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CONTENTS

EDITORIAL

I t is indeed a matter of great pleasure for the Editorial Board to present the 73rd issue of Bangladesh Army Journal before the esteemed readers. Bangladesh Army Journal serves as an important medium for inculcating the habit of writing and for the development of intellectual faculties of officers of Bangladesh Army. It also acts as a professional mouthpiece through which the military writers communicate their thoughts with the valued readers. It provides an open forum to present the innovative ideas and matured thoughts related to Bangladesh, national and international security affairs, military strategy, military training, military leadership and management, military history and tradition, modern technology and equipment, unit affairs and other topics of significant and current interest to Bangladesh Army. Bangladesh Army Journal seeks to encourage further research on the core issues of defence, offers the latest perspectives, and serves as a platform for sharing research findings and opinions of military scholars which have greater impact for continuous improvement of Bangladesh Army.

The current issue of Bangladesh Army Journal contains articles on varied themes which include upholding Bangladesh Army as the 'Pride of the Nation', importance of creativity, contemporary challenges of UN peacekeeping operations, importance of maintaining austerity, military conscription, critical role of visual skills in combat vehicle identification training, Turkiye-Syria's earthquake and lessons for Bangladesh, articulation of defeat mechanism in the existing military literatures, information warfare, and changing landscape of Air Defence and preparedness of Bangladesh Army. We are quite optimistic that the scholarly write-ups of our talented authors will be able to hold the attention, interest and admiration of the valued readers.

The Editorial Board is profoundly indebted to **General S M Shafiuddin Ahmed, SBP (BAR), OSP, ndu, psc, PhD, the Chief of Army Staff, Bangladesh Army and Chief Patron of Bangladesh Army Journal** whose wisdom, prudence, professional acumen and keen observance have made the qualitative enrichment of the journal. We express our sincere gratitude to the Chief of General Staff for his insight, invaluable advice and suggestions given to the editorial board during the selection of articles to elevate the standard of Bangladesh Army Journal. We would like to thank all the writers who contributed immensely for this issue despite their busy schedule of professional commitments. We would also like to thank all concerned who have cooperated us in publishing the journal. Despite our sincere efforts, there may be errors in the publication. We fervently hope that the learned readers will consider such shortcomings with sympathy and forward their invaluable suggestions for the improvement of Bangladesh Army Journal.

UPHOLDING BANGLADESH ARMY AS PRIDE OF THE NATION: ROLE AND CONTRIBUTION OF ITS MEMBERS

Brigadier General Humayun Quyum, afwc, psc

Abstract

The military profession has always been valued in terms of honour and pride. Serving in the military is not merely a job rather a way of life. In peace or war, the members of Bangladesh Army never lose sight of their core objective which is 'to defend the sovereignty and territorial integrity of Bangladesh'. Bangladesh Army gradually prepares its men as patriotic citizens and trained fighters to serve the nation. At the same time, military life automatically offers lots of blessings that keep its members well-motivated and loyal to the constitution. It is a life full of responsibilities, challenges, and well-being. Every young man dreams of being a military officer to contribute to the nation, though very few can materialize. Officers are the prime movers of Bangladesh Army. They have more sources to be self-motivated and can motivate their troops to dive deep into the heart of the enemy in need. With the pride and respect that an Army Officer enjoys, comes a lot of responsibilities too, where patriotism stands first. This pride booms the officers to undergo hardship with a smiling face and accomplish unthinkable assignments. Officers being the mirror of any outfit of Bangladesh Army, are responsible to be the icons in front of their under-command and also to their civilian counterparts. As Bangladesh Army is the nation's pride, its officers need to be reminded regularly so that they continuously strive to uphold the organization's glory both in the country and in the international arena.

Keywords: Military profession, honour and pride, members of Bangladesh Army, trained fighters, contribution, pride of the nation.

Introduction

Soldiering is one of the oldest professions in the world. Bangladesh Armed Forces got birth during the Liberation War (LW) in 1971. Since then, members of the Armed Forces are contributing for the development of the country in many forms. The architect of independent Bangladesh Bangabandhu Sheikh Mujibur Rahman generated the golden dream of a time-utilitarian and modern Armed Forces of this sub-continent. The most competent successor of Bangabandhu, his daughter-the Honourable Prime Minister Sheikh Hasina is vividly following the footsteps of her mentor to incorporate a soft veneer and a steel determination for the ultimate progress and development of today's modern Armed Forces. Most importantly the country has the trust and confidence on the forces for any kind of assistance at any time of need. The present Chief of Army Staff (CAS) has also reiterated his vision to see Bangladesh Army as the 'Pride of the Nation'.

