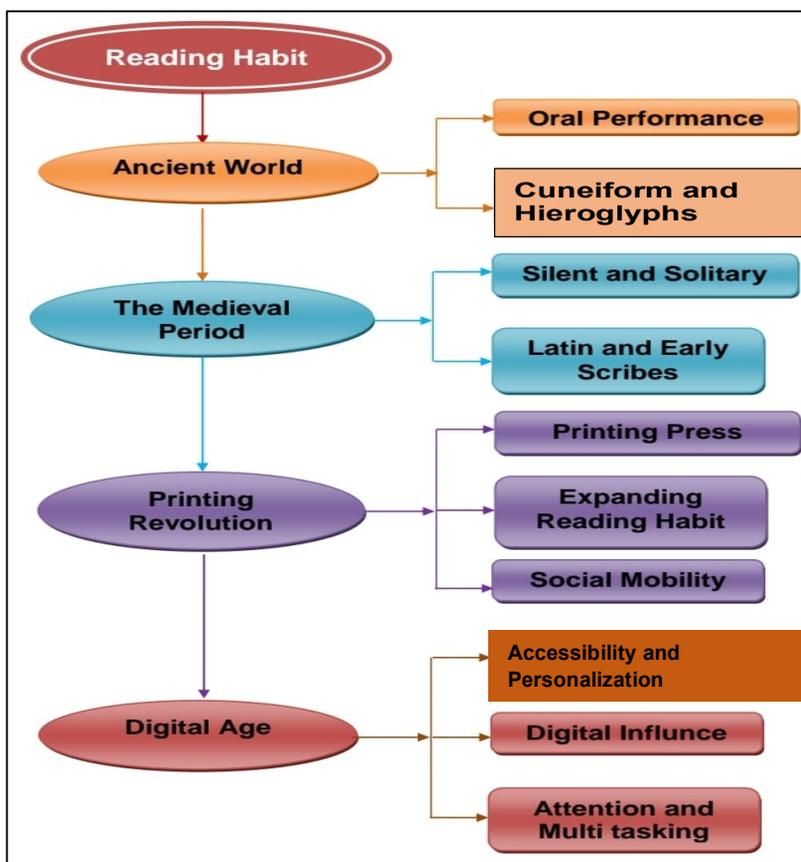
Source: Author's self-construct

Top Book Reading Nations around the Globe

India often remains in leading role based on hours spent on reading books per week putting a high level of reading culture. This is also an indicator how passionate the Indians are towards reading book besides cultural activities. Thailand and China also frequently appear at the top, suggesting a strong reading culture in many parts of Asia. However, according to the number of books read annually, it's the United States who possesses the top position of the list. India is always breathing to the neck of USA in this competition. The top reading nations portray a high literacy rate, a well-recognized and flourished publishing industry and also a diverse range of genres and formats, including e-books and audiobooks. On the other hand, countries like the United Kingdom, France and Italy consistently show strong reading cultures, with their citizens reading a substantial number of books per year. Smaller nations like Luxembourg and Denmark also demonstrate high percentages of their populations who are avid readers, pointing to the role of strong public library systems and national literacy initiatives.[13]

Table-1: Top Book Readers as Per Countries-2024

Ser	Country	Book Read Annually	Hours spend reading Per Year
1.	USA	17	357
2.	India	16	352
3.	UK	15	343
4.	France	14	305
5.	Italy	13	278
6.	Russia	11	223
7.	Australia	10	217
8.	Spain	09	187
9.	Netherland	08	187
10.	Switzerland	6.9	157

Source:https://worldpopulationreview.com/country-rankings/average-books-read-per-year-by-country

Importance of Reading Habit for Young Military Officers

The importance of reading habit for a young officer is manifold. This noble virtue undoubtedly widens the intellectual horizons, sharpens the understanding the battlefield complexities, and enriches all the unique leadership qualities like critical thinking, wisdom, communication skills et cetera.[14] Few core points are described below:-

Strengthening Intellectual Ability: Reading helps a young military officer developing their intellectual ability by providing a vast library of knowledge and diverse perspectives like analyzing problem pattern, visualizing big picture, fostering innovation and also questioning assumption. This helps officers recognizing the recurring patterns in conflicts which lead them expert on reframing the battlefield scenario.[15]

Leadership Quality: By reading military history, biographies of great leaders, and works on strategy and geopolitics, the young officers can gather knowledge and learn how great captains handled complex situations in different battlefields. This learning greatly helps them to develop a better understanding of the 'why' behind military doctrine and historical events, allowing them to apply those lessons to new, unforeseen challenges. Therefore, they become confident on professional aspects and turned into a confident better military leader.[16]

Military Culture and Professional Identity: Reading is deeply ingrained in the culture of many armed forces. They serve as a shared intellectual foundation for professional military education and foster a sense of shared purpose and identity. It establishes that a military career is not just a job but a profession that requires continuous, lifelong learning. By

participating in professional reading, an officer demonstrates a personal commitment to self-improvement and to the intellectual demands of their calling.[17]

Improving Communication Skill: Reading exposes an officer to a wide variety of writing styles, sentence structures, and vocabulary thereby a young officer can improve upon the clarity and conciseness as well as logical argumentation for his writing skills. A well-read officer is often a more effective speaker and leader. Reading historical narratives, myths, and other works helps an officer to develop a feel for effective storytelling, allowing them to frame their vision in a way that is relatable and memorable for their troops.

Improve Decision Making Skill: Few aspects like development of critical thinking skills, broadening the perspectives and empathy and facilitating imagination and scenario Planning can be improve by a long-standing reading habit. Reading also enhances cognitive functions like memory, focus and concentration; and also, problem-solving skill thereby reading habit improves decision making skill.

Personal Growth and Emotional Well-being: Out of professional books, reading habit of different books like fiction or novel allows young officers to step into the shoes of different characters, fostering empathy and understanding of diverse human experiences and emotions. Therefore, reading habit can be a highly effective way to relax, reduce stress, and escape from daily pressures. However, non-professional books offer guidance, strategies, and inspiration for personal growth, skill development, and achieving goals generating creativity and imagination.[18]

Adapt to the Development of Contemporary Society: Building a strategic mindset, fostering a lifelong learning ethos, improving interpersonal and intercultural skills are the key factors of social adaptation. Beyond military tactics, young officers must understand the socio-political and cultural dynamics of the contemporary societies. Reading habit helps officers to better understand different perspectives and social norms.[19]

Present State of Reading Habit among Young Officers

A survey was carried out to reveal the present state of reading habit among young officers of various categories. A number of 40 officers have participated in the survey from different arms and services. Figure-2 presents the participation of young officers as per arms and services in the survey.

Figure-2: Participation of Young Officers in Survey
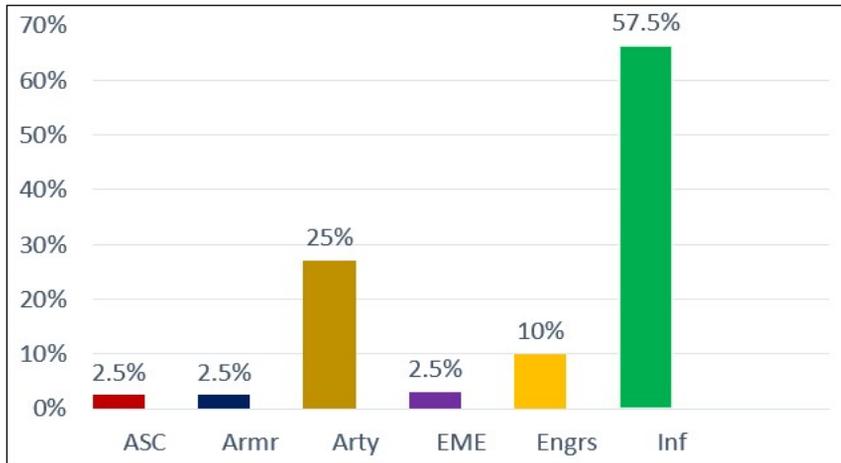
Source: Author's self-construct

It is revealed that 70% of young officers do not have a regular reading habit in any platform. Only 30% officers bear regular reading habit (Figure-3).

Figure-3: Regular Reading Habit of Officers
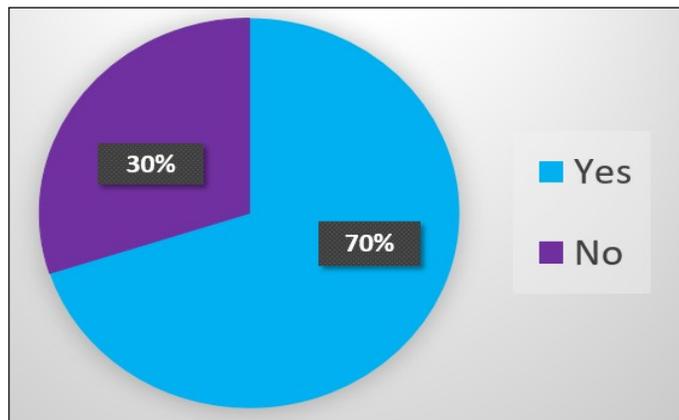
Source: Author's self-construct

Reading books daily is a rare phenomenon for young officers now-a-days. Figure-4 shows that among the participants, 5% of officers read any sorts of book daily, 27.5% once in a week, 17.5% once in two weeks, 20% once in a month and 30% officers rarely read any book.

Figure-4: Reading Frequency of Young Officers
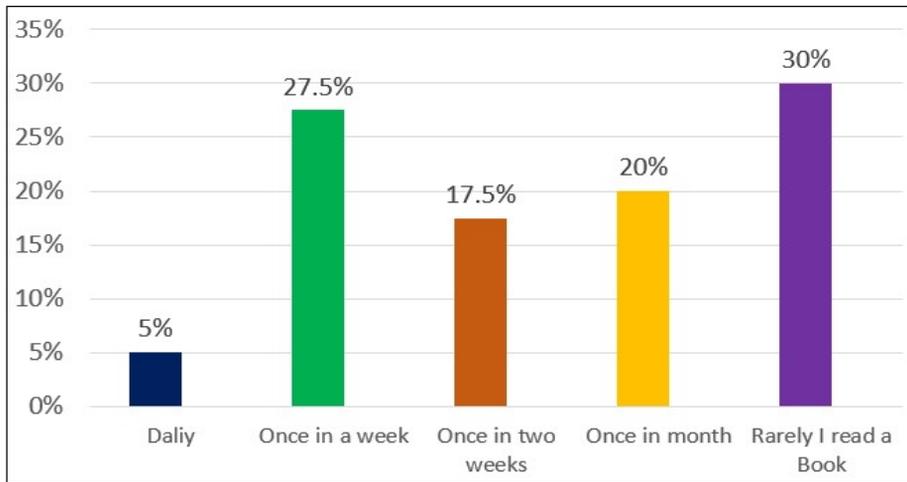
Source: Author's self-construct

It is also revealed that young officers mostly use internet based platforms (52.5%) to read a book rather than visiting library (2.5%) or sitting with a printed book (45%) their reading table (Figure-5).

Figure-5: Reading Platform of Young Officers
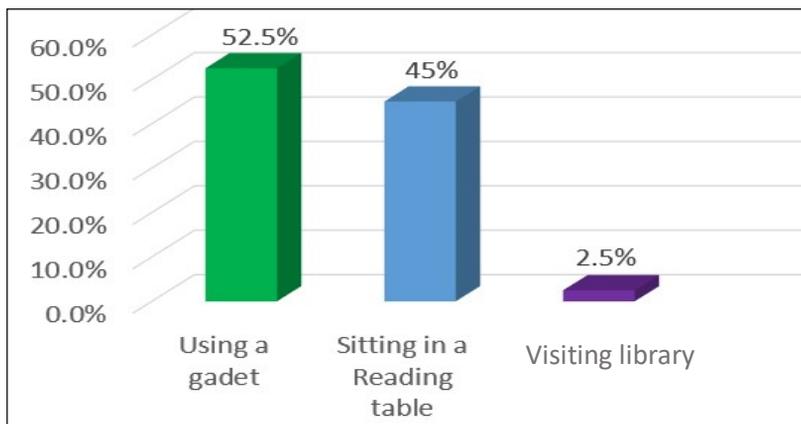
Source: Author's self-construct

Figure-6 shows young officers mostly read books for professional excellence, recreational purpose and also for gathering knowledge (57.5%). Few officers read professional books for professional excellence (15%) and few officers mostly read non-professional books only for enjoyment and mental refreshment (27.5%).

Figure-6: Category of Books Read by Young Officers
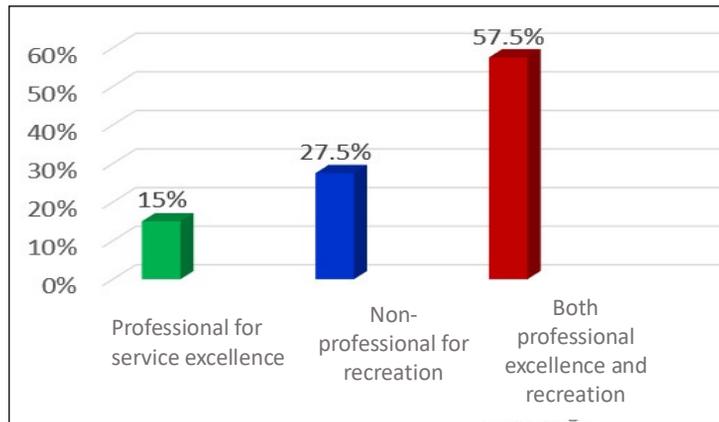
Source: Author's self-construct

Figure-7 shows, in case of reading professional book, young officers prefer to read mainly military history (50%), 22.5% prefer to read military tactics and military strategy, 17.5% military leadership. Officers are less interested to read books on military campaign carried out by great captains (10%).

Figure-7: Category of Military Books Preferred to Read by Young Officers

Source: Author's self-construct

Challenges/Factors Reading Habit among Young Officers

The reading habit of young officers in the Bangladesh Army is an issue, influenced by a combination of institutional, personal and societal factors. While the army actively promotes professional reading, the reading habit of young officers at personal level are affected by the same challenges that face young people in the modern world and the social reasons are also leashed with as general causes. Following are the limiting factors inculcating reading habit among young officers:

Personal Level: Personal desire, dedication and mind-set merit paramount importance of creating a regular reading habit. Self-determination can make outdated all

remaining disturbance indeed. However, following are the crux of factors affecting reading habits at personal level:-

Reading Attitude: A young officer's personal reading habits are inextricably linked to the attitude towards reading. A positive attitude acts as the driving force behind a sustained habit of reading for pleasure and knowledge, while a negative attitude can create a significant barrier, regardless of their reading ability or access to books. Positive attitude fosters enjoyment and motivation where negative attitude leads to avoidance generating lack of willingness and also perception of difficulty.[18] Figure-8 shows, 82.5% of young officers strongly agree that attitude towards reading affects reading habit.[19]

Figure-8: Attitude Towards Reading Affects Reading Habit
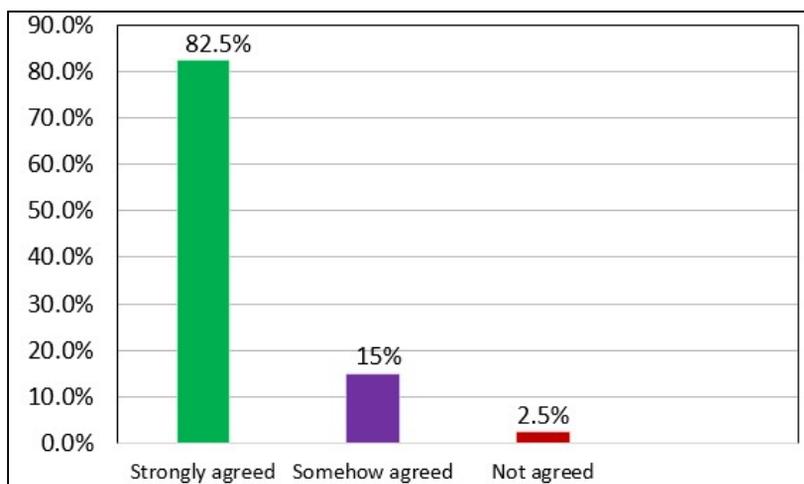
Source: Author's self-construct

Disturbance by Telephone Call: For both the persons making and receiving a telephone call becomes a significant source of distraction that can severely disrupt a person's reading habit creating few effects like fragmentation of concentration, cognitive load and working memory; and also creating psychological and emotional disruption. In contemporary times, due to globalization, talking over the phone has been increased enormously causing severe negative affect on the reading habit of young officers.[20] Figure-9 shows that 82.5% of young officers strongly agree, 12.5% somehow agree and 5% do not agree that telephone calls distract their reading habit.

Figure-9: Telephone Call Distracts Reading Habit
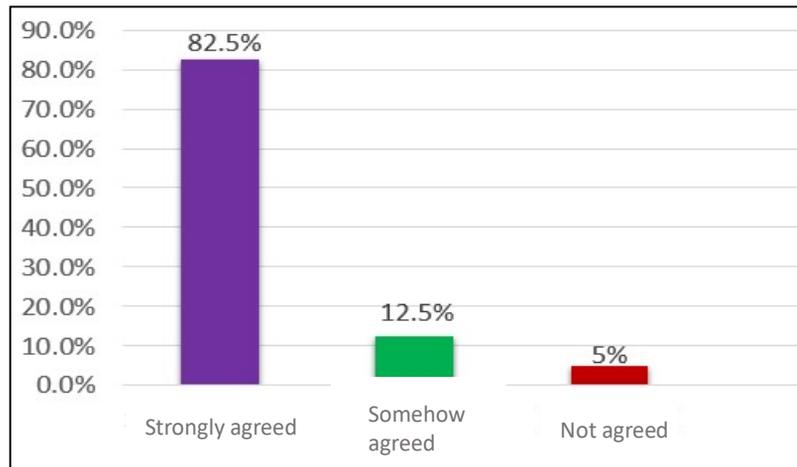
Source: Author's self-construct

Watching TV: In this modern era screen dominates the attention over reading books. In the context of a young officer, this is a relevant factor that distracts reading habit. Figure-10 shows, 65% of young officers strongly agree that watching TV distract their reading habit. 27.5% officers somehow agree where only 7.5% officers not agree with the statement.

Figute-10: Watching TV Disturbs Reading
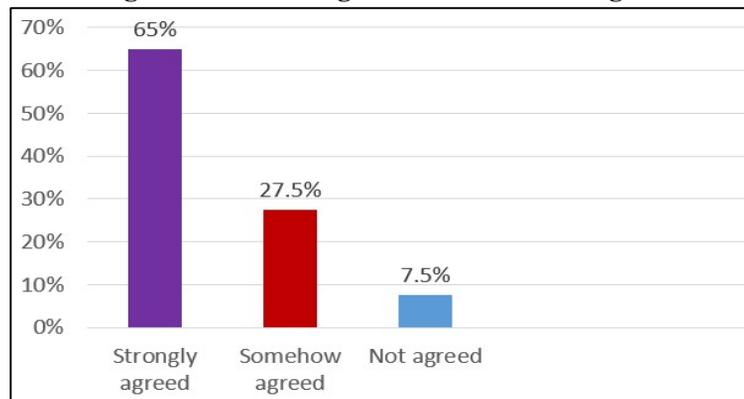
Source: Author's self-construct

Listening Music: Listening music reduces reading comprehension and makes difficult to be fully immersed in the text. Even instrumental music can be a distraction, depending on its volume, tempo, and complexity. However, the quick and easily accessible event of music on a device often wins over the delayed gratification of reading books.[21] Figure-11 shows, 47.5% of young officers strongly

felt that listening music distracts their reading habit where 35% are somehow agreed. Only 17.5% officers think that listening music does not affect their reading habit.

Figute-11: Listening Music Create Disturbance on Reading Habit
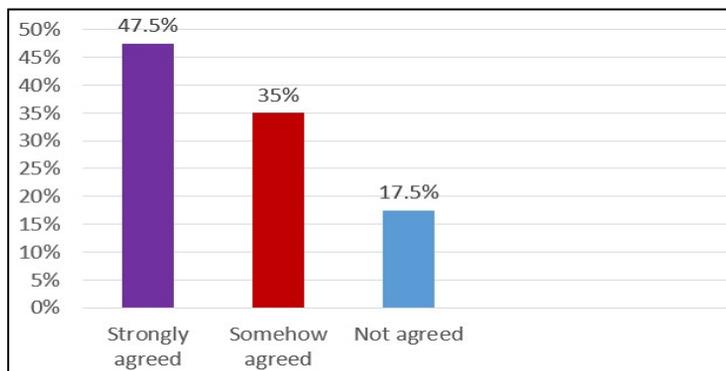
Source: Author's self-construct

Effects of Social Media: Social media is a major distraction for young military officers' personal reading habits as they create constant notifications and alerts from few popular platforms like Facebook, WhatsApp, Instagram, Tik Tok etc. Furthermore, social media offers instant gratification through likes, shares and comments a much faster reward than the long-term payoff of finishing a book. This contrast can make reading feel like a boring and unfulfilling activity.[22] Figure-12 shows, 77.5% of young officers strongly marked social media as a distracting factor of their reading habit, 15% are somehow agreed and only 7.5% thinks social media is not a barrier for inculcating a regular reading habit.

Figure-12: Disturbance of Reading Habit Due to Social Media
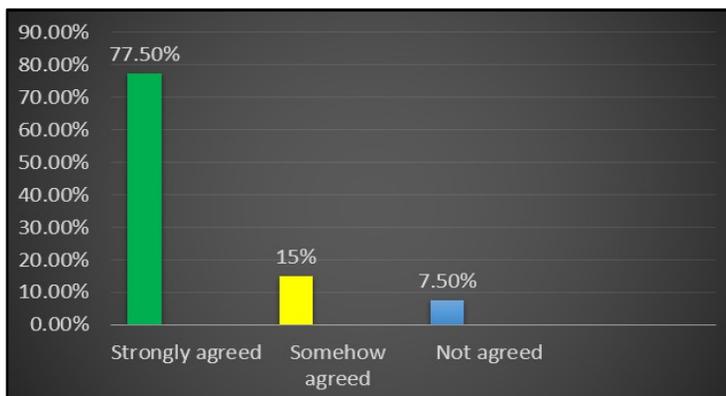
Source: Author's self-construct

Gossiping with Friends: The social and psychological dynamics of gossiping creates a constant need for real-time engagement. At times young officers found emotionally attached with close friends.[23] Figure-13 shows that 45% of young officers strongly agree that gossiping with close friends distract their reading habit.

Figure-13: Effect of Gossiping with Friends
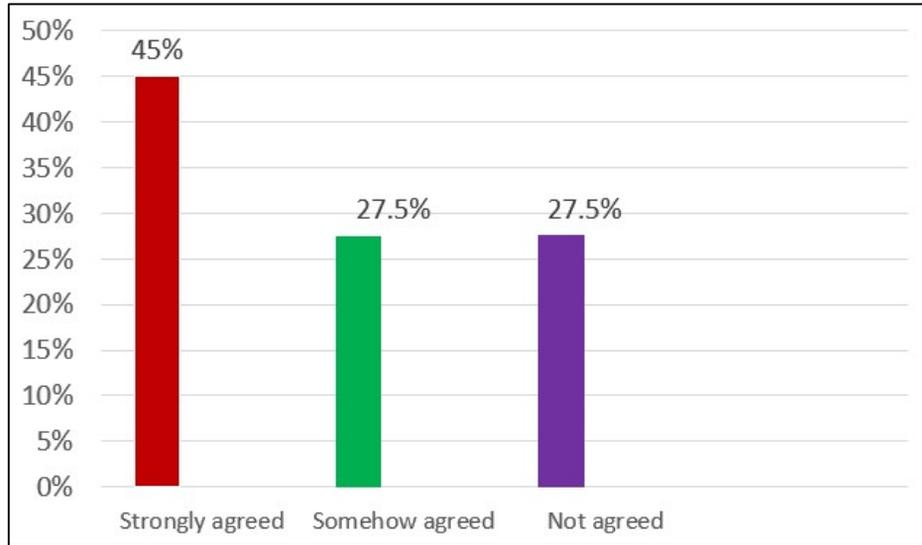
Source: Author's self-construct

Organizational Level: Due to some obvious organizational engagement, young officers are getting detached from inculcating a regular reading habit. Few key factors that hinder the reading habit are stated below in brief:

Over Commitment: The nature of employment often involves the young officers' long, unpredictable hours and high-stress environments leading mental fatigue that makes difficult to engage with complex texts for personal or professional development.[24] Figure-14 shows, 80% officers strongly agreed that over commitment distract their reading habit and 15% officers agreed with the statement. Only 5% officers think, official commitments are not barriers to create a regular reading habit.

Figure-14: Disturbance to Reading Habit due to Over Commitment
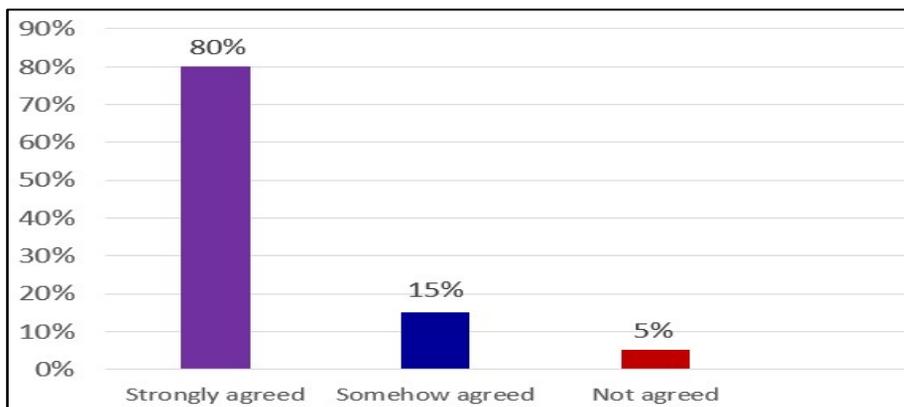
Source: Author's self-construct

Instant Occupation: The young officers are busy with different types of commitments which bear no time limits. Moreover, very often they are assigned with few sudden tasks. Therefore, young officers are mostly interested to be engaged with quick and instant mental refreshment platforms like browsing internet, listening music, watching TV etc. and reading books turned into a slow and old version of mental refreshment to them. Figure-15 shows, 75% officers strongly agree that sudden commitment distract their reading habit. 20% officers somehow agree. Only 5% officers think, sudden official commitments are not barries to create a regular reading habit.

Figure-15: Disturbance to Reading Habit due to Sudden Commitment
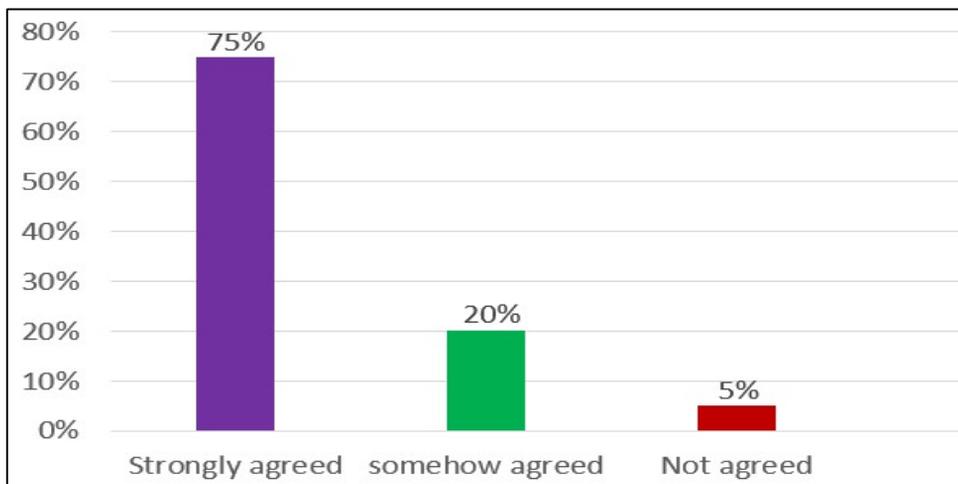
Source: Author's self-construct

No Error Syndrome in Working Environment: The 'no-error syndrome' emphasizes flawless execution and non-acceptance of mistakes. This unusual work place environment infuses mental and physical fatigue, leaving little cognitive capacity or energy for a demanding leisure activity like reading. The fear of making a mistake can consume thoughts, making pretty difficult to relax and immerse in a book. Figure-15 shows, 82.5% of young officers are strongly agreed that zero error syndromes in works place environment remains as a factor that affects reading habit. 12.5% are somehow agreed and only 5% are not agreed with the statement.

Figure-16: Disturbance to Reading Habit due to Zero Error Syndromes
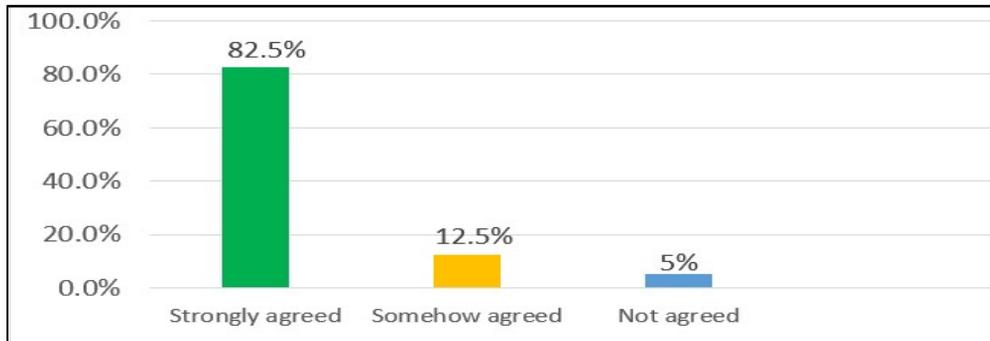
Source: Author's self-construct

Lack of Evaluation System and Recognition of Readers: Without a strong institutional push, reading becomes a low-priority or personal hobby instead of a core professional duty. A strong evaluation system does not exist in Bangladesh army which recognizes the readers in terms of professional reputation irrespective of service length. Figure-17 shows, 57.5% of young officers strongly agree, 35% somehow agree and 7.5% do not agree with the statement.

Figure-17: Lack of Evaluation and Recognition System Affects Reading Habit
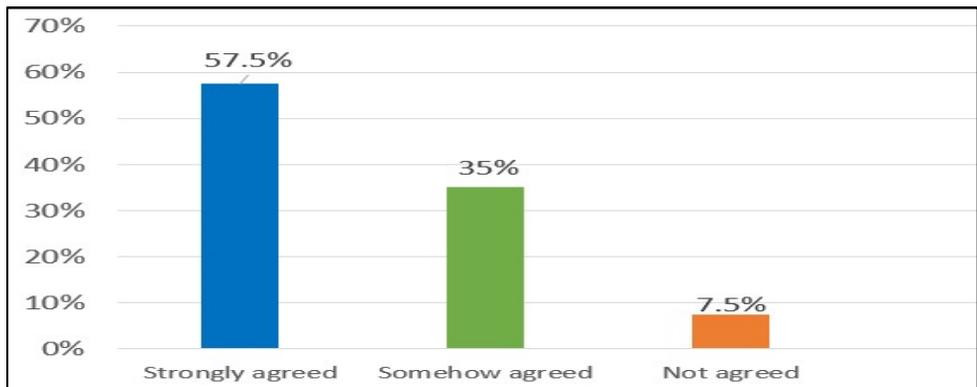
Source: Author's self-construct

Lack of Giving Rewards: Rewards act as a self-catalyst in any competitive works. However, in Figure-19 it is shown 92.35% of young officers believe that, giving rewards to the readers increases the reading desire among young officers whereas only 7.70% believe that, giving rewards to the readers does not create any impact to increase the reading desire among young officers.

Figure-18: Not Growing Reading Habit due to Lack of Reward
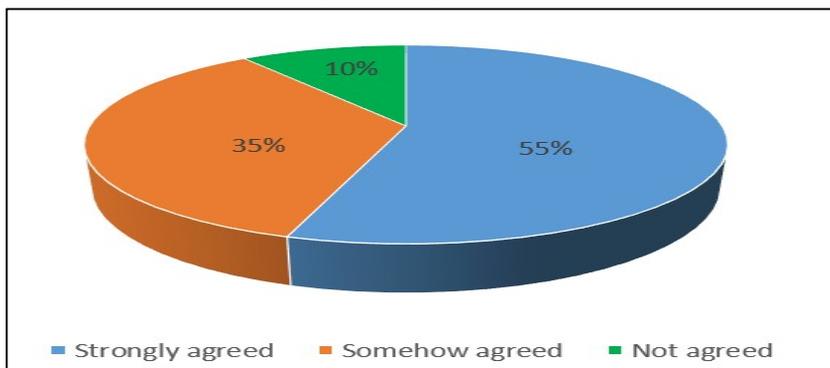
Source: Author's self-construct

Absence of Reading Culture in Institution Level: An institutional reading culture refers to the collective attitudes, values and practices that promote to encourage reading habit to the members. Few key factors like inadequate libraries, absence of infrastructure, no structured reading time and failure to promote reading are critically involved to distract the reading habits of young officers. However, most the young officers of think that reading culture in institution level is critical for Bangladesh army.

Figure-19: Disturbance due to Absence of Reading Culture
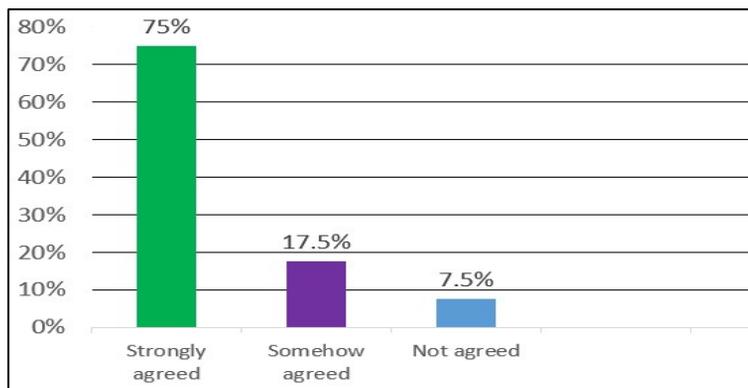
Source: Author's self-construct

Ways Forward

To improve upon the reading habit of young officers few steps to be taken visualizing the present socio-dynamic spectrum. A drastic change may not create desired environment of reading habit. So the identified challenges to be mitigated accordingly. Therefore, both institutional and personal level steps need to be focused below:-

Institutional Level Attempts: An institution can significantly improve a young military officer's reading habits by integrating a strong reading culture into its formal and informal professional development programs. This goes beyond simply providing a list of books and involves creating an environment those values and supports continuous learning through reading.

Forming Professional Mandatory Reading List: Create a must-read list for young officers to get through in next level of professional career as well as amenities like promotion, salary etc. This list must contain professional and non-professional books and may be similar to those in other militaries that include a diverse range of topics. This is how young officers can be knowledgeable on military history, strategy, leadership, international relations and fiction to provide a broad intellectual foundation.

Developing a Unit Reading Program: An initiative by unit commanding officer may create huge effects on reading habit of young officers. The focus should be on practical application and connecting the content to daily military life. Implementing a reading program as a discussion and debate fashion at the unit level will boost up the moral of the young officers and leads them to grow a sustainable reading habitant at unit level.

Allocating Library Hours: For young army officers weekly library hours to be allocated. The unit commanding officer must take the accountability whether the young officers pass quality time in the library or not. After one month, the unit commanding officer may have an interaction session with young officers in a friendly environment and look for the progress and setbacks.

Organizing Competitions Including Families: Family members are the part and parcel of military life. To inspire reading habit book reading competition including family members may be organize in a frequent interval. In case of including spouse and children in a competition surely enhance the reading habit of young officers. This competition will create a supportive and encouraging environment fostering a Sense of healthy competition. It will also increase accountability as well as enhances communication and Bonding among the family members relates with reading habit.

Compulsory Reading Books List: Allocation of compulsory book reading will compel the young officers to sit on their table. The list must include professional books like military history, military tactics, military science; great battle presentation as well as literature based recreational books. This step will make the young officer mentally fresh and knowledgeable person in the long run. This compulsory reading list to be completed by a certain service length and the young officers must be under close supervision by near senior officer to ensure the completion of reading list

Submitting Book Review: Compulsory submitting book review will promote active reading habit which is deeply connected with improving comprehension and critical thinking, enhancing memory and retention, developing writing and communication skills, accountability and motivation and also fostering a deeper connection with the material. Thereby, compulsory submission of a book review can be a highly effective strategy to enhance reading habits of young officers of Bangladesh army.

Modernizing Library Facilities: Enhancing library facility is a core issue of attracting the readers to library. This step will create a more inviting, accessible, and resource-rich environment. Upgradation of collections and resources, modernizing physical space; and professional and information services are the key issues of modern library facilities. However, engaging an expert librarian and organizing workshop program like information literacy, research methodology, and critical thinking will definitely inspire the young officers to visit library frequently and create a regular reading habit.

Incorporating E-reading Facilities: E-reading facilities can be incorporated in numerous ways to enhance the reading habit of individuals. Digital content and platforms like audio books, kindle app, apple Books, Google play books, Libby/over Drive, third-party apps etc. are the best e-reading platforms. Moreover, Microsoft Edge Immersive Reader, Read-it-later services, Online PDF readers and document viewers, Text-to-Speech (TTS), Speech-to-Text, Reading Aids etc. to be made well oriented with the young officers. Study period or workshop to be organized by expert authority to make the young officers well known and expert users of these e-reading platforms.

Personal Level Attempts: Building a strong reading habit as a young military officer is a personal journey that requires discipline, intentionality, and a mindset that values continuous self-improvement. While institutional support is helpful, the most significant change comes from within. Some personal-level steps a young military officer can take to improve their reading habit are highlighted below:-

Making a Plan and Start Small: To develop reading habit young officers should set a realistic goal, establish a realistic reading routine and break down reading according to self capability. To bear in mind that the cumulative effect of small, consistent effort is more powerful than sporadic and large-scale attempts very often become fruit-less. Moreover, making reading a part of daily routine, like physical training, will help it become a habit.

Self-Control on Using Social-media: Social-media has strong influence in personal and social life. Young officers must be self-motivated to positive use of social media and build up a reading habit using this influential platform. They my utilize social media effectively for sharing books among friends and officers instead wasting time for chatting.

A Daily Routine of Reading Books: Individual young officer can make a self-allocated time for reading book every day which will inject positive attitude towards reading books rather wasting of time browsing internet and social-media.

Judicious Use of Cell Phone: Judicious use of cell phone a book will create favorable situation of getting reading habit. Officers need to be judgmental whether to attend the emergency calls during reading time or not.

Improving Self-Perseverance: In modern days reading books becomes a bit repellent comparing with the entertaining surfing of internet. Young officers need to be self-motivated for finding books and book sites using internet and web-sites. Perseverance to chronological development of reading habit will ensure due dividend of reading habit.