The military profession has always been evaluated in terms of honour and pride. The society holds the profession in high regard for the nature of sacrifice, dedication, and commitment which is rewarding and bringing attraction to the profession. Serving in the army is a volunteer service that

promotes moral values, trust, service before self and other positive attributes. Bangladesh Army is a well reputed organization which gradually prepares its members as patriotic citizens, trained fighters and servers to the nation. At the same time military environment systematically teaches its member to become a responsible social being. All these keep its members well-motivated, contended and loyal to the constitution. Every young fellow dreams to be a military member to avail the opportunity to serve the nation from a solid platform, though very few can materialize.

In peace or war, the members of Bangladesh Army never lose sight of their core objective 'to defend the sovereignty and territorial integrity of Bangladesh'. Their great contribution for the nation is sincerely acknowledged by the common people of Bangladesh. Bangladesh Army is also recognized as one of the finest and most disciplined forces worldwide for its remarkable contribution to the United Nations (UN) Peacekeeping Missions and other international assignments. Members of Bangladesh Army lead a life of honour and dignity who work as the symbol of confidence, uprightness, self-motivation and charismatic personality. Officers of Bangladesh Army are responsible to be the icons in front of their under-command (UC). They remain as custodians of their UC at all time and are able to motivate them to dive deep into the heart of the enemy for the nation. All these remain as glory and sources of motivation.

Along with pride and respect, members of Bangladesh Army take lot of responsibilities where patriotism stands first. This booms them to undergo hardship with a smiling face and accomplish the challenging tasks. As Bangladesh Army serves as the 'Pride of the Nation', its members must strive to uphold the glory of the organization both within and beyond the country. Their dedication, positive attitude towards profession and selfless serving mentality help to promote the image of the organization into a unique height which will also act as a source of inspiration for the young to join the military.

This paper intends to present the overview of military life and softly reminds the military members about their sacred responsibilities to the nation. This study has followed a qualitative approach to reach the findings. The paper will firstly define the 'Military Way of Life', and then will highlight the development process of the members of Bangladesh Army including their contribution for the nation. After that, an analysis of the sources of motivation for the members to selflessly serve the country and men will be highlighted. Finally, the paper will have an effort to remind them about their sanctified responsibilities for the prestigious organization, beloved nation and her citizens for better future.

Military Life and Gradual Development of Its Members for the Nation

Defining Military Life

Military-A Way of Life.   Serving in the military encompasses the unique nature and commitment where military members go beyond a classical employment. The term 'Way of Life' denotes the inclusive set of beliefs, values, customs, behaviors, and attitudes that guide the daily routine

and identity of military members. Military service demands highest level of dedication and sacrifice that extends beyond usual working periods. Members of Bangladesh Army are to remain ready to sacrifice their lives for the cause of beloved country. However, often, the military community turns into an extended family, providing care and cohesion lasting beyond active service.

Voluntary Service.   In Bangladesh serving in the military has always been voluntary. It clearly means that an individual is conscious with personal motivation, goals, and interests to join the military with a view to serving the motherland and to be part of the military community. However, after joining, the individual is subjected to military regulations, hierarchy, and the chain of command. He/She is expected to follow orders, adhere to military standards, and uphold the values and ethos of the organization.

Orientation Training in the Unit and Gradual Development of Officers and Men

Preparing military members is of paramount importance as they are trained as protectors of the country. But selection of right man, preparing and developing in right way is a complex phenomenon, when that deals with Armed Forces as it demands sacrifice of human life for right cause[1]. As such, the selections are done through a time-tested, dynamic and comprehensive procedures for all the members of Bangladesh Army.

Orientation in the Unit.   On joining the unit, newly commissioned officers undergo regimentation as part of orientation training. They see unit life; learn unit history, traditions, operational and administrative aspects. They improve upon the teachings of the academy on code of conduct, ethos, army traditions, customs and etiquettes, command philosophy etcetera. On the other hand, newly joined soldiers also undergo young soldiers' basic training in the unit which familiarizes them with the unit life, regimental culture, traditions, ethos, values, operational and administrative aspects. In both the cases they receive mentorship and guidance from seniors.

Progressive Development.   Through a scientific method and tested process, Bangladesh Army moulds its members to be patriot. These help to grow their knowledge, improve their skills and capabilities as solid military members. From the very beginning of the military life members of Bangladesh Army undergo various types of trainings in different institutions. These include training on modern weapon handling, tactics of the battlefield, development of mental endurance and physical fitness, etcetera. With the passage of time, they are trained on staff job and leadership traits. As a continuous process professional expansion both at home and abroad goes on to keep them updated on newly evolving military doctrines, technologies, and challenges.