Conclusion

In the words of Sir Francis Bacon (1561-1626), the eminent English philosopher and diplomat, "Reading maketh a full man." Fostering reading habit among young officers of Bangladesh army is not only a peripheral concern but also a strategic imperative. In this competitive world, the lack of reading habit can be a cognitive factor becoming a world standard professional army. It becomes apparent that gradual technological advancement in all dimensions of life creates unavoidable barriers in the path of intellectual development. Most of the young officers are ignoring the certain truth that, though exploration of virtual world makes easy access to information, reading habit remains as the best way to develop intellectuality, the key element to achieve a strong military personality. In the context of present modern age, young officers prefer using mobile phones or electronic gadgets keeping disinterested reading of the traditional formats like reading books and newspapers. Though technology helps a lot to ease up the daily activities covering all facets of life but in the situation of different social media-based platforms completely

substitute the reading habit, it will put a strong barrier for the future career development of a young officer. Therefore, they must understand and value the importance of reading habit perceiving the realy of personal, social and professional life which will strengthen the sovereignty of the country.

In this critical junction of reading habit, the path forward demands a concerted, multi-faceted approach that engages leadership, modernizes infrastructure, and empowers individual initiative. The motivation for changing the present scenario must come from the top. Senior leadership must arrange the 'warrior-scholar' ethos. The professional reading must be a visible issue and valued properly on occasion of career progression. Framing a Chief of Army Staff's or Formation Commander's annual reading list with required assessments and assistance will confer due aftereffects. Beside this, ceremonial celebration of officer's intellectual demonstration will become a good inspiration for officers of different levels. Besides providing military training, academic institutions of Bangladesh army can play a pivotal role in instilling a lifelong love of reading during the tender age of officers in the training institutions. However, reading must be perceived not as a mere academic requirement rather a direct route to professional excellence and promotion factor which will conserve a reading habit priority for all aspiring leaders as well as young officers.

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Preparing Bangladesh Army for Black Swans: Embracing Anti-fragility

Lieutenant Colonel Tahsin Saleheen, psc, Infantry

Abstract

In an era when major powers are nonchalantly breaking the rules of the game, countries like Bangladesh can no longer rule out a strike of unprecedented scale and precision targeting the command and control structure of the country's defence forces should hostility escalate. That will be a Black Swan moment for Bangladesh and its Army. Warfare qualifies all characteristics of a Black Swan: extreme rarity, disproportionately severe consequences and a tendency to retrospective justification. Nassim Nicholas Taleb popularised the concept and later introduced the idea of Anti-fragility as an answer to the shock of Black Swans. Anti-fragility refers to a system's ability to become stronger by enduring stress and volatility. From the Army's perspective, Anti-fragility would mean stress-testing the force's command and control integrity. This essay explores how traditional military planning can be improved by understanding the inevitability of Black Swans in warfare and advocates for Anti-fragility as an antidote to the chaos that could disintegrate the Army at the onset of any war.

Keywords: *Precision Targeting, Warfare, Black Swans, Command and Control Integrity, Anti-fragility.*

Introduction

What could most aptly explain Homo sapiens' insatiable hunger for progress? Arrogance, perhaps? However, what has been the source of human aspiration for progress, arrogance, has also ironically been its reason for doom. Arrogance has driven much of progress, yet paradoxically, it has also caused us to be blind to our fallibility. Human arrogance, or epistemic arrogance, has historically led us to be stubborn in accepting that many things will remain in the realm of the unknown until we truly understand them, such as the relationship between randomness and warfare. Throughout history, refusal to acknowledge the significance of randomness has led to attempt to predict everything, measure risk in precise terms and inevitably fail. That is why one is frequently jolted by the Black Swans.

Nassim Nicholas Taleb (b. 1960), a Lebanese-American essayist, mathematical statistician, defined Black Swans[1] as extremely rare, consequential events that often change the course of history. Evidently, man-made complex systems can create a series of reactions and counter-reactions that result in a runaway chain of events. Warfare exemplifies such a chain of events, consistently defying predictions and unleashing chaos. To deal with such a chaotic phenomenon, traditional decision-making models and matrices often create a pseudo-certainty, misleading military planners into selecting the best course of action (COA), which is eventually turned upside down even before the conflict begins. The lesson? Plans, assessments, and processes

are crucial, but what is even more important is understanding their fallibility before blindly initiating a war or misjudging the possibility of one, putting millions of lives and the integrity of a nation at stake.

The lesson for Bangladesh Army is clear: It must revisit its overreliance on traditional decision-making tools and risk assessments to avoid the disaster of high-stakes miscalculations. Miscalculation is particularly unaffordable for a country like Bangladesh, which, unlike Ukraine, does not have any promise of a steady supply of war materials from any capable ally. Therefore, the Army must objectively assess its preparedness to face the most extreme, unpredictable, and dangerous scenarios. In doing so, Bangladesh Army must revisit its centralised decision-making structures, which stifle flexibility and leave forces vulnerable to the volatility of modern warfare. It is time to put the theory of decentralised command into practice by embracing a transformative concept: Anti-fragility.

Taleb also popularised the idea of Anti-fragility[2] as an answer to the shock of the Black Swans. Taleb rightly parallels the responses of living beings to controlled volatility with those of large and complex organisations. The 2008 collapse of the then seemingly booming U.S. markets, or the rapid degeneration of Arab authoritarian regimes, are fitting examples of the Black Swan vulnerability of man-made complex systems. The antidote? Anti-fragility, which Taleb argues is a step above mere robustness. Systems and organisations can become antifragile by allowing a certain degree of stress and volatility in the form of 'calculative flexibility.' For militaries, embracing Anti-fragility may involve introducing a measured degree of flexibility into Command and Control (C2) structures and approaching war planning with an open and supple mindset.

This essay draws parallels between Black Swan events, warfare, and military planning, cautioning against unquestioned faith in traditional Military Decision Making tools. The concept of Anti-fragility, and how it can inoculate the force against the shocks of Black Swans, follows in later segments. Since both concepts remain relatively less studied in the context of military conflicts, they must be understood more clearly. The following sections discuss the inevitability of Black Swans, analyse why traditional risk assessments fall short, and outline how the Army can integrate Anti-fragility into its C2 structures through practical steps.

Black Swan and the Problem of Induction

Most people believe that since something has always happened, it will continue to happen. This is known as the problem of induction, as exposed by Scottish philosopher, historian, economist and essayist David Hume (1711-1776). Military planning is not exempt from the problem. Another British philosopher, logician, and mathematician, Bertrand Russell (1872-1970), illustrated this problem with his famous chicken metaphor. In every war, one side appears to be the chicken that gets blindsided on the day its 'kind-until-yesterday' master opens the door, not to feed it but to

slaughter it. The course of any war resembles countless moves only possible in a game of chess. However, militaries often stick to inflexible decision-making templates grounded in flawed empirical data of 'past precedents' and often become Russell's chicken. Like the chicken's feeding routine for 364 days, that data gives no clue about the catastrophe awaiting on day 365. The above analogy shows how overconfidence in past precedents can lead to devastating underestimation of an adversary's intentions. What if recognising the induction problem of our assessment tools provided the caution and nuance needed for more flexible risk assessments? That could potentially change the outcome of entire battles. Raising this awareness is one of the central aims of this essay.

One more twist: Russia's full-scale invasion of Ukraine was a Black Swan for Ukrainians but not for the invaders. Black Swans only blindside those who fail to acknowledge how rare, high-impact events can strike without any resemblance to past patterns. That makes such phenomena relative. What catches one actor off guard may be entirely foreseeable to another. One can avoid becoming the 'chicken' by acknowledging the limits of predictive models. While the nature of Black Swan events is inherently unpredictable, it is important to learn about the cognitive limitations that often worsen their impact.

What Blurs our Vision from Approaching Black Swan

The Black Swan surprise does not emerge from intelligence gaps but rather from our innate cognitive biases. These blind spots have repeatedly led military leaders to underestimate the unpredictable forces that reshape history.

Normalcy Bias: Normalcy bias leads to the assumption that the future will play out in a manner similar to the past. In 1944, an Imperial Japanese Army officer General Mutaguchi (1889-1966), assumed that British forces would retreat as before and persuaded the Japanese high command to launch Operation U-Go. This time, the commander was Field Marshal William Joseph Slim, 1st Viscount Slim (1891-1970) and his rejuvenated subordinates held firm, handing the Japanese an agonising defeat. Normalcy bias deluded many military planners throughout history in the same way.

Confirmation Bias: The frustration when someone stubbornly holds on to their opinions despite clear counter-evidence can be overwhelming. During World War II, Adolf Hitler (1889-1945), dictator of Germany during the Nazi era pursued foolhardy offensives on all fronts, even when presented with more flexible alternative strategies by Heinz Guderian (1888-1954) or Manstein (1887-1973), German military officer. This behaviour is a cognitive limitation called confirmation bias. It causes leaders to favour evidence that supports their preconceived idea and reject contradictions. For military leaders, confirmation bias can mean gambling with lives and resources, as did Hitler during Operation Barbarossa.

Narrative Fallacy: Conspiracy theories like the fake moon landing or aliens roaming around Area 51 reflect humans' intrinsic preference for simple stories over complex explanations. In 1940, France's stunningly swift defeat is often credited solely to the German Blitzkrieg, ignoring the deeper mix of causes: unstable government, outdated military and poor troop morale. Narrative fallacy like this can mislead leadership by oversimplifying the complex buildup of an approaching conflict.

Anchoring Bias: Before December 7, 1941, the US planners anchored on the logistical limitations of Japan, analysed their past behaviour, and ruled out the risk of any long-range carrier attack by them. The US models predicted likely attacks anywhere in Southeast Asia. Then came the attack on Pearl Harbour, which qualifies many characteristics of a Black Swan. Anchoring bias was among the many cognitive limitations that led the American leadership to the costly miscalculation. Likewise, people tend to hold onto the initial piece of information and overlook some significant ones later in the decision-making process. Planners must learn to avoid this critical thinking defect before initiating any campaign planning.

Sunk Cost Fallacy: The US leadership hung on to a sinking ship during the Vietnam War. They clung to the sunk cost fallacy by senselessly pushing forward an already disastrous campaign in an attempt to justify the initial misjudgments. Had they asked, "Is this still worth it?" Perhaps the embarrassment would have been more bearable. Military leaders are not immune to the fallacy of trying to correct one mistake by making more mistakes. The problem is that they put people's lives at risk while doing so.

The Ludic Fallacy: The Ludic Fallacy refers to the false sense of confidence provided by models and matrices. This fallacy may have contributed to Argentina's miscalculations during the Falklands War in 1982.[3] Argentine war planners were confident in their wargaming, which might have demonstrated that the Royal Navy would struggle to sustain an operation so far from its home base. This is a familiar kind of miscalculation among many war planners in history, who failed to grasp the simple fact that in the face of a life-or-death situation such as war, an adversary will go all out. Britain did exactly that by swiftly deploying a coordinated naval task force, overcoming Argentina's advantages. History is filled with similar victims of the Ludic Fallacy, those misled by models and matrices.

The Invisible Threats: Unmasking the Problem of Silent Evidence

A Greek philosopher and sophist Diagoras who lived in 5th century B.C. was once shown some painted blocks bearing the portraits of worshippers whose prayers before the voyages saved them from shipwreck. The implication was that praying protected them from drowning. Diagoras disagreed with the notion. "Where are the pictures of those who prayed, then drowned?" he argued. This anecdote reveals that truth often lies under plain sight. This is the problem of silent evidence. During World War II, the United States Air Force analysts initially suggested that they must reinforce aircraft sections which returned with bullet holes. Mathematician Abraham Wald (1902-1950) corrected them, noting that these areas were survivable; the planes that never returned likely

suffered hits to critical sections, such as engines. Thus, heeding the evidence lost in silence, survival rates of the aircraft rose dramatically. Silent evidence, if neglected, distorts risk evaluation, overestimates successes, and masks threats. To determine the best COA before a campaign, one needs to uncover the silent evidence first, but doing so requires confronting another dangerous trap: epistemic arrogance.

The Perils of Epistemic Arrogance and the Need for Intellectual Humility

Epistemic arrogance is the belief that is known more than is done, which can be a dangerous flaw in military leadership. Amid the chaos of a battlefield, commanders often feel tempted to show decisiveness and sometimes end up submitting to their gut feelings fueled by epistemic arrogance. A top-down command structure can further aggravate this issue by discouraging alternative perspectives, dismissing unconventional ideas, overlooking emerging threats and clinging to outdated doctrines. The remedy? Intellectual humility. It can counteract arrogance, rectify knowledge limitations and open up minds to new perspectives. Intellectual humility prompts leaders to question assumptions and adapt to changes. Nevertheless, even after dealing with arrogance and adopting humility, military planning does not become immune to another predicament: the unknown unknowns.

The Sheer Weight of Unknown Unknowns

Unforeseen scenarios in a war are merely known unknowns. They are predictable; therefore, they can be dealt with contingencies. However, warfare is dominated by the unknown unknowns: the outliers. The unknown unknowns are a mishmash of unpredictability, coincidence, and randomness. On December 16, 1944, Hitler gambled everything in a last-ditch attempt to alter destiny, and almost made it. Had the Battle of the Bulge gone in the Germans' favour, the Allied forces would have been the victims of the unknown unknowns. Nevertheless, on December 23, 1944, the sky cleared, returning the advantage of Allied air superiority, and Hitler's Army itself became the prey of war's unpredictability. If Pearl Harbour, the Yom Kippur War and Enigma Codebreaking in WWII teach us anything, it is this: no amount of contingencies is enough; all plans crumble under the unfathomable uncertainty, even when they are made with the most sophisticated tools. To navigate the unpredictability of modern conflict, planners must critically evaluate the tools they rely on, such as the Risk Assessment Matrix.

The Limitations of the Two-Dimensional Risk Assessment Matrix

The Risk Assessment Matrix (RAM), currently followed by the Bangladesh Army, is a tool that reduces risk to just two dimensions: likelihood and impact. Two dimensions cannot capture all factors; they overlook critical elements that can radically change the nature of the risks. Human factors and the dependability of intelligence play almost no role in the two-dimensional RAMs, making them prone to dangerous blind spots.

Figure-1: Simplified 5x5 Risk Matrix

		Impact				
		Low Impact 1	Minor Impact 2	Moderate Impact 3	High Impact 4	Severe Impact 5
Likelihood	Highly Likely 5	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	Likely 4	Moderate 4	High 8	High 12	Extreme 16	Extreme 20
	Neutral 3	Low 3	Moderate 6	High 9	High 12	Extreme 15
	Unlikely 2	Low 2	Moderate 4	Moderate 6	High 8	High 10
	Rare 1	Low 1	Low 2	Low 3	Moderate 4	Moderate 5
Key: 1-3 = Low, 4-7 = Moderate, 8-13 = High, 14 < = Extreme						

Source: https://www.rosemet.com/quantitative-risk-analysis

Multidimensional Matrices are Key to Adaptability

The nature of warfare is changing at a breakneck speed, and the multidimensional dynamic risk matrices must replace the traditional RAMs. Although such matrices are not yet standardised by most armies, they are worth discussing to facilitate their development, understanding, and eventual integration into current Military Decision Making Processes (MDMP).

Three-Dimensional Dynamic Risk Matrix: This model incorporates a third dimension to traditional two-dimensional matrices: Confidence Level (Z-axis) to assess the reliability of intelligence. This additional dimension enables better prioritisation of information-gathering. This matrix offers a more nuanced analysis for decision-makers, enabling a finer differentiation of risks. For example, suppose intelligence indicates an adversary's potential, yet unverified, arsenal of satellite-launched missiles. In that case, standard RAM might flag them as a "High impact and unlikely" threat without considering the reliability of the intelligence. By incorporating a Confidence Level axis, the Dynamic Risk Matrix draws attention to possibilities. This is likely to make commanders more flexible in considering options before making critical threat assessments.

Figure-2: Simplified Three-Dimensional Risk Matrix

Note: Confidence (Z) scale = 1–5 (1 = single-source/uncorroborated; 5 = multi-source, timely, corroborated). When $Z \leq 2$, prioritise ISR over action.
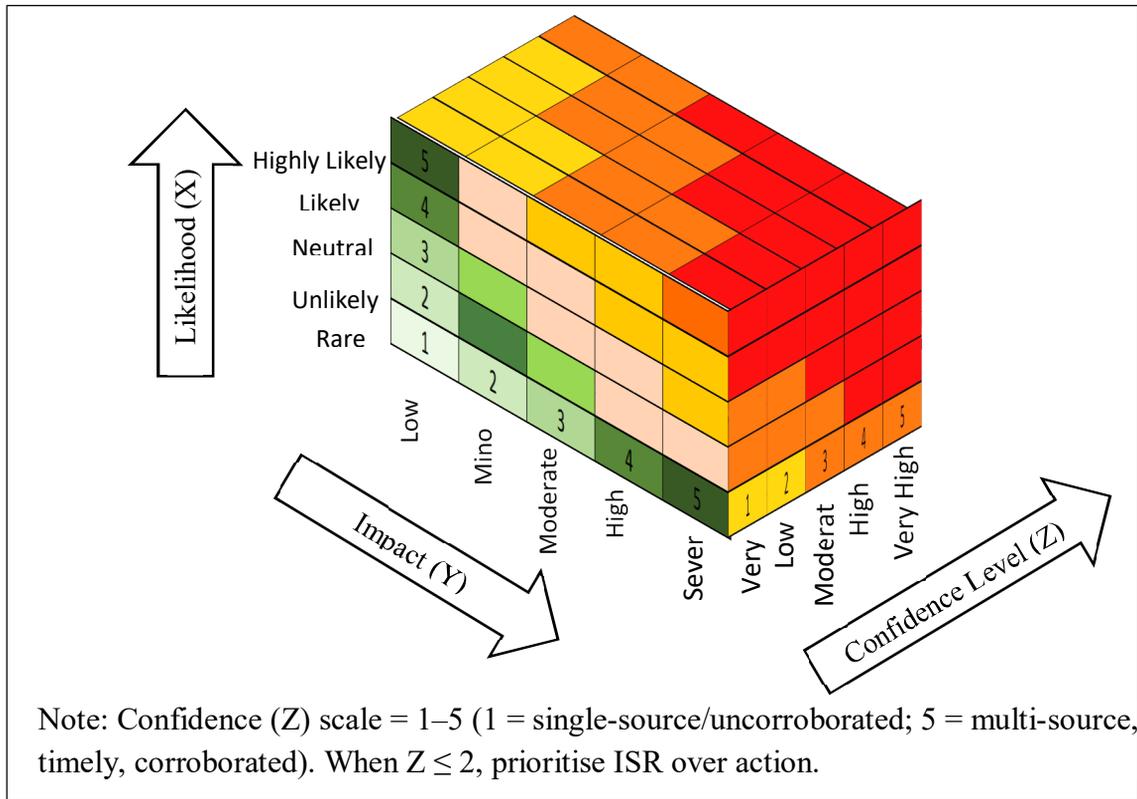
Source: Author's self-construct

The Grey Zones of the Fuzzy Risk Matrix: A fuzzy risk matrix is complex and not widely used as a military risk assessment tool. Its speciality is that it avoids fixating on a precise risk factor score, instead showing it within a range. If intelligence suggests the enemy might deploy new drones, but reports are inconsistent between small and mass deployments, standard RAM might force commanders to choose a single option ("Moderate likelihood, High impact"). A fuzzy RAM instead pushes the risk into the grey zones between 'High Impact' and 'Critical Impact,' forcing planners to consider both possibilities and thereby reducing the chance of a catastrophic surprise. That serves another central aim of this article: alerting planners to the need to avert irreversible catastrophe in any war by considering possibilities.

Figure-3: Simplified Fuzzy Risk Matrix

		Impact				
		Low Impact 1	Minor Impact 2	Moderate Impact 3	High Impact 4	Severe Impact 5
Likelihood	Highly Likely 5	Moderate	High	Extreme	Extreme	Extreme
	Likely 4	Moderate	High	High	Extreme	Extreme
	Neutral 3	Low	Moderate	High	High	Extreme
	Unlikely 2	Low	Moderate	Moderate	High	High
	Rare 1	Low	Low	Low	Moderate	Moderate

Note: The shaded areas indicate risk within a range. If the risk band overlaps a threshold (e.g., Moderate–High), plan for the higher band until new intelligence narrows the range.

Source: Author's own construct

Artificial Intelligence (AI) can be utilised to generate more usable and practical RAMs, and the Bangladesh Army should invest in that effort, ASP.

Implications of Prospect Theory in Military Planning

Matrices and models can appear mechanical at times, failing to perceive a significant aspect that influences military decision-making: human psychology. Israeli-American psychologist Daniel Kahneman (1934-2024) and an Israeli cognitive and mathematical psychologist Amos Tversky (1937-1996) developed Prospect Theory,[4] which was later applied to military contexts by an American lawyer and corporate executive James V. Schultz. (b. 1972). The latter explains how decision-makers are psychologically inclined by the prospects of gain (read success) or loss.[5] Intriguingly, when commanders perceive success, they become reserved and try to play it safe to preserve the current advantage. Some of Field Marshal Bernard Law Montgomery (1887-1976), or former Chairman US Joint Chief of Staff General Omar Nelson Bradley (1893-1981) cautious,

sometimes overly cautious planning reflected this mindset during World War II. By contrast, when any campaign seems destined to fail, leaders undertake reckless gambles to alter its course. Most decisions made by Hitler or Mussolini (1883-1945), an Italian politician and journalist who was the dictator of Italy during the Fascist regime bore resemblance to such gambles in their final days. The implication of Prospect Theory for military planning is clear: even the most sophisticated decision-making tools cannot be separated from the psychology of the individuals who employ them. With Schultz's work and its findings, military planners can now better understand their counterparts, outsmart them in specific scenarios, and strike a balance between risk aversion and recklessness.

Falsifiability: the Additional Test Every Plan Must Pass

Military plans are supposedly subjected to rigorous testing through wargaming. However, the rigour of such DMPs and resulting plans can still be questioned. Many campaign plans in history were immediately turned upside down, despite having presumably undergone highly professional and traditional military planning processes. Considering the weight of the stakes in any war planning, additional ways to shock-proof these plans need consideration. Karl Popper's[6] (1902-1994), an Austrian–British philosopher, academic and social commentator, concept of falsifiability can offer an additional test for the reliability of the MDMP and the COAs derived from it. The idea was originally developed to distinguish between scientific hypotheses and pseudoscience that lacks empirical support. Falsifiability is the principle that a hypothesis must be testable and capable of being disproven. This ensures that the hypothesis or theory itself is not vague, and it advocates that something that can not be proven wrong falls under pseudoscience, not real science. For instance, most hypotheses and theories proposed by Sir Isaac Newton (1643-1727), an English polymath active as a mathematician, physicist, astronomer, alchemist, theologian, author and inventor or a German-born theoretical physicist best known for developing the theory of relativity Einstein (1879-1955) can be proven wrong someday, given new evidence and observations. That does not apply to any theory (however scientific it claims to be) related to human dreams or human souls. Such theories are pseudoscience.

In military planning, falsifiability may require identifying and stress-testing potential weaknesses in every fundamental assumption that plays a crucial role in the DMP and its resulting outcomes. Although there are qualifications for such assumptions at different levels in military planning, their reliability can still be a critical predicament. That is why testing their ambiguity through an additional lens of falsifiability can play a significant role in refining the planning process and the plan itself before committing lives and resources to its execution. Applying falsifiability will prompt the planner to step out of the comfort zone and consider what if some basic assumptions are proven wrong. Therefore, plans would be tested against the most extreme (even improbable) adverse scenarios on a battlefield. Careful analysis consistently reveals that wars are defined by the most perilous, improbable, and random outcomes. That said, no amount of rigour or shock-proofing can ensure that the force that will execute the plan will be able to act or react as planned or as planners want them to. That adaptability can possibly be gained through a greater flexibility in the C2 environment of the combat force by embedding the idea of Anti-fragility.

Examining the Relevance of Anti-fragility for the Army

The counter-Enlightenment lawyer, diplomat and political philosopher Joseph de Maistre (1753-1821) famously remarked that "war strengthens nations," underscoring that any conflict compels nations and institutions to confront their weaknesses and emerge stronger[7]. This hypothesis aligns with the lessons of history, which show that no superpower has risen without enduring the trials of war. Conversely, prolonged stability often masks fragility, as seen in the deceptive calm that preceded the First World War (1914-18) in Europe, which concealed the impending apocalypse. Therefore, challenging the false sense of stability is obligatory to strengthen a system from within. This is the fundamental message of Anti-fragility.

The lesson for the Bangladesh Army is this: while a highly centralised command structure may project stability during peacetime, it risks catastrophic failure amid the unpredictability of war. The Army must focus on achieving the capability to adjust and react in the event of a sudden and severe degradation of the C2 structure, resulting in a temporary blackout of guidance. Given the way modern conflicts are playing out and the fact that the major powers are nonchalantly neglecting the rules of the game, the biggest mistake would be to rule out a totally unanticipated long-range strike of unprecedented scale from an adversary. The answer to the question of whether the Bangladesh Army is ready to cope in such a scenario is blatantly negative. By advocating for Anti-fragility, this essay turns attention to the harshest possible reality that any army in Bangladesh Army's position faces in the present context: how to survive the initial strike of a disproportionate scale from a vastly superior enemy. To find the answer and prepare for the worst, the entire C2 of the Army must undergo a stress test by employing the principles of Anti-fragility: create voluntary tension in training modules and often during peacetime non-operational activities by partially or entirely removing command guidance.

For operational tasks, decentralised decision-making, as exemplified by the US military's mission command philosophy, must be put into practice to empower personnel on the ground to act with liberty within limits. This can ensure that ground troops are not forced to frequently look upward for trivial decisions. Such decisions must be made swiftly and have a significant cumulative impact on the overall outcome of military operations.

However, achieving Anti-fragility demands more than wartime flexibility in decision-making; it requires a transformative approach during peacetime. Bangladesh Army must critically reassess its feedback system within the C2 framework, ensuring it becomes truly multidirectional. Formalising a multidirectional feedback loop will empower young officers and junior leaders, encouraging new ideas and feedback to flow seamlessly in all directions, both top-down and bottom-up, as well as laterally. That could potentially create a reciprocal C2 environment, strengthening the organisation against the shock of Black Swans.

Such an approach may challenge the traditional unity of command or risk introducing mild chaos, but that is precisely the essence of Anti-fragility. A measured dose of disorder and confusion

within the C2 framework is essential to dismantle the illusion of superficial stability. At the heart of this transformation is the creation of a flexible C2 environment that prioritises openness and actively involves all ranks in decision-making both in peacetime and during crises. The following section outlines actionable measures to fully embed Anti-fragility into the Army's mindset, ensuring readiness for the shocks and uncertainties of warfare.

Putting Theory into Action

Embracing Anti-fragility requires healthy scepticism in the decision-making process and planning while incorporating flexibility into the Army's C2 structure. This transformation demands bold measures that may initially seem experimental, but considering the uniqueness of Anti-fragility, these measures are worthy of consideration:

Red Teaming Exercises: Bangladesh Army should regularly conduct Red-Team[8] exercises. In these exercises, trainees will be divided into two teams that actively challenge each other under realistically portrayed battlefield scenarios. Unlike traditional two-sided exercises, where the opposition often plays a dictated role, Red-Teaming empowers the enemy side to think creatively and often counterintuitively. The notion that 'how can the enemy do this?' must be broken through a revised exercise modus operandi. The traditional role played by the exercise control must be revamped, and a complete absence of command guidance, combined with a communication blackout for a specific period, must be implemented to observe the participants' reactions. The aim will be to deliberately break assumptions, expose blind spots, and inject unpredictability into the training. After all, what use is an exercise that ends, unfailingly, with 'ULLASH!'? Red-Teaming is about testing the adaptability of commanders, a characteristic of Anti-fragility. Additionally, peer-based review sessions should follow these exercises, which would differ significantly from the outdated debriefing sessions of Bangladesh Army. This article recommends further study on the feasibility of incorporating Red-Teaming exercises into the Bangladesh Army's training modules.

High-Fidelity Wargaming: Red-Teaming, as mentioned in the previous paragraph, helps planners at all levels expose blind spots in plans. However, these exercises have their limits. Scenarios in these exercises cannot progress as rapidly as a wargame. In a wargame, scenarios change dynamically, demanding swift actions and reactions from staffs and commanders who must be prepared for chaos at every level: tactical, operational, and strategic. For that, Bangladesh Army should run regular, high-fidelity wargames that emulate the complexity of real war. These exercises must test the most improbable scenarios, accepting that the adversary may act counterintuitively, leaving own forces unprepared. The control must throw in sudden shocks such as shifting alliances, adversaries introducing new technologies (like hypersonic missiles), unexpected enemy tactics, and even changes in terrain and weather. By facing rapidly changing and contradictory situations in wargames, commanders should learn to think on their feet, adapt when plans collapse and keep control amidst chaos. That mindset of constant adaptability is the real test of leadership in modern war, a gold standard of Anti-fragility.

Dedicated Teams for Experimentation: Bangladesh Army needs to establish dedicated teams to test cutting-edge technologies and unconventional approaches. Replicating the U.S. Army's Rapid Capabilities Office, these units would serve as incubators for new operational concepts and doctrines that can address the fluidity of modern warfare. The experience gained would provide valuable lessons for the Army's modernisation.

Dynamic Risk Assessment Matrices: Traditional two-dimensional RAM often fails to capture the complexities of modern threats. Introducing Dynamic Three-Dimensional and Fuzzy Risk Matrices would allow for a more nuanced approach, incorporating war-like ambiguity and intelligence reliability. Embedding these tools into AI-integrated wargaming, planning and feedback mechanisms would ensure risk assessments adapt as situations evolve.[9]

Multidimensional Feedback Loop: The Army must formalise a multidimensional feedback loop that encourages unfettered feedback and input from all members of the organisation during peacetime. Such a feedback loop can create some tension, which is not only acceptable but necessary in making any system antifragile.[10] The fundamental goal here is that the reactions and feedback that are generated within the organisation must flow unfiltered in all directions consistently. The 'how-to' and practical implementation of this measure will require deeper exploration, but its potential merits make it an idea worth pursuing. This will primarily be a peacetime measure that will stress-test the integrity and unity of command and presumably result in a symbiotic C2 environment capable of preparing the Army to stand taller in the face of any chaos generated within or beyond the country's borders.[11]

Conclusion

What could possibly go wrong in a war will definitely go wrong, and arrogance, overconfidence, or biases will only hasten a disaster. Black Swan events are real, and warfare epitomises them. Potential adversaries shall aim to break the cohesion of the force at the very outset of future campaigns. While it will be nearly impossible to match the technology and inventory of the opponent toe-to-toe, gun for gun, Bangladesh Army's aim must be to maintain the integrity of the force during those initial disproportionate blows. An antifragile Army would adapt to the likely absence of command guidance more quickly than a force with an inflexible command structure should any such situation arise.

To survive the impending shock of an all-consuming conflict, Bangladesh Army must embrace decentralisation, mission command, and multidimensional feedback loops to ensure the force does not face disintegration in the face of an overwhelming pre-emptive strike, such as the one seen at the beginning of the 12-day Israel-Iran war in 2025. Dissenting views and new ideas must start to find greater space within Bangladesh Army, empowering all levels of command before a seemingly distant war suddenly reaches our borders and turns us into victims of a Black Swan shock.

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Brief Biography

Lieutenant Colonel Tahsin Saleheen, psc was commissioned in the Corps of Infantry with 55 BMA Long Course on 20 December 2006. He is a graduate of the Defence Services Command and Staff College (DSCSC), Mirpur. He has served as Brigade Major in the 88th Infantry Brigade and as GSO-2 (Plans) in the AHQ, Military Operations Directorate. He has also served as a Sector Military Staff Officer (G5, Plans) in MINUSMA, Mali, and has twice served under the blue helmet. The officer served as an Instructor Class B in the Non-Commissioned Officers' Academy. He has commanded an Infantry Battalion and is currently posted as the Principal of Barishal Cadet College.

The March-23 Offensive in Goma of Democratic Republic of Congo: Challenges Faced as Contingent Commander and Takeaways for Bangladeshi Peacekeepers

Lieutenant Colonel Md Nahidul Islam, psc, Engineers

Abstract

The recent offensive of the rebel group 'March-23 Movement' (M-23) in Goma city had a significant impact on global security, political power and economic disturbance. The instability caused the fall of the capital city of Nord Kivu province of Democratic Republic of Congo (DRC). The mineral rich territory paved the basement for opportunists. Moreover, the aged ethnic collision has its roots deep inside the birth-history of Rwanda and DRC. The causes are complex and significant, which designed the outcome of the conflict. MONUSCO, SADC mission in Africa (SAMIDRC) and regional force deployed here, faced diverse situation based on their roles and mandates. However, the conflict inflicted several challenges for the deployed forces. Bangladesh Engineer Company was deployed in three advancing axes of M-23, which further led to administrative, operational and logistical challenges. The contingent commander's unique approach to mitigate these challenges was exemplary and highly appreciated by Director Mission Support (DMS) and Force Commander of MONUSCO. The balance of wisdom based leadership, comradeship and cooperation were notably demonstrated during the situation. The lessons learnt from the challenges should serve as reference. The paper discusses the root causes of invasion, followed by inflicting challenges. It also suggests the ways forward and takeaways from the conflict.

Keywords: Recent Offensive, M-23, MONUSCO, Administrative Challenges, Operational Challenges, Logistic Challenges, Mitigation, Takeaways

Introduction

The eminent Nigerian novelist, poet and critic Chinua Achebe (1930-2013) rightly observes, "Africa's story has been written by others; we need to own our own narrative." Africa is the second-largest continent in the world, having a variety of ethnicities, cultural diversity, and natural resources. The country DRC forms the heart of Africa. Having rich minerals underneath its soil, it has been plagued by persistent dissonance for decades. Over the period, the discord was fueled by political instability, regional disputes, economic and ethnic conflicts. Furthermore, the presence of a large amount of natural wealth along the western belt of the DRC worsens the overall security situation of the North Kivu province. Goma, the capital of North Kivu, has become the flash point of recent conflict. The turmoil resulted humanitarian crisis, socio-economic devastation, displacement of large numbers of people as internally displaced people (IDP) and costing thousands of lives in the region. The recent unrest started with the military invasion of the March-23 movement (M-23) rebel group, allegedly backed by Rwanda, on 20 January 2025. The invasion

costs deep engagement and involvement of the key actors of the region. United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO), being the most vital component of the United Nations (UN) deployed, rendered an active impact on the discomforting situation. It saturated the universal legion of conflict on each element of MONUSCO. Hence, Bangladesh Engineer Company (BEC) is no different from others.

The offensive causes multi-dimensional challenges for the commanders at subunit level. Moreover, strategic discontinuation of stability in the region imposed added responsibility to UN forces deployed at Goma. The detrimental infusion of M-23 incurrence has disrupted all aspects, including Operational, administrative and logistics of deployed forces. All stakeholders had to suffer for the distortion created by M-23. However, the very task of BEC is 'horizontal and vertical construction along with combat engineer support' to the units under the blue helmet. BEC, being the most versatile unit has faced tremendous difficulties in terms of completing task, safeguarding the troops, water and ration management and so on. The unique and versatile challenges faced by contingent commander demanded immediate and unorthodox solution for time and resource margin. The hurdles had also challenged the decision making, personal and military traits of leadership. On the process, the offensive taught few lessons to takeaway for further implementation to any Bangladeshi contingent commander as well as contingent deployed in conflict and disputed zone.[1]

The paper initially describes the genesis of the conflict. It will analyze political, regional and historical factors for raising the insurgence. Sequentially it portrays particular focus on challenges faced by contingent commander comprising administrative, logistics, operational and few other notable challenges during the offn of M-23. Furthermore, the paper is framed to describe the mitigation strategies to address the challenges by BEC. Lastly it denotes key takeaways for Bangladeshi peacekeepers who may be deployed in similar and different conflict zone as contingent commander or any role. The incident and challenges described in the paper are viewed in specific geographical location and political gamut. Therefore, it is a limitation of the paper.

Historical Background of the Conflict

The conflict in the DRC has a long and complicated history. The main reasons include political unrest, ethnic tensions, poverty and competition over minerals among various opportunist groups. Belgian colonial rule fostered ethnic divisions among major groups like Hutu and Tutsi. Election governed by Belgium resulted in Hutu forming the Government in 1960. In 1994, the biggest genocide against the Tutsi took place, where 500,000 Tutsi were killed by the Hutu systematically. On the other hand, after being forcibly displaced by the Tutsi-led Rwandan Patriotic Front (RPF), Hutus entered the eastern DRC as refugees. However, the presence of the Democratic Forces for the Liberation of Rwanda (FDLR) further destabilized the region and contributed to the outbreak of the First Congolese War (1996-1997). After one year of the First Congo War, the Second African World War took place in 1998, also known as the Second Congolese War.[2]

**Figure-1: Political Violence Involving Rwanda-Linked Forces in Eastern DRC**
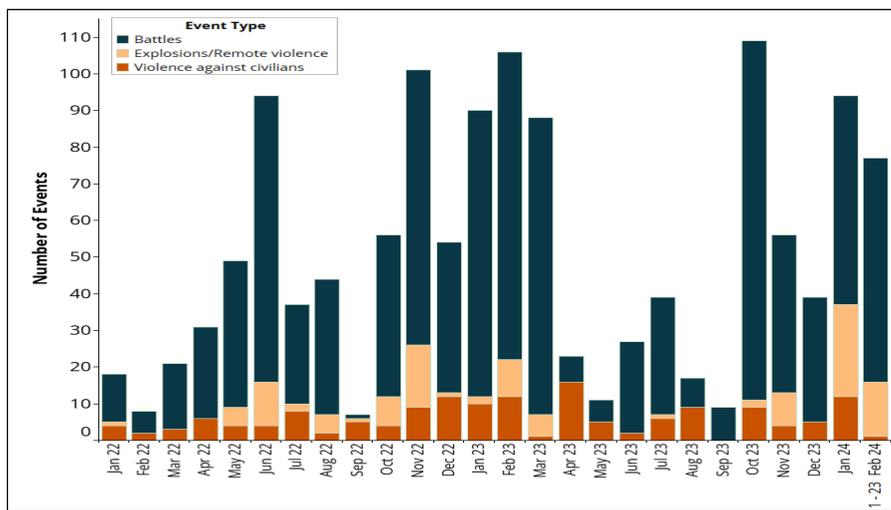
Source: Armed Conflict Location and Event Data (ACLED, 2025)

The Causes of the Conflict: A few of the most discussed and probable causes of the conflict are mentioned below:-

Mineral Resources: Mineral resources remain at the very core of the conflict and security nexus of this region. The presence of minerals such as coltan, gold and diamonds has not only made this region a lucrative zone for many armed groups but also increased the level of corruption and terrorism in the region.