Findings.   Military profession is a unique way of life that goes beyond the typical expectations of a job. The selection and development process of its member are very comprehensive. Gradually it prepares its members as competent, adaptable, spirited and effective

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[1] https://issb-bd.org/page/1/1/

to serve the nation. Their selfless attitude and readiness to make sacrifices are so important for the good going of Bangladesh Army and the overall safety of the nation.

Major Contributions by the Members of Bangladesh Army for the Nation

Sacrificing Attitude[2]. Members of Bangladesh Army have been contributing by their highest possible professionalism in the country and across the globe. Their sacrificing attitude significantly contributes to the defence and security of the country, fostering a sense of national unity and inspiring patriotism among fellow citizens. When the common people observe that army members are sacrificing their personal comforts, safety, and even their lives for the interest of the nation, it fosters a sense of unity and national pride among them.

Role in Chattogram Hill Tracts (CHT)[3].   Bangladesh Army has proved its efficiency in establishing peace in CHT. Sacrificing their lives, members of Bangladesh Army have significantly contributed to the restoration of peace and stability in that area. They also facilitated negotiations and implementation of the peace accord, which has promoted development in the region. Since long, members of Bangladesh Army are involved in infrastructure development, healthcare initiatives, educational programmes, and socio-economic uplift. These efforts have helped the government machineries to perform its normal activities in CHT.

Nation Building Activities[4].   Since independence, Bangladesh Army has made substantial contributions to nation-building by actively participating in reorganizing the country, infrastructure development, relief distribution, in aid to civil administration, etcetera. Members of Bangladesh Army have been actively involved in preparing voter list with picture, NID cards, machine readable passport, construction of important roads, bridges, schools, hospitals, and other public facilities, particularly in remote and under-developed areas. Engineering units of army are playing a vital role in developing the infrastructure for connectivity. Their dedicated efforts have helped in improving the overall socio-economic condition of the country and fostering national development.

Humanitarian Works[5].   Bangladesh Army has made commendable contributions in humanitarian work across the country. Its members remain actively involved in disaster response and relief efforts during any natural calamities. Its contribution during the rescue operation of Rana Plaza tragedy, operation in Holey Artisan and Atiya Mahal, operation Moyur Ponkhi, operation during Covid Shield, operation Plabon, response to fire hazard at Shitakundo, relief distribution and rescue operations at Sylhet and Hobiganj area during flood have been the great instances. Bangladesh has been hosting a large number of Forcibly Displaced Myanmar National (FDMN) and Bangladesh Army members have been helpful in providing healthcare and sanitation facilities.

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[2] Findings of FGD
[3] Ibid
[4] Ibid
[5] Ibid

It has ensured the safety and security and other assistance to FDMN. They also have been involved in coordinating with international organizations and facilitating humanitarian aid distribution. All these resulted due recognition and respect from common people of Bangladesh and international community as well.

Contribution in Overseas Periphery[6]. Bangladesh Army is actively involved in the UN Peace Support Operations across the globe. Its members are selflessly engaged in humanitarian work, including protection of civilians, conflict resolution, and post-conflict reconstruction. This kind of involvement clearly denotes Bangladesh Army's commitment to global peace and humanitarian values which brings name and fame for Bangladesh. Furthermore, they are earning huge amount of foreign remittance which increases the economic growth and contributing immensely to the economic sector.

Sources of Inspiration for the Members of Bangladesh Army to Serve

Members of Bangladesh Army get inspiration from numerous sources that drive them to be committed and dedicated towards the nation. Important features are discussed in the following paragraphs which collectively shape the mindset of the members to serve with honour and pride.

National Identity and Pride[7]. Members of Bangladesh Army are highly inspired by their strong sense of national identity and pride in serving their motherland. Their history, sacrifices, and struggles of the people in achieving independence motivates them to see themselves as custodians of the nation's sovereignty and integrity.

Glorious LW[8]. Members of Bangladesh Army draw inspiration from the LW and strive to carry forward the legacy of love for the country displayed by their predecessors. It infuses a strong sense of patriotism, courage, sacrifice, professionalism, and motivation to serve their nation with full dedication. Army members being in the frontline sacrificed their lives during LW. For the sacrificing contribution, total 3 BIR SRESHTHO, 39 BIR UTTOM, 90 BIR BIKROM and 167 BIR PROTIK gallantry awards were received by the members of Bangladesh Army. Members of the army look up to past leaders, war heroes, and their contributions to the nation, which instills a sense of pride and motivation to continue that legacy.