Figure-2: Map Showing Minerals in Eastern DRC
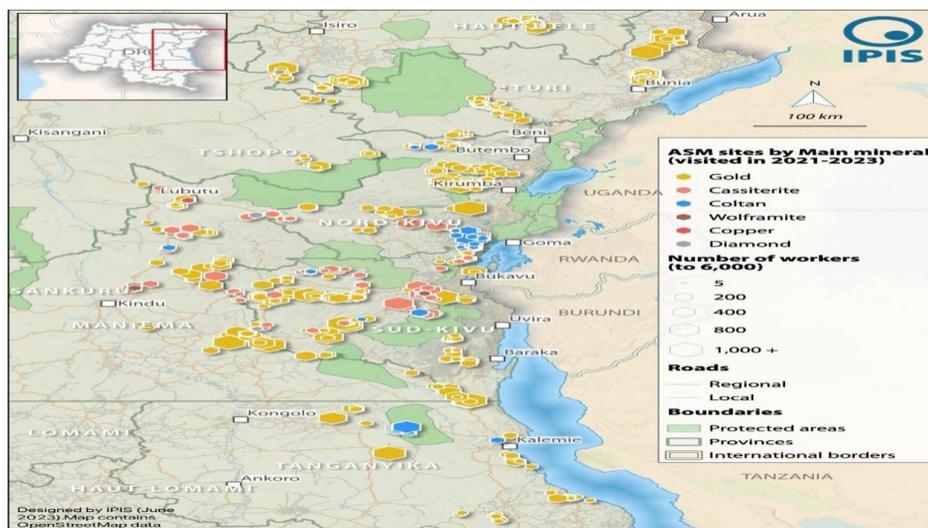
Source: International Peace Information Service 2025

Territorial Gain: Territorial control is one of the key components of the instability of this region. Goma and Bukavu are ideally two locations which provide all three means of communication. Control over the North Kivu province ensures a huge and profitable influence of Lake Kivu and its resources.

Ethnic Polarity: The most significant and widely media-covered reason for the conflict is ethnic polarity between Hutu and Tutsi. The effect of Rwandan genocide was a huge influx of Hutu in the nearest country as refugees. There is a direct connection between Hutu and Armed Forces of the DRC (FARDC) in this region. Furthermore, it led to the formation of a rebel group named 'M-23' comprising the Tutsi rebels.

Figure-3: Number of Conflict in North KIVU and South KIVU for Ethnicity
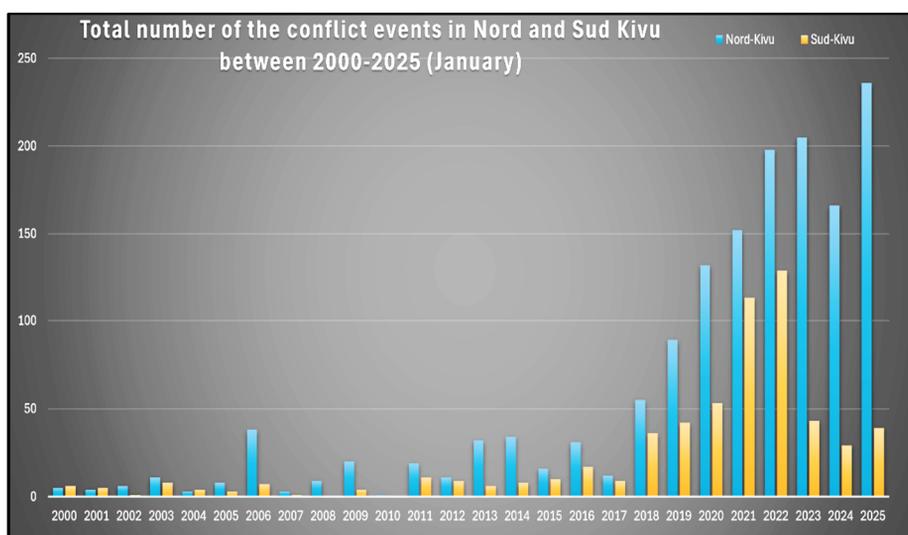
Source: Armed Conflict Location & Event Data (ACLED, 2025)

Offensive Manoeuvre of M-23

Recent M-23 offensive on 20th January 2025 propagated the violence over the region. A coordinated offensive manoeuvre by M-23 resulted the fall of Goma and North Kivu. Notable characteristics and reaction of the invasion are mentioned in the subsequent paragraphs:-

Military Attributes: The important military characteristics demonstrated by M-23 during invasion are described below:-

Tactical Capability and Military Structure: M-23, a well-trained rebel group has wide range of modern weapons and equipment in its inventory. In recent invasion, they showed well-coordinated conventional and guerilla tactics which strongly portrayed their military capabilities. The force showed a well-structured

command and control from top to bottom like conventional military forces. The orchestrated command and control ensured operational readiness which further led to achieve their ultimate military objective of capturing Goma.

Offensive Capabilities of M-23 in Multiple Front: The force advanced in three axes. Their supporting axis was from western side of Goma city. The significant focus was given to Sake, as it was a deception. The main effort was from northeast side catching the FARDC in surprise. The advance of M-23 from western side towards Goma was conducted following Masha-Sake-Bambiro-Keshero-Goma axis. The advance from northeast side towards Goma was conducted following Kiwanja-Rumangabo-Kibati-Monigi-Goma axis. The advancing column from north conducted cross country manoeuvre following the approach Kashari-Kanzene-Rusayo-Goma.

Figure-4: Gradual Territorial Gain by M-23
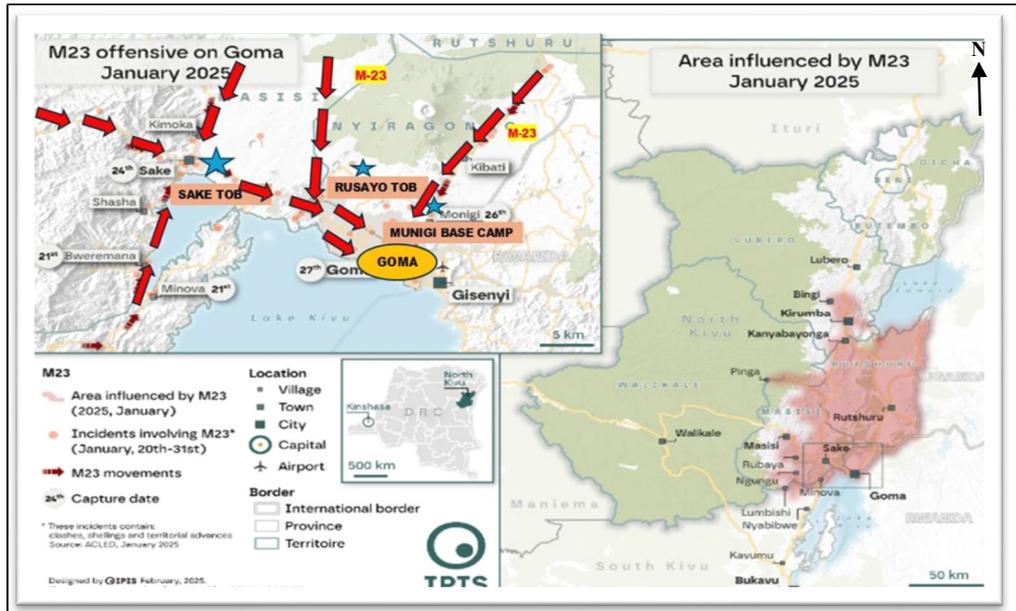
Source: International Peace Information Service 2025

Master in Conventional and Unconventional Tactics: The rebel followed both conventional and unconventional means of warfare. Conventional advance was conducted in coordination with unconventional means. Strict compliance to command and control was notably observed among the members of M-23. For example, M-23 disrupted rear area security of FARDC and captured key point installation (KPI) like airport, fuel refinery etcetera, at the first go. Blending both strategies helped them to achieve their ultimate goal within the stipulated time.

Figure-5: Picture of Advance of M-23

Source: Author's self-construct

Role of Key Actors Deployed in the Region: The Congolese force FARDC could not resist the invading M-23 for poor leadership and training. Moreover, they were caught by surprise during offensive. The Southern African Development Community mission in DRC (SAMIDRC) could inflict initial deterrence and casualty on the invading rebel force. The major role played by MONUSCO during the offensive was to ensure the overall protection of civilian and own troops. However, Quick reinforcement force of Republic of South Africa (RSAQRF) could develop strong resistance against the offensive. On the process, the conflict incurred varied challenges to the peacekeepers.[3]

Figure-6: Casualty of Peacekeepers over Time in Eastern DRC
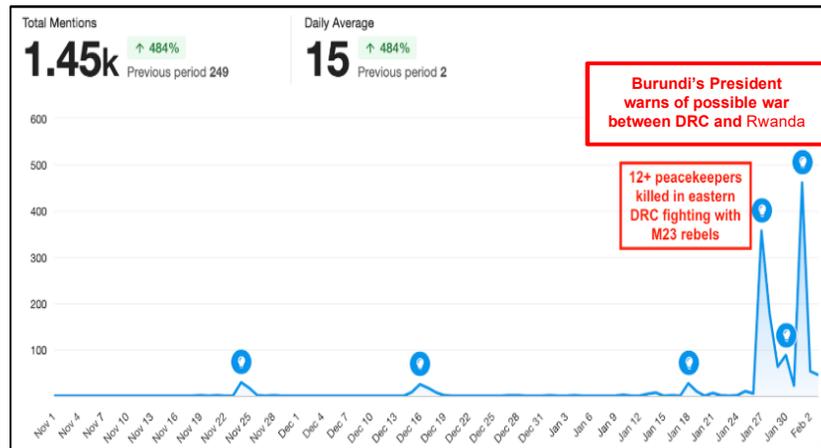
Source: *Armed Conflict Location & Event Data,* ACLED, 2025

Challenges Faced as Contingent Commander

A contingent commander operating in the context of the M-23 offensive against local army in Goma faced a myriad challenges. The rumors was a tool to demoralize the opposite forces which facilitated the advance of M-23 and capture of Goma. In addition, Protection of Civilians (POC) was extremely challenging for the armed invasion. Moreover, anti-MONUSCO sentiment was at the peak during the conflict. However, the major challenges can be described as following:-

Operational Challenges: BEC had faced versatile challenges are mentioned below:-

Vulnerable Location of the Camp: The permanent operating base (POB) of BEC was in Munigi, 4.6 kilometers away from Goma airport towards north. It had more 2x Temporary Operating Bases (TOB) in Sake and Rusayo. Having two hill locks at both the western and eastern side of the base camp, the domination of the area was further established from here. The hill locks were initially held by FARDC and further captured by M-23. Thus, having two armed groups on two opposite hills created devastating collateral damage due to crossfire of small arms and mortar shelling.[4]

Figure-7: Location of BEC Head Quarter at Munigi
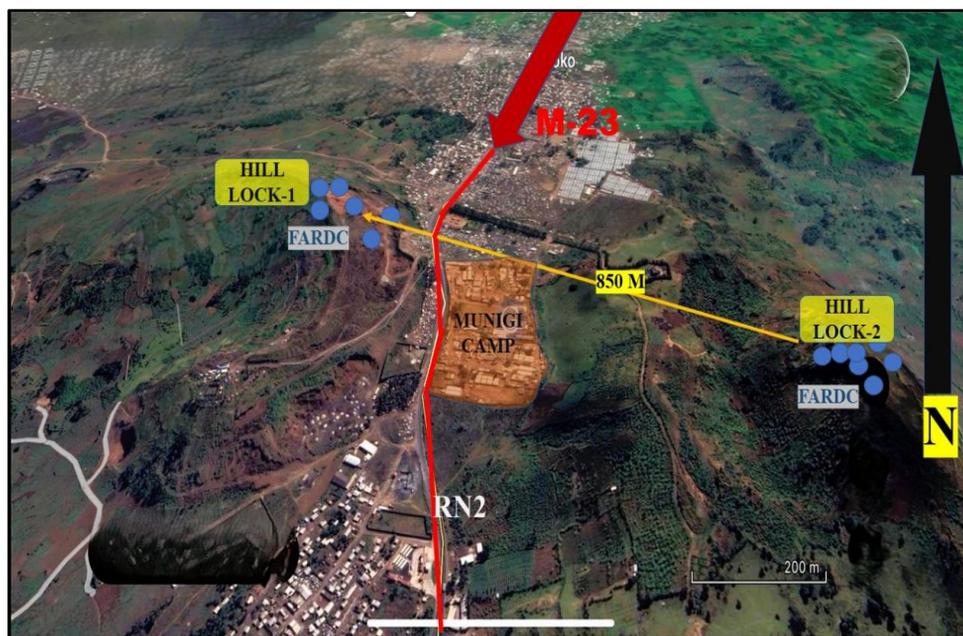
Source: Author's self-construct

Figure-8: Location of Different Camps During Invasion
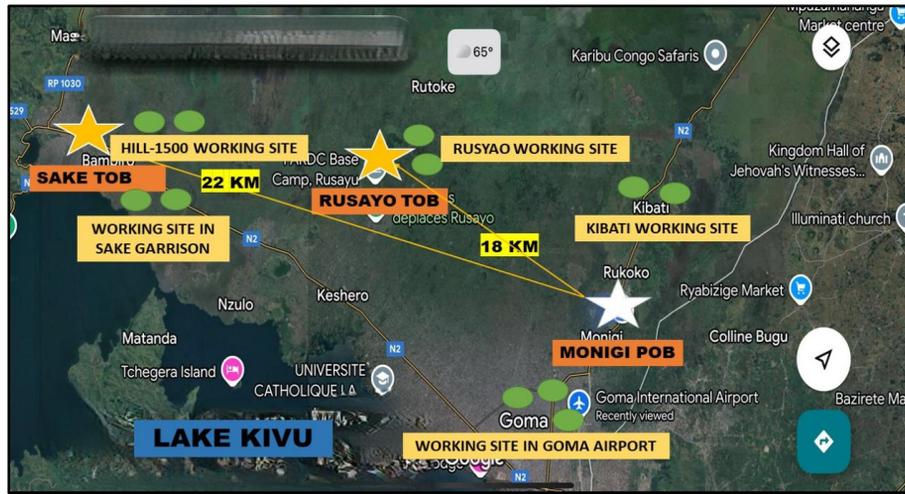
Source: Author's self-construct

Protection of Troops and Equipment: Ensuring the protection of troops and equipment of camps and project area was a major concern during the invasion. BEC kept the tracked vehicles in the construction site. During the invasion, heavy bombardment and crossfire damaged the vehicles. Expensive items were lost due to looting and vandalism at the airport. BEC had no counter-bombardment bunker during the invasion to safeguard its troops. Thus, maintaining safety for troops and equipment became prime concern for the commander.[5]

Figure-9: Damaged Container and Vehicles of BEC

Source: Author's self-construct

Psychological and Moral Effect: The spread of unprecedented violence had led to psychological and moral impacts on the troops. Exposure to violence caused trauma, stress and fatigue among the troops. Moreover, the anxiety and stress introduced issues like

trigger shyness, fear of the unknown and many more. Moreover, presence of UXO in working site created a psychological effect on troops.

The Complexity in Operating Prolonged Deployed Vehicles and Equipment: BEC has been deployed in MONUSCO for the last 15 years. During this extended period of deployment, the majority of the equipment has completed a substantial portion of its operational service cycle. Nearly all vehicles have met the eligibility criteria for rotation. The timely induction of updated equipment and modern vehicles would further enhance operational effectiveness and support prompt response capabilities in meeting mission requirements.

Coordination and Communication Disruption with Stakeholders: During the offensive, communication failure within the stakeholders led to delays and confusion. Mobile network collapsed and signal jamming left the commander blind of temporary operating bases. For the failure of effective communication, BEC faced difficulties to communicate with job requester, Force Headquarter (FHQ) and central sector (as tactical command). Moreover, communication hindered with DMS office, United Nations Department of Safety and Security (UNDSS) and concerned civil counterpart as well.

Failure of Time Worthy Intelligence Assessment of FHQ: Intelligence failure at headquarter level kept under command in complete darkness about next step of the intruders. Lack of Battlefield preparedness because of Intelligence Failure led problems like looting and vandalism in airport. Updated Situation Report (SITREP) could help the troops to prepare sufficient bunkers which could eventually inform the force about advancing column of M-23.[6]

Logistics Challenges

The peacekeepers have suffered from several logistics challenges due to the offensive of the M-23, which are described below:-

Ration Supply: Ration supply was the most vulnerable issue during the conflict. 'Disrupted supply routes' imposed difficulties on the suppliers. The supply was completely cut off during the conflict, resulted in curtail of amount of daily necessary goods. The lack of the required amount of   dry and fresh ration supply have an implied pressure on the smooth performance of the operational tasks.

Petroleum, Oil and Lubrication (POL) Supply: The equipment heavy contingent like BEC requires huge amounts of fuel for its daily use. The hindered POL supply created a significant effect on carrying out operational tasks. The disruption in POL supply has limited the troop mobility, disrupted fuel-based communication systems, and impaired

rapid response capability of the troops. In sum, it substantially undermines the operational and humanitarian aspects of the mission.

Water Management: Water management was one of the biggest challenges of the conflict. Water collection from safe water point was seriously affected due to war debris. Moreover, the contingent had to use reserve for one week during the invasion. The conflict added strange problems like finding dead bodies from water collection point, no arrangement for bathing of troops for more than a week and curtail of water during cooking.

Stores and Spares Management: Management of stores and spares was one of the crucial factors of logistics. The whole purchasing procedure was severely damaged due to supply chain disruption in Goma city. Moreover, local resources like workshops and industries were shut off, resulting complete cut off from local assistance.

Administrative Challenges

The conflict tested the command with number of decisive and prompt contextual administrative problems. Very significant few are described below:-

Security Management of the Camps: During the invasion BEC struggled to maintain camp security. Base camp was overrun on first day while Sake garrison ensured resistance. Another detachment in Rusayo where less than a platoon strength troops deployed was more vulnerable. Crossfire around all the three camps of BEC between opposing forces further worsened the situation. A huge influx of internally Displaced People (IDP) was a major security concern for the camps.

Figure-10: Graph Showing 7 Millions of IDPs in Last 14 Years for Prolonged Conflict in Eastern DRC
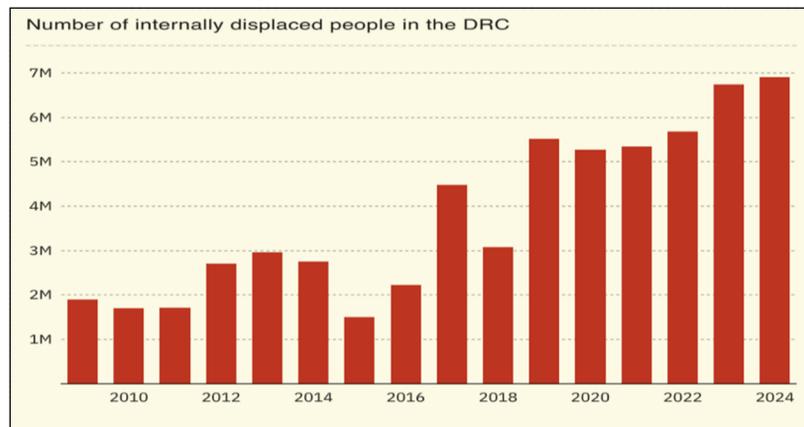
Source: Internal Displacement Monitoring Centre (IDMC)

Maintaining Effective Command and Control: The gamut of the situation demanded a crucial role of command and control by commanders and junior leaders. All

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subunit commanders had to fight against rumor, and misleading information. The contingent commander had to face the acid test of maintaining a visible chain of commands, issuing clear and timely orders, and monitoring troop movements.

Effective Employment of Troops: BEC is designed to perform the mandated tasks by its held troops. However, the conflict implied tasks like guarding additional duty posts, security of working sites, escort for water collection and logistics move. Manning the mandated and additional implied tasks due to conflict created tremendous challenges for command channel with same manpower.

Mitigation Strategies

Contingent commander had to take decisive and prompt action for mitigating the challenges. Flow of information was ensured at all levels to wrestle with propaganda. All troops were taught on Rules of Engagement (ROE) for engaging with civilians. In addition, all the vehicles were covered with metal shields for protection from stone pelting in the local area. However, notable mitigation strategies are mentioned below:-

Psychological Mind-Gaming: While advancing towards Goma, M-23 made initial contact at Morocco Rapid Deployment Battalion (MORRDB) in Kibati for not having the knowledge of the location of UN camp. M-23 did not engage with UN forces. Considering this fact, the BEC Contingent Commander arranged UN flags in all duty posts including perimeter on the approach of advancing force. This psychological gameplay had saved the camp from any aimed fire of direct or indirect weapons.

Figure-11: UN Flag in Duty Posts along the Perimeter

Source: Author's self-construct

Protection of Troops: The Contingent Commander ensured protection of troops using his wisdom and foresight. Intelligence collected from language assistance and local Congolese people, experience shared by previous contingent commanders and situational appreciation led the

commander to make right decision. However, the following measures had greater impact controlling the situation:

Surveillance: Surveillance and smooth information propagation are prerogatives to the safety of the troops. During the intense fire, it was life-threatening to remain in duty posts. Under the guidance of the contingent commander, a surveillance net was established and manned for 24/7 by control room. Additionally human intelligence collected by Congolese workmen, language assistance and local shops were given due importance. The effort had ensured smooth flow of information and strongly acted against propaganda.

Figure-12: Surveillance System and Control Room
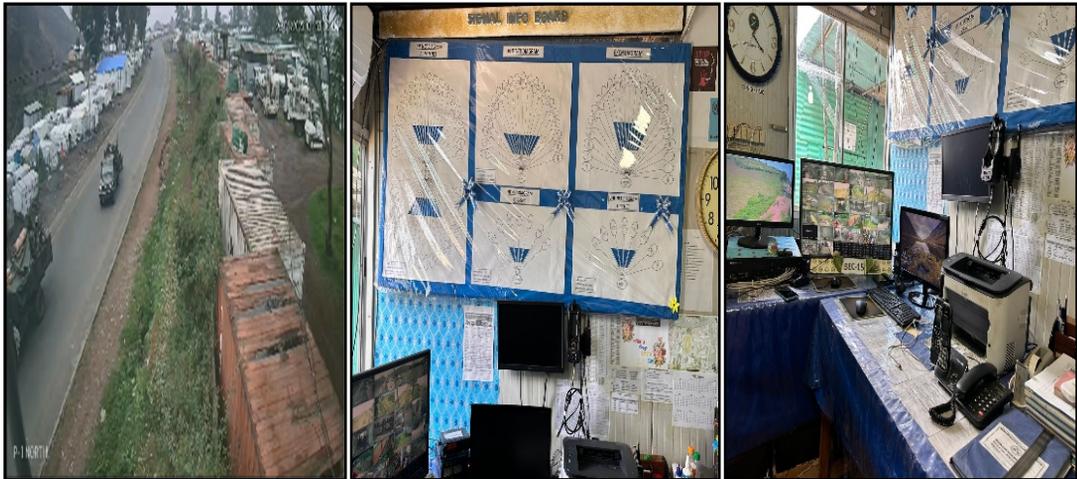
Source: Author's self-construct

Improvised Bunkers and Strengthening the Entrance: Munigi base camp lacked counter bombardment bunkers. The first encounter in Sake introduced the requirement of bunkers for troops. M-23 gave 48 hours to FARDC forces for surrender by a press release. Confirming the information, the contingent commander instructed to build 5x bunkers within stipulated time. Entrance to the camp was strengthened by two layers of heavy sheets and earth. MG post was established covering RN2 axis. Furthermore, a quick reinforcement force consisting of language assistant was kept ready throughout the time to settle any unforeseen.

Figure-13: Improvised Bunkers and Reinforced Entrance

Source: Author's self-construct

Protection of Major Equipment: The protection of the major equipment during the conflict was a major concern. All vehicles except a few were pulled back to the base camp from all working sites like Goma airport and Kibati before the night of invasion where massive vandalism took place on later stage. A separate blockade was placed in front of the fuel storage in probable trajectory of small arms. Low beds were placed in front of the generator room obstructing trajectory. Soft skin vehicles were placed in between the construction vehicles.

Psychological Management of Troops: The contingent commander physically visited all duty posts to motivate the under commands to overcome the situation. Regular interaction with troops was ensured which acted against rumors & propaganda. Bomb Disposal (BD) qualified personnel were carefully picked for working site to handle unexploded ordnance (UXO).

Coordination and Communication with Stakeholders: Maximum effectiveness of operational tasks was achieved by the coordination and collaboration of all stakeholders. Proactive and timely communication with the job requester was ensured by the contingent commander. Alternative communication means like Satellite phones, tetra, CISCO & high-frequency radio sets were used to communicate with Deputy Chief of Staff, Operational Support branch of FHQ and other operating bases.

Ration & Petroleum, Oil and Lubrication (POL) Supply: The food was made as such that the existing ration was sustainable for an extra 14 days. In addition, the cooking was arranged centrally for all members and supplied to the bunkers during offensive. The Contingent commander repeatedly pushed the Ration & Fuel Unit for logistics arrangement.

Water Management: Water management during the crucial moment was a very sophisticated issue. The foresightedness of commander helped the contingent to overcome this

scarcity. Arrangement of rainwater harvesting, restriction on daily usage of water rationale the use of water. New indigenous water reservoir was introduced. The impact of such adherence to the instruction resulted in a reduction of daily usage to one-fourth of regular.

Figure-14: Rainwater Preservation during the Conflict

Source: Author's self-construct

Security of Camps: Security of camps was maintained by creating defensive layers of perimeter wall and reinforced entrance. In addition, surveillance, early warning systems and prompt security assessments were ensured for maintaining the security of camps. Besides, observation towers and elevated posts were used to monitor the surrounding threats and ensure the safety of the camps.

Management of Troops Through Effective Command and Control: Dilemma in delineating task to manpower was brought to minimum. The prudent decision of commander to distribute the task as group and project was very effective in overcoming the challenges. Command was distributed to sub-unit level. Dissemination of responsibility to platoon commander ensured additional control over the situation. Moreover, continuous communication with the platoon commanders over phone helped keep the troops motivated and disciplined during the violence.

Takeaways for Bangladeshi Peacekeepers

The takeaways can be roughly categorized in operational, logistics and administrative aspects as follows:-

Operational Aspects

Selection of the Appropriate Location for Newly Established Camp: As the camp location plays a very crucial role, selection of geographic location needs to be given utmost priority. Domination over the area should be ensured if it is high ground. It should not be vulnerable to small arms crossfire. In addition, the location should not be as such which can be isolated from force protection.

Protection of Troops and Equipment: Protection of troops and equipment should be ensured. Improvised armor & remote monitoring can be incorporated. Moreover, CB bunkers should be kept ensuring the safety of the troops. Sophisticated equipment requires additional attention on this regard.

Maintaining Psychological & Mental Health of Troops: Continuous motivation may improve the overall condition. Stress release management should be incorporated. Smooth flow of information is mandatory in this aspect. Proactive information dissemination strategy can reduce the rumor & propaganda.

Timely Rotation of Vehicles and Equipment: Prolonged deployed vehicles should be rotated immediately just after being qualified for rotation according to Contingent Owned Equipment (COE) manual to maintain operational efficiency. There must be a moderate level of advanced vehicles and equipment to deal with such adverse situations and ensure the smooth operation.

Co-ordination and Communication with All Stakeholders: Co-ordination and planning with higher headquarters are essential to maintaining close liaison for any assistance. Thus, communication and coordination exercises in the form of 'Field Training Exercise (FTX)' can be arranged to reduce the impact of such incidents. Establishing alternative means of communication is necessary to ensure connectivity in challenging environments.

Flow of Information and Timely Intelligence analysis: Intelligence propagation from higher headquarters should follow a chain of standing operating procedure (SOP). All stakeholders should be in same line in terms of threat analysis. Streamlined intelligence would be more helpful in mitigating the adversity in a cost-effective manner.

Inculcate Practical Oriented Field Training Exercise (FTX) during Pre-Deployment Training (PDT) in Bangladesh Institute of Peace Support Operation and Training (BIPSOT): Task and mission oriented practical training should be arranged in BIPSOT during PDT. Case studies and lesson learnt should be deliberately taught. All members should be available to perform the training physically. This type of training or FTX should not be conducted in lodger formation or in periphery as necessary training materials and simulation of the scenario are unavailable there.

Safeguarding from anti-UN Sentiment: Necessary indigenous approach may be followed. Thinking out of the box via quick impact projects may give desired output on this aspect. For example, BEC has conducted number of civil society work like reconstructing city drainage system, cimic activity, culvert repair etcetera. Social engagement with the locals may pacify such hostile sentiment from civilian.

Logistics Aspects

Ration Management: Ration supply can be a critical issue at the time of conflict. Foresight and preplanning are required for ration management. Reserving meal ready to eat (MRE) for 2 weeks may be taken as counter measures. Prepositioning of stockpiles and the diversification of transport routes may help ensure the flexible ration supply. Apart from increasing the storage capacity, it is also important to locate camps in the nearby water sources.

Petroleum, Oil and Lubrication (POL) Management: POL is a prerequisite for mobility and smooth functioning of unit. Reserve should be maintained and calculative measures should be incorporated. Cooperation with the local traders and suppliers may be taken into consideration to continue fuel supply if central supply system is blocked by the rebels.

Stores and Spares Management: Stores management can frame operational readiness. Logistics reconnaissance and survey (LRS) should be held physically to measure the requirements on ground. Maintaining Selective Stockage Lists (SSL) is a prerequisite. Shipment of the container prior to deployment should be given priority.

Administrative Aspects

Security of Camps: Security of camps is to be enhanced by incorporating surveillance, early warning system & regular security assessments. Fencing or building wall can hardly be effective when there is a large-scale armed violence. Necessary actions need be taken to ensure not only the humanitarian security of the camps but also the protection of the logistics, bunkers, and the vehicles of the mission. Aerial devices must be made available to ensure the effective monitoring of the potential dangers beforehand. Radio communication and other forms of wireless communication must be made available to avoid any misunderstanding and confusion among the troops.

Effective and Efficient Engagement of Command Structure and Troops Distribution: Command structure at the subunit level should be efficiently engaged. Few responses like conversing repeatedly with under commands and regular interaction should boost the morale of the troops. Judicious and effective distribution of troops for different project should be made. Training and life-skills of the troops should be increased in enhancing their situational awareness to avoid serious humanitarian casualties in the conflict.[7]

Conclusion

The conflict in Goma is deeply rooted in number of causes like political, regional, ethnic and economic factors. After the independence of Rwanda, two major ethnic polarities named as Hutu and Tutsi initiated the instability in the region. The Rwandan genocide caused thousands of Hutu influx in eastern DRC. The involvement of the opportunist group in eastern DRC made the situation worse. Rich minerals like gold, coltan and diamonds fueled the aged crisis to regional war. The outcome of the war was more significant, escalating the conflict further by forming M-23 and FARDC. However, the recent invasion to capture the capital of North Kivu province instilled number of challenges for all the contingents of MONUSCO deployed in this region.

The emerging challenges faced by contingent commander demanded prompt and bold decisions at all three scopes of administration, logistics, and operational aspects. Versatile operational challenges included the vulnerability of camp location, communication disruption, and coordination with FHQ along with other stakeholders. In addition, the proper flow of intelligence was distorted. Age old vehicles and contingent owned equipment enhanced the operational challenges. Ration and water management were key impediments faced by the contingent in terms of logistics challenges. Moreover, local support from vendors and suppliers was severely affected by the conflict. The supply chain was completely devasted for the regulations imposed by M-23. Administrative hustle added different levels to the overall challenges. Manpower management and security management were major challenges imposed on each contingent. In addition, maintaining effective command and control was key component of the administrative challenges. Rumor and propaganda of social media by both the belligerent, added different dimensions to the challenge. However, mitigation of the challenges taught the contingents few lessons which might be applied to any Bangladeshi contingents for further references.

Mitigation of the challenges required significant effort at command level. Prudent and prompt decisions of contingent commander could save lives and equipment. Operational challenges demanded immediate action for mitigation, including protection of troops and equipment, and arrangement of coordination with FHQ. Central cooking arrangement and change of ration scale was remarkable adjustment for logistic challenges. Selection of troops (right men in the right place) for different projects was mentionable adjustment for mitigating administrative challenges. The takeaways from the process of mitigation taught significant aspects for other Bangladeshi peacekeepers. The location of the camps should be tactically verified and communication exercise should be introduced to all stakeholders. Moreover, rotation of the vehicles and equipment should be done in time to maintain operational efficiency of the contingent. Stockage of items and spares should be maintained considering the unforeseen. Morale of the troops should be maintained by regular interaction with the troops. Command and control should be given the highest priority. Moreover, PDT should be more realistic and needs to be conducted in BIPSOT for all troops. However, a commander should be prudent and decisive in action in such conflicts to safeguard the interest of his troops.

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Brief Biography

Lieutenant Colonel Md Nahidul Islam, psc was commissioned in 12 Engineer Battalion under 33 Infantry Division with 32nd BMA Special Course on 24 December 2009. He is a graduate from the Defence Services Command and Staff College (DSCSC), Mirpur. He obtained Masters of Social Science (MSS) in Security Studies from Bangladesh University of Professionals (BUP) and Bachelor of Science in Civil Engineering from Bangladesh University of Engineering and Technology (BUET). He has served in Division Engineer Battalions, Engineer Construction Battalions and Riverine Engineer Battalion and held various appointments. He served as a Battalion Second in Command (2IC) and Commanding Officer (CO) at 22 Engineer Battalion. He participated in the UN Mission in Liberia in 2014. At present, he is serving as the Contingent Commander of Bangladesh Engineer (Construction)/15 at Democratic Republic of the Congo.

Unveiling Bangladesh Army's AI Strategy for Future Readiness

Major Md Shoaib Rifat Aumy, psc, Armoured Corps

Abstract

The characteristics of modern warfare is undergoing a remarkable transformation, largely driven by the rapid advancement of Artificial Intelligence (AI) in multifarious sectors. In the present context, recent conflicts have manifested that technological superiority is no longer an auxiliary element rather it has become the prime determinant of success in the battlefield. These recent developments portray a clear reminder for the Bangladesh (BD) Army that adapting to this paradigm shift in the technological arena is no longer optional. Integrating AI into military decision making processes (DMP) is emerging as an essential requirement for staying relevant in the modern days battlefield environment where speed, precision and informed judgement shape the battlefield outcomes. At first glance, the idea of incorporating AI into the decision cycle of a developing military may appear to be an ambitious effort. However, the global trend portrays a different story. Many modern armies are allocating substantial portions of their defence budgets specifically for AI-driven capabilities, projecting that the results of future battles will be decided not only by manpower, firepower or conventional dynamics of warfare, but by the quality of data and the efficiency with which it is used. Simultaneously, the rise of localised network centric warfare techniques has introduced new tactical demands that traditional systems can no longer fully address. These changes mark a dire need of incorporating AI as a critical capability for both operational effectiveness and strategic foresight. In light of above, this paper illustrates the implications of incorporating AI into the DMP of the BD Army. It explores how AI can enhance battlefield awareness streamlining the operational planning, and prepare the forces for the rapidly evolving landscape of future warfare.

Keywords*: Artificial Intelligence, Paradigm, Operational Effectiveness, Strategic Foresight, Network Centric Warfare*

Introduction

Artificial intelligence has been developed as a remarkable phenomenon in terms of changing the militaries, offering overwhelming capabilities in the decision making process (DMP), analysis and strategic planning in the context of modern warfare. Bangladesh Army, as the greatest contributor to the paradigm of peacekeeping, has already established its footprint as a professional and powerful force in the world. Following the modernization drive of the military domain, it has become inevitable for BD Army to take its DMP and analysis capability of assessing the battlefield situation to the next level. The incorporation of AI-enabled DMP is likely to introduce this paradigm shift in the sense of enhancing operational effectiveness and readiness of BD Army, fighting the modern threats. Given how technology is transforming the global security environment, the timing is exactly right to know how to strategically apply AI technologies so as to stay ahead of the competition.

Incorporation of AI into operations and BD Army's DMP will likely redefine traditional military doctrines. It will likely enable rapid response to changing battlefield situations in terms of operational effectiveness. Use of AI enabled capabilities within the DMP, e.g., sophisticated analytical system, autonomous system and predictive modeling, would most likely be beneficial to the senior

leadership in a great way with respect to maximizing resource utilization, making logistics easier and also improving the situational awareness of the battlefield situations in the contemporary times. Additionally, the use of AI is likely to illuminate the ground commanders with real-time information and actionable intelligence in order to enable them to make knowledge-based decisions in fluid operating environments. Nevertheless, the inclusion of AI in the DMP is likely to increase a list of challenges and concerns that must be addressed in order to guarantee the implementation's success and prevent any risks. Notwithstanding these obstacles, the BD Army's DMP's integration of AI is anticipated to open up new possibilities, strengthening its capabilities and preparing it to face 21st century threats.

In light of above, this paper will initially highlight the battlefield effectiveness of AI integration. Subsequently, it will manifest the ways to attain operational efficiency through AI integration and attaining adaptability of future warfare scenarios via AI. Lastly, it will portray the challenges of AI integration in the military operations of BD Army and ways forward to mitigate those.

Battlefield Effectiveness of AI Integration

As per the BD Army Staff duties in the field there are three decision making processes (DMPs). These are: deliberate decision-making process (DDMP), combat decision making process (CDMP) and Quick decision-making process (QDMP).[1] DDMP is considered as the most basic, deliberate and methodical form of DMP which commences at the peace time. DDMP progresses through four stages which includes: Mission Analysis, Course of Action (COA) development, COA analysis and lastly Decision and Execution. To conduct the DDMP it is evident to rearrange the staff duties as per Battlefield Operating Systems (BOS) (Figure-1). However, the BOS provides battlefield environment information, target attribute information and reconnaissance, surveillance and early warning information which involves different data formats such as pictures, videos and words and has typical unstructured characteristics.[2] How to quickly extract relevant information from vast amounts of complex military condition data is a core issue, and the introduction of AI is expected to change this and greatly reduce human mistake.

Figure-1: Restructuring of Staff Functions as per BOS
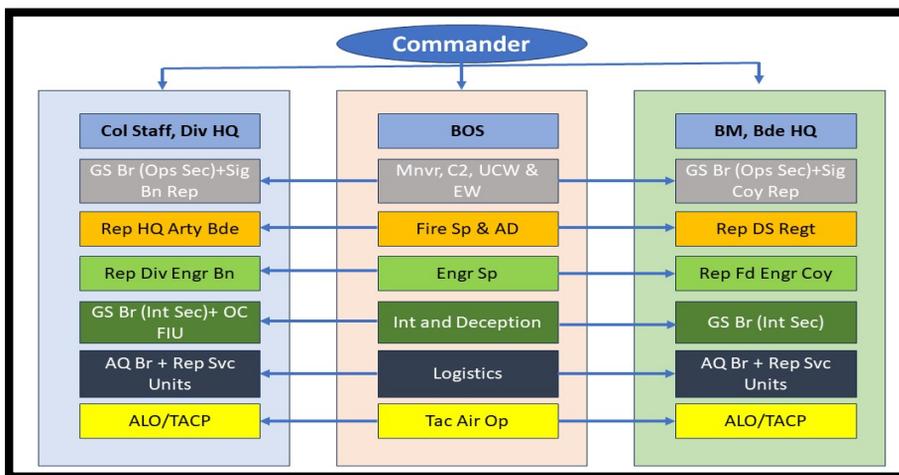
Source: Author's self-construct

Enhancing Situational Awareness: One way to describe situational awareness is as the awareness of things in the surroundings. It makes it possible to comprehend their significance and the outlook for their standing in the near future.[3] Situational awareness on the battlefield could be revolutionized by incorporating Artificial Intelligence (AI) technologies into military operations. AI-driven systems can analyze massive amounts of data from several sources, including sensors, satellites, and unmanned aerial vehicles (UAVs), to provide commanders and troops with real-time intelligence. Through the analysis and interpretation of intricate data streams, artificial intelligence (AI) systems are able to recognize trends, spot irregularities and forecast adversary actions, facilitating proactive decision-making and quick reaction to new threats.

**Figure-2: An Overview of Situational Awareness in the Battlefield[4]**
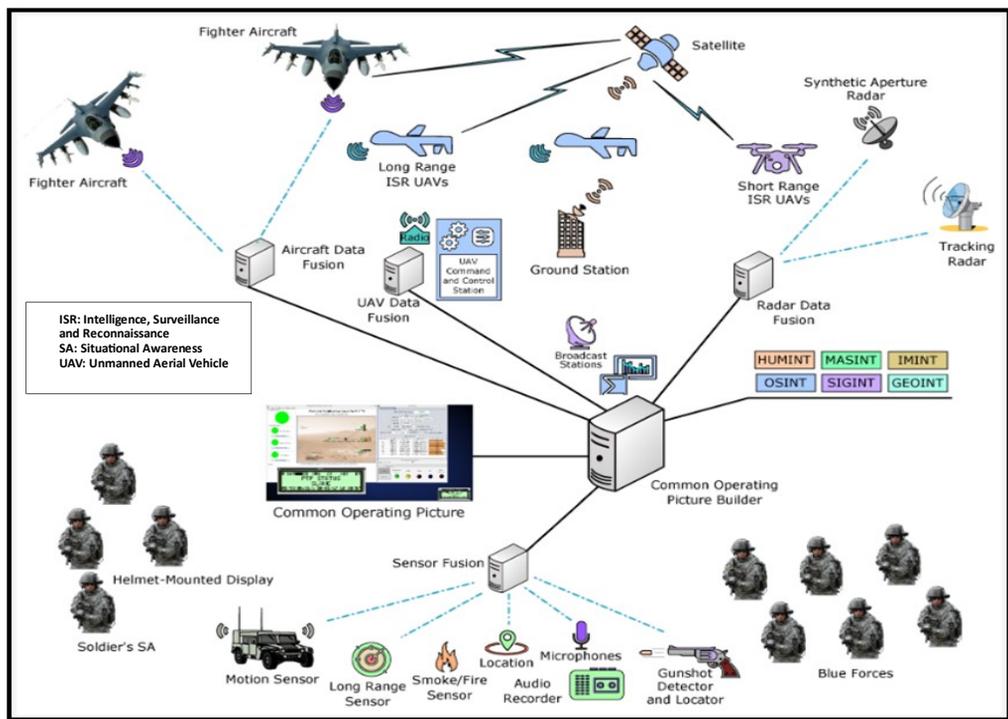
Source: Author's self-construct

In battlefield situation awareness, in order to obtain the information advantage of operations and break the information gap between weapon equipment platforms, field combat forces, local command systems and logistics support forces, it is necessary to convert data into knowledge and turn passivity into initiative. In order to handle and use combat scenario data fully, convert it into easily understood and processed knowledge, and create a more ideal battlefield situation information management system, knowledge graphs are needed.[5] Additionally, integrating AI improves situational awareness systems'

accuracy and dependability, lowering the possibility of false information and guaranteeing commanders have a thorough grasp of the fighting environment.

Figure-3: Model of Situational Awareness and Dynamic Decision-Making[5]
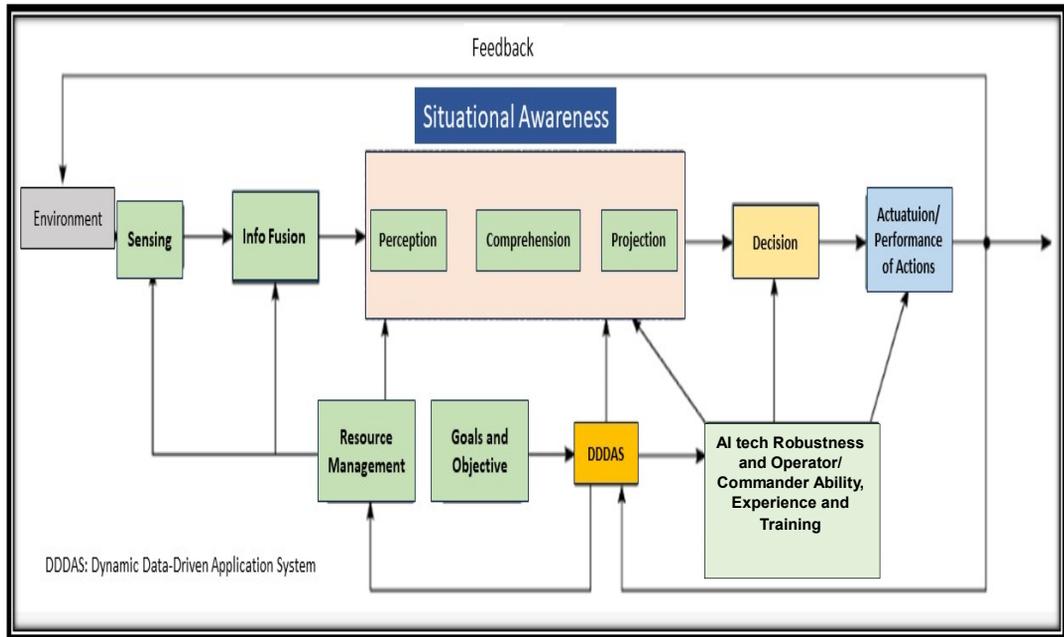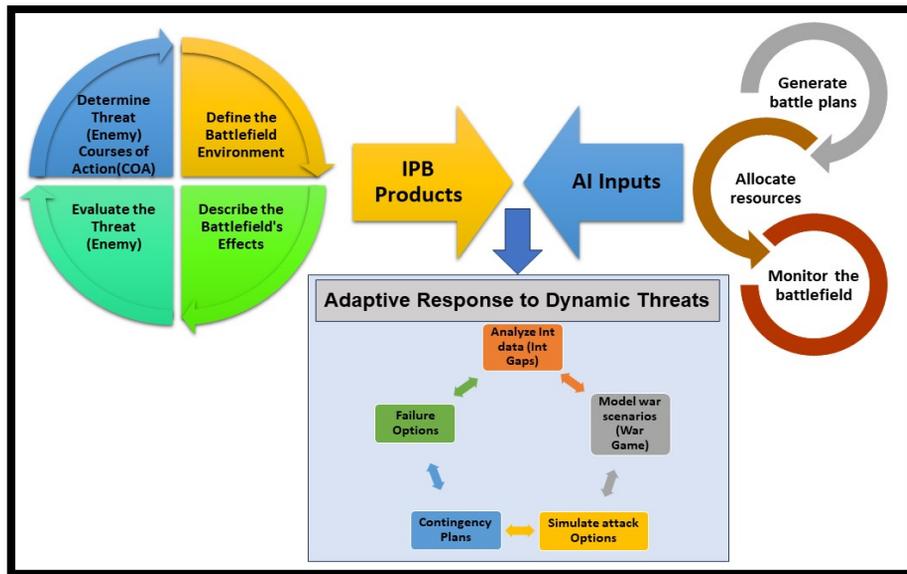

Source: Author's self-construct

Precision Targeting and Engagement: Improving precision targeting and engagement capabilities is one of the main benefits of integrating AI into military operations. Every AI use case fits into one or more of seven categories, despite the wide range of applications (Figure 4). In recent years, these seven AI patterns have transformed military operations by providing new tools and uses for activities like object identification, DMP and conversational engagements.[6] AI-driven algorithms can analyze terrain data, enemy positions, and other relevant factors to identify high-value targets and optimize weapon systems for maximum effectiveness. By leveraging AI, the Bangladesh Army may minimize collateral damage, reduce civilian casualties, and achieve strategic objectives with greater precision. Additionally, AI-enabled targeting systems can adapt to changing battlefield conditions in real-time, enhancing operational flexibility and resilience in dynamic environments.

Figure-4: Seven Patterns of AI[7]
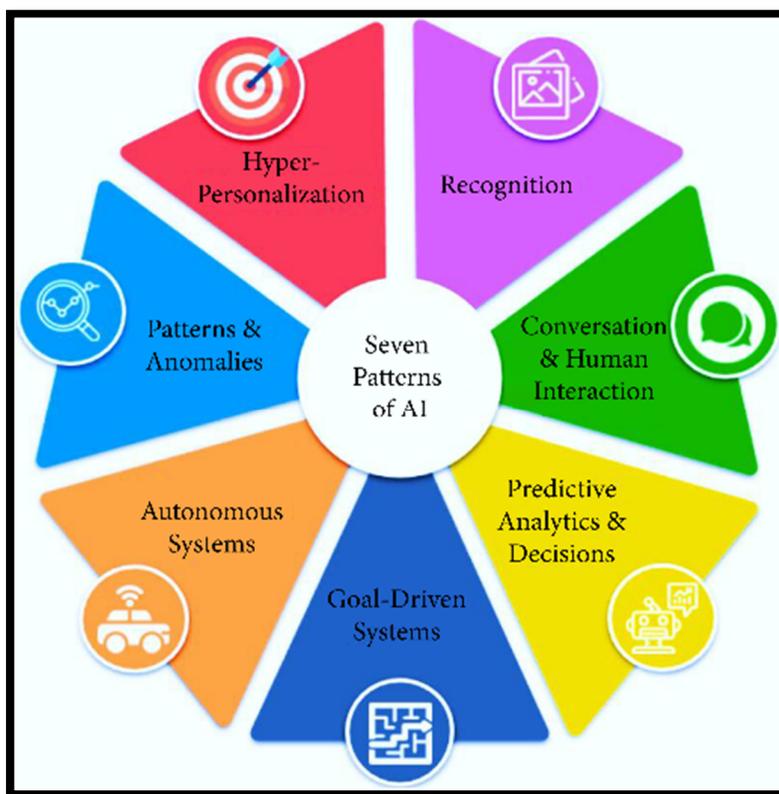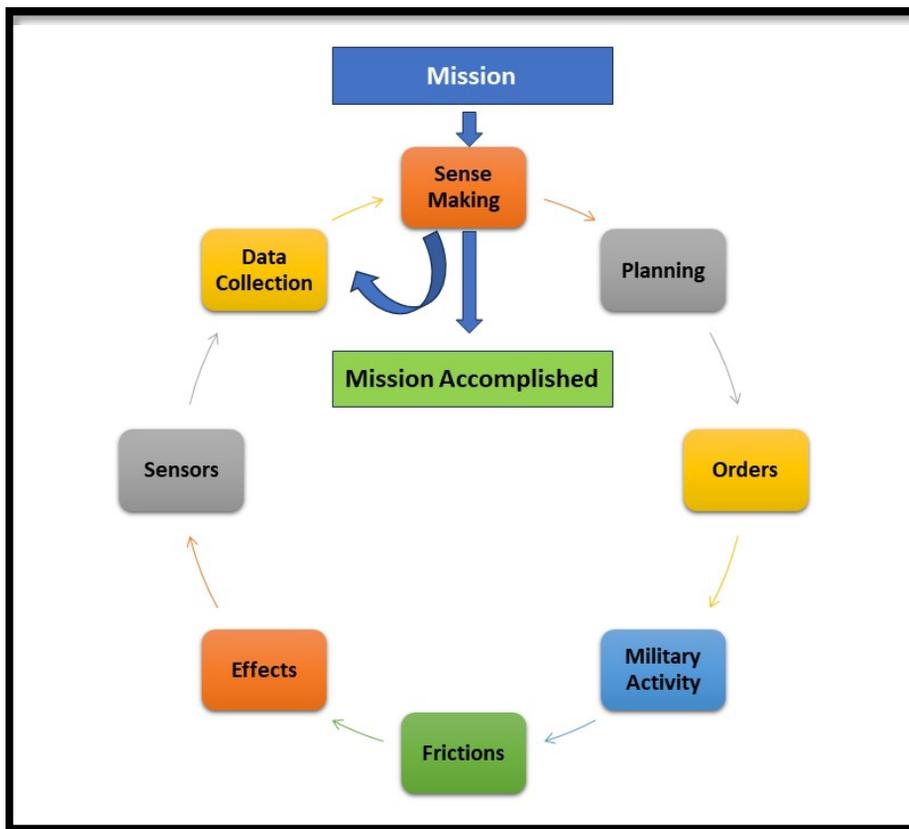

Source: Author's self-construct

Adaptive Response to Dynamic Threats: Incorporating AI into military decision-making processes is likely to enable BD Army to adapt rapidly to evolving threats and dynamic battlefield conditions. AI algorithms can analyze incoming data streams, assess the threat landscape and recommend optimal courses of action in near real-time.[8] This capability allows the intelligence staffs to suggest for proactive threat mitigation options to the commanders, swift response to enemy maneuvers by identifying the main effort, and the ability to exploit fleeting opportunities in the battlefield by shifting own main effort. By leveraging AI for adaptive response, the operational staffs may maintain the initiative, impetus, outmanoeuvre adversaries and achieve tactical superiority in contested environments.

Figure-5: Adaptive Response to Dynamic Threats
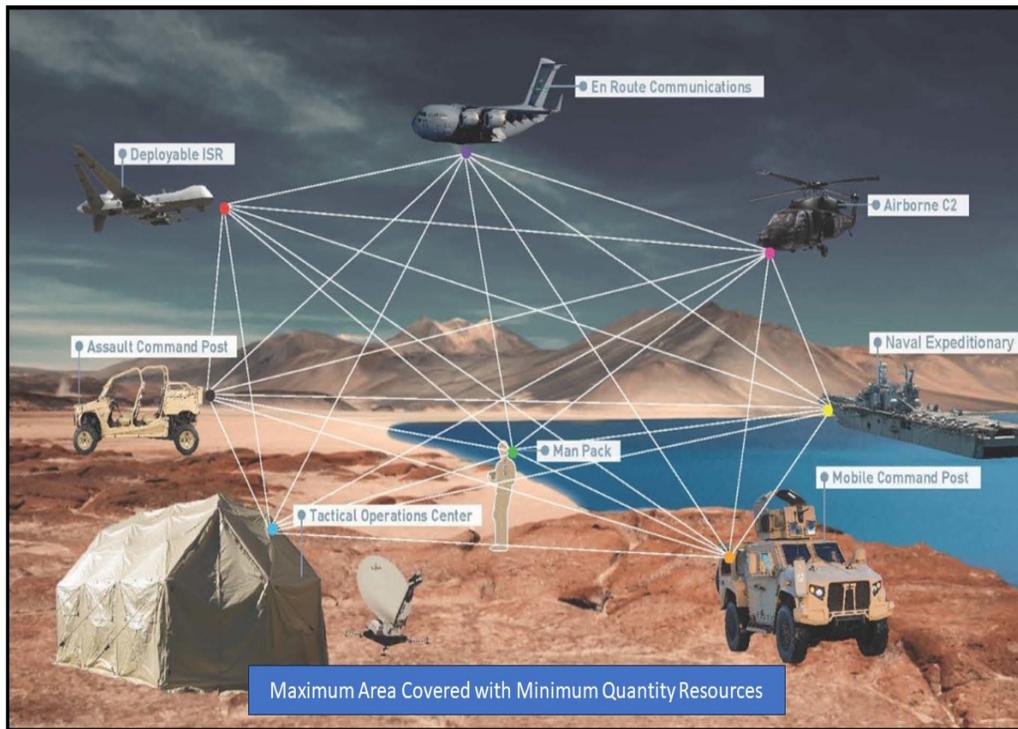

Source: Author's self-construct

Assisted Command and Control (C2): AI integration streamlines command and control processes within the organizational framework, facilitating faster, more efficient communication and coordination across operational units. AI-driven command and control systems can automate routine tasks, prioritize incoming information, and provide decision-support tools to commanders at all levels. The C2 process for a particular mission is a very dynamic process that can be represented as a dynamic observe, orient, decide and act-loop (also known as a DOODA-loop) at some level of abstraction. The effects on the loop are observed by sensors (in the widest possible sense, from electronic sensors to human observations) and sensor data are collected together with data from the system's internal state, such as the mission's progress.[9] This enhanced efficiency allows for quicker dissemination of orders allowing junior leaders to execute Auftragstaktik, improved synchronization of the BOSs and better utilization of limited resources attaining economy of effort. Moreover, AI-enabled command and control systems enhance the resilience of military operations by achieving fluidity, providing redundancy and multifarious contingency plans to mitigate disruptions and ensure continuity of command in adverse conditions with numbers of failure options.

Figure-6: Illustration of the DOODA-Loop[8]

Source: Author's self-construct

Force Multiplier Effect: AI integration in the military enables non-state actors and smaller countries to employ the technology as a force multiplier in all areas of the battlefield and beyond.[9] All things considered, inclusion of AI technology in DMP will probably act as a force multiplier, which will increase the effectiveness and strength of the combat power. By utilising AI-based tools and systems to supplement human capabilities, the maneuver units can achieve greater operational effectiveness, maintain battlefield dominance, and achieve mission-orientated tasks with minimal risk and resource consumption, and therefore the commander is most likely to achieve the conservation of combat power in an all-encompassing manner. Moreover, the incorporation of AI enables the commanders to be abreast of technological advancements and evolving threats and be ready and prepared for possibilities of future warfare. As a force multiplier, AI will most likely equip BD Army as a whole with the ability to respond to emerging challenges and safeguard national security interests with agility, precision and vision.

**Figure-7: A Graphical Representation of Force Multiplier Effect Utilizing AI**

Source: Author's self-construct

Operational Efficiency Through AI Integration

The integration of AI is likely to enhance the operational efficiency of the operating forces extensively. AI is likely to optimize the logistics management, resource allocation, predictive maintenance, adaptive training and so on which is likely to enhance the success of the force significantly.

Optimized Logistics Management: The Army's logistical management might be greatly enhanced by the incorporation of AI technologies into combat operations. AI-driven logistics systems can analyze supply chain data, forecast demand, and optimize resource allocation to ensure timely and efficient delivery of critical supplies and equipment to frontline units. AI integration lessens the workload for employees and improves the responsiveness of logistics operations by automating repetitive logistical tasks like inventory management and transportation scheduling.[10] Moreover, AI-enabled predictive analytics help anticipate future logistical requirements, enabling proactive planning and risk mitigation strategies to minimize disruptions and enhance operational resilience.

Figure-8: Optimization of Logistic Management by AI
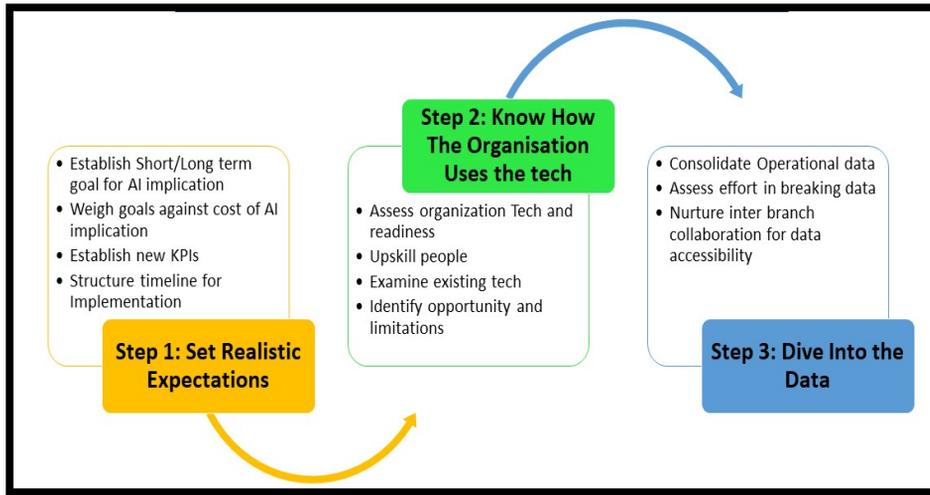
Source: Author's self-construct

Resource Allocation: All operations benefit from more effective resource allocation and utilization made possible by AI integration. In order to ensure economy of effort, AI-driven algorithms can evaluate mission priorities, analyze operational data, and suggest to commanders the best ways to allocate resources. By optimizing resource utilization, AI integration enables the commanders to achieve greater operational effectiveness with fewer resources, reducing costs and enhancing overall mission success rates.[11] Furthermore, AI-enabled resource allocation systems may maximize flexibility and adaptability in dynamic contexts by enabling the six aspects of AI Optimization. This allows them to dynamically reallocate resources and modify priorities in response to shifting operational requirements.

Figure-9: Factors for AI Optimization Success[12]
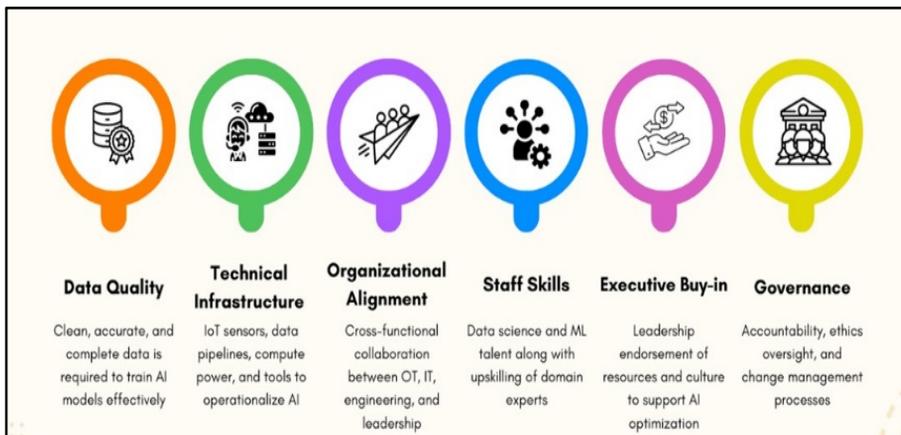
Source: Author's self-construct

Asset Management and Predictive Maintenance: AI integration offers significant advantages in predictive maintenance and asset management for the Army. Predictive maintenance systems powered by AI can examine sensor data from military vehicles and equipment to identify possible issues and foresee maintenance requirements before they arise. AI integration reduces maintenance costs, increases asset longevity, and minimizes equipment downtime by spotting maintenance problems early. Furthermore, AI assisted management system is likely to optimize the utilization of various assets in the required theater of war. It is likely to enable the ground commanders to track the inventory levels and streamline the maintenance workflows regularly. This system is likely to assist the formation commanders to employ the critical assets in the exact time and place, reducing the risk of premature exposures.

Figure-10: Benefits of Utilizing AI in Maintenance and Asset Management

Source: Author's self-construct

Streamlined Command and Control: The AI integrated C2 system is likely to facilitate efficient coordination and synchronization of various outfits in the operational area. This system is likely to prioritize incoming information and work as an analytical tool to assist the ground commanders at all levels. It is likely to enable the commanders to take quick decisions and disseminate the orders quicker. Such action is likely to synchronize the battlefield operating systems in a smoother fashion. The commanders are likely to be assisted to economize their effort and avoid redundancy. At the same time, it is also likely to provide multiple failure options to the senior leaderships in adverse situations.

Figure-11: Overview of C4ISR for Military Operation[13]
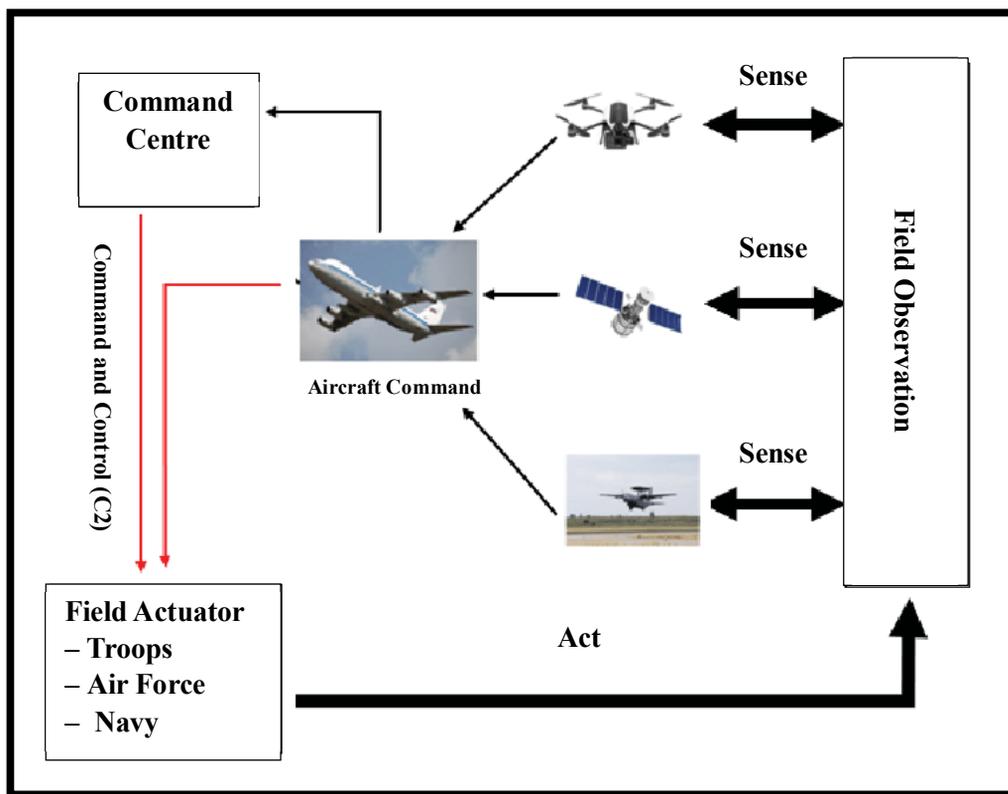
Source: Author's self-construct

Enhanced Training and Personnel Management: The integration of AI in the training modules of BD Army is likely to enhance the potentiality of the training programs and personnel management system. The AI driven training simulations and the virtual reality of specific time and space are likely to provide remarkable training experiences to the soldiers and officers as well. Such real time scenarios are likely to enhance their decision making abilities and readiness for unexpected operational situations. The AI assistant personal management system is likely to be a phenomenal tool to analyze visual performance data, identify the training needs of individuals, and recommend the development plan as per the necessity. By leveraging AI for training and personnel management like UK (Figure-11), the BD Army may cultivate a highly skilled and adaptive workforce capable of meeting the challenges of modern warfare with proficiency and confidence.

Figure-12: The Architecture of the Defence AI Centre of UK Published in its Policy Letter[14]
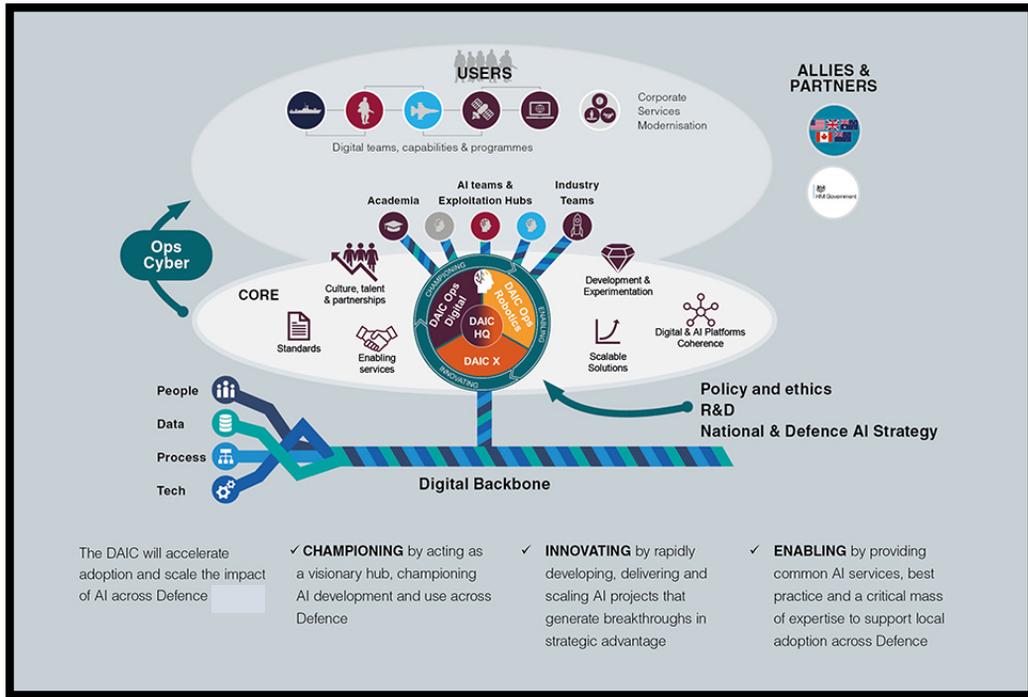
Source: Author's self-construct

Challenges

Privacy of Confidential Informations and Hostile Interference: Military operations involve management and handling of various classified documents and data. The access of AI in such important information is always a threat as the chance of security breach in the cyber domain can never be nullified. Moreover, interference by any hostile network in form of a rouge malware is likely to jeopardize the entire AI assisted DMP, which may create disaster in the ground operations. The deployment of AI in the DMP and other BD Army components is seriously hampered by this threat.

Coexistence with the Practiced Doctrine: Integration of AI in various aspects of BD Army is likely to create discomfort to users end while coexisting with the prevailing doctrine. This is likely to open the wellspring of various interoperability challenges. Multifarious existing systems of the army may not be compatible to AI incorporation as well. The limited exposure of the under commands to the technological arena is likely to retard the normalization of interoperability. Such challenges may result inefficiencies and serious disruptions in real time operations.

Legal Regulations and Ethical Dilema: Legal regulations of the international relations paradigm pose a remarkable challenge to AI implementation in the force. The incorporation of AI driven DMP necessitates legal back up from the Diplomatic domain concerning International Humanitarian Law. As the AI does not take the ethical aspects into cognizance, incorporation of AI into DMP is likely to raise questions about its transparency in terms of using specific weapons.

Limited Exposure of the Personnels to Technology: The acute shortage of skilled personnel in the technological domain is likely to present a serious challenge in the successful implementation of this initiative. The incorporation and development of AI driven system necessitates a handful of skilled personnel and technicians. Maintenance of such system is also a mammoth task indeed. Unavailability of such manpower poses a significant draw back in the integration of this system.

Organizational Inertia: Adapting such advanced but critical and complex system in the Army is likely to pose a remarkable challenge within the organization itself. The prevailing chain of command, institutional habits and age old customs and traditions are likely to create resistance while doing so. Being the slave of habit, the under commands are likely to be reluctant in terms of the adaptation projecting multifarious benefits of the existing doctrine and practices.   Such organisational inertia is likely to be the greatest challenge of AI integration in the system of BD Army.

Ways Forward

Invest in Training and Capacity Building: Addressing the shortage of skilled personnel in terms of investment in various pilot programs of AI incorporated DMP are likely the open wellspring of success. Collaborating with academic institutions like MIST/BUP/BUET/DU and various indigenous industry partners to develop multifarious courses, workshops and certifications tailored to the needs of the BD Army is likely to enhance the progress. The new initiative of indigenous defence industry by BD Army may also explore the dimensions of AI incorporation in the DMP by providing a specific portion of its budget in its research and development.

Enhance Interoperability Solutions: Another solution to this issue is to investigate interoperability alternatives to make it easier to integrate AI technology with current military infrastructure and systems. In doing so, the initiative may be taken from Armed Forces Division by means of joint coordination cell for all three services to ensure such program is well synchronized and interoperable. By investing in research and development efforts to design standardized protocols, and communication frameworks is likely to enable interoperability across different platforms and domains thereby solve the identification of friend and foe (IFF) issues as well.

Create Governance Frameworks and Ethical Guidelines: The Armed Forces Division can take care of the integration of governance systems and moral values on the ethical deployment of AI technologies in war. The framework would most likely serve as a bulwark against all the myths and critics against the fear of the unknown of integrating AI into the military operations' DMP. Establishment of oversight mechanisms, review boards, and compliance processes to monitor AI systems' is likely to ensure that they adhere to ethical principles, legal requirements and international humanitarian law.

Foster Public-Private Partnerships: Developing public-private partnerships to leverage outside know-how, resources, and innovative ideas is most likely to solve the AI implementation problems significantly. Such local technological companies and indigenous talents of online platforms from the local institutions of learning are most likely to be such valuable assets in developing such platforms. This project is most likely to provide protection against overseas companies' disclosure of confidential information as well. Collaboration with technology companies, research institutions, and start-ups for co-developing AI solutions, sharing best practices, and leveraging upcoming technologies would likely be an excellent way to mitigate the fiscal barriers.

Promote Organisational Culture Change: These initiatives can be supplemented through an encouragement of culture promoting innovative, flexible, and lifelong learning among the army's technology leaders. Open communication, knowledge sharing, and experimenting with new technology are likely to overcome resistance to change and make room for adoption. The concerned technical departments like AITSO or IT Directorate of Army Headquarters may implement various programs as talent hunts or so to identify the people having interest in this field and thus sponsor him/her for the long term. Such practice will more likely build an organizational culture in totality.

Conclusion

The BD Army's action to incorporate AI into its military strategies might be a good step ahead towards boosting its operational capabilities and preparedness for contemporary combat situations. By implementing AI-driven decision-making mechanisms for military actions, the organization should gain advantage from improved situational awareness, correct tactical judgment and greater flexibility to the dynamic threats. However, the firm will certainly face a number of issues as a result of this transformation, including security risks for data, interoperability issues, ethical problems and talent development. However, by making proactive arrangements in advance to surmount them and using AI technology responsibly, the company can emerge as a behemoth that is able to deal with the tough challenges of the contemporary battlefield.

It is indeed crucial for the organisation to place special focus on investing in research and development activities to explore the cutting-edge AI methods and applications. Through such investment, the organisation can gain the maximum benefits of AI technologies to counter-altering security threats in the modern battlefield. Furthermore, the actual key to unleashing the actual potential of AI integration in military operations will be to invest in adaptive training and education, to encourage cross-domain integration, enable ethical deployment of AI and ensure international collaboration. Lastly, operations by the BD Army will greatly be enhanced by the integration of AI, improving its effectiveness, responsiveness, and ability to adapt to changing security threats. The organization can leverage the revolutionary potential of AI to promote national security interests and uphold its assurance to protect the sovereignty of the nation by adopting AI technology responsibly and courageously tackling the issues of implementation.

Recommendations

The best way of achieving this is funding research and development activities in AI technology and its applications in military activities. In order to remain consistent with the tempo of future battlefield operations and build a suitable AI-enabled DMP tool for the BD Army, the General Staffs Branch can establish a task force consisting of the Military Operations (MO) and Information Technology (IT) Directorate to study the recent AI techniques like deep learning, reinforcement learning, and autonomous systems.

Obtaining cooperation and knowledge sharing on the integration of AI in military procedures with local universities, institutions and native tech firms is yet another way to move the integration process faster. Sharing the best practice, lessons gained and technological solutions with such organizations could be done by Operations and Plan Directorate of Armed Forces Division's Communication and Information Technology (CIT) department to obtain common capabilities and expertise for mutual benefit.

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Brief Biography

Major Md Shoaib Rifat Aumy, psc, was commissioned on 22 Dec 2010 with 63rd BMA Long Course in the Armoured Corps. He is a graduate of Defence Services Command and Staff College, Mirpur. He also obtained Master of Social Science in Security Studies from Bangladesh University of Professionals and Professional Master's Degree on International Relations from University of Dhaka. In addition to mandatory courses, he completed Special Guard Course in Shijiazhuang Mechanized Infantry Academy, China and Potential Platoon Commander Course (PPCC) in BMA. He also performed Special Driving Course in UK and Tactical Support Team Course in Poland. Besides all regimental appointments, he served in different staff and instructional appointments. His parent unit is 12 Lancers. He served as adjutant and camp commander in Chittagong Hill Tracts with 20 BGB Battalion. In Special Security Force, he served as both Assistant Director and Deputy Director. He was also an Instructor and Platoon Commander in Bangladesh Military Academy. Beyond national borders, he served with BANENGR-7 (MINUSMA) under the blue helmet. Prior to the present appointment he served as the Private Secretary to Principal Staff Officer (PSO) of Armed Forces Division. GSO-2 Coord of Chief of General Staffs (CGS) of BD Army. He has achieved Masters degree in the Professional Masters Progamme in the Department of International Relations, University of Dhaka. Presently he is serving as Deputy Military Assistant to the Chief of Army Staff at CAS Secretariat.

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      (3) Place of publication,

      (4) Year of publication,

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2. **Examples- Book Referencing**

Notes and References

1. P.K Hitti, *Islam A Way of Life*, London, Oxford University Press, 1970, p. 90.

2. Salar Khan et al, *Scientific Indications In the Holy Quran*, Dhaka, Islamic Foundation of Bangladesh, 1995, pp.33-35.

3. Abul Kalam, *Bangladesh in the New Millennium-A University of Dhaka Study*, Dhaka, Dhaka University Press, 2004, pp. ii+8.

4. Shaikh Maqsood Ali, *From East Bengal to Bangladesh: Dynamics and Perspectives*, Dhaka, University Press Ltd, Second Edition, 2017, p.110.

5. Md Mahfuzur Rahman, *A Study on Drug Proliferation in Bangladesh*, Dhaka, Procholon Prokashan, 2017, p. 255.

6. Forces Goal 2030 is a military modernization program for Bangladesh Armed Forces which began in 2009 and was revised in 2017. Its main purpose is expanding the force size, acquiring modern war weapons and equipment and providing advanced level training. The Goal also stresses on developing indigenous defence industries and enhancing the capabilities of three services.

Journal/Magazine/Periodical Referencing

1. Fazilatun Nesa, 'Modern Education in the Life of Women,' *Sikha*, Vol 2, 1928, pp.223-266

2. A. O. Aldridge, 'The Sources of Franklin's The Ephemera,'*New England Quarterly*, Vol 27, 1954, p. 388.

3. Martin Indyk, 'The Strange Resurrection of the Two-State Solution,' *Foreign Affairs*, Volume 103, Number 2, March-April, 2024, pp. 8-31.

4. Farzana Fatima, 'Bangladesh and BRICS: Emerging Dynamics,' *biiss journal*, April 2024, pp. 259-278.

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'Turkey,' *CIA World Fact Book*, available at://www.cia.gov/library/publications/the-world-facebook/goes/ tu.html.accessed on…… (date).

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