National Anthem.[9] The national anthem represents the identity of Bangladeshi people and reflects the aspirations of the nation. Like all, it serves as a good reminder for the military members of their belongingness to the country and their role in safeguarding her interest. The mind-blowing anthem, Amar Shonar Bangla (My Golden Bengal), is really a great source of inspiration for them. Each word of the powerful lyric and melody signifies very deep meaning about our beautiful country and evokes a sense of pride, unity, deep love for the nation. It also keeps alive the spirit of sacrifice and inspires the members to serve the country with selflessness.

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[6] Ibid
[7] Ibid
[8] Ibid
[9] Ibid

Love for the Country.[10]   Love for the country fosters a deep sense of belonging among the members of Bangladesh Army. The unfathomable love and attachment that members have for the country highly inspire them to serve with commitment. It also fuels their sense of belonging, sacrifice, and dedication to defend the nation's interest. Their unconditional love for the nation, sense of duty and a desire to contribute to the well-being of their fellow citizens always keep them motivated to serve with honour and dignity. That's why they take oath to sacrifice their lives for the beloved country.

Protector of the Motherland.[11]   Military is always a prestigious and demanding profession across the globe with no exception to Bangladesh. After a unique selection process and vigorous training, a civilian becomes a military man with the supreme responsibility to safeguard the motherland. Becoming such a proud selected citizen to protect the motherland instills a strong sense of accountability amongst the members of Bangladesh Army. They clearly realize that, they have been chosen among many for this noble profession. This recognition makes them proud and inspires to serve with utmost dedication.

Adventurous Life.[12]   Life in army is always adventurous and multi-dimensional that offers its members the opportunity of gaining innovative experience. Various training events like rock climbing, jungle warfare, survival training, parachuting, waterborne activities etcetera are really adventurous. These prepare them with the necessary skills and attributes to undertake challenging missions and at the same time help in building camaraderie, esprit de corps, trust, and mutual respect among the members which are essential in military operations.

Growing as Responsible Social Being.[13]   Military members are always elevated for their involvement in various social activities. As the members of Bangladesh Army always bear the motto inside, they project the best possible outfit in any social gathering and activities. Their honesty and care for others gradually grow them up as responsible social being which works as a strong source of inspiration. It improves personal conduct and growth, emphasizes the impact on society, promotes ethical conduct, and nurtures a service-oriented mindset. These factors inspire the members to be more responsible, compassionate, and to be engaged positively to contribute to the society.

Commitment to Peace and Humanitarian Assistance.[14]   The members of Bangladesh Army are committed to ensure a safe and secure environment to maintaining internal peace, stability, and national security for their fellow citizens. By promoting human rights, fostering trust and unity, standing beside distressed people, members of army find real meaning, purpose, and motivation in their service. It inspires them to be defenders of peoples' rights, ensuring fair treatment, respect, and empathy towards all individuals, particularly those who are vulnerable. Members of Bangladesh Army also play significant role in upholding this commitment by actively contributing in UN peacekeeping missions.

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[10] Ibid
[11] Ibid
[12] Ibid
[13] Ibid
[14] Ibid

Welcoming by the Common People.[15]   Due to the glorious past of this prestigious organization and relentless support during any crisis of national interests, Bangladesh Army is highly respected and warmly welcomed by the common people of Bangladesh. This attitude of the common people raises a sense of belonging among the members of Bangladesh Army and grows the idea that they are the very trustworthy part of the society they serve. The support and acceptance from the community also develop a bonding between the military and the people, inspiring them to commit with greater devotion. As such it serves as a good source of inspiration for military members to devote for the nation.

Parents and Relatives Take Pride.[16]   The members of the prestigious and demanding profession have good reputation and respect among the common people in our society. Members serving in this esteemed organization are highly loved and valued. Parents and relatives of army personnel also take pride for their military members. These feelings work as a source of inspiration for the members of Bangladesh Army.

Ensuring Wellbeing of Life.[17]   Bangladesh Army takes quality care of their members in fulfilling basic and supplementary needs including lucrative facilities. It offers mentionable opportunities and amenities like child education, higher education for the military members, visit inside and outside the country, housing, loans etcetera. Many benefits and amenities continue after retirement also.

Knowing the Country.[18]   Members of Bangladesh Army serve across the country as profession demands. They consider it to be a blessing to have the opportunity to see the country and learn more. They get better chances to visit different historical places, landscape of the country which widen the horizon and add knowledge from different dimensions in their life.

Exposure to International Forum.[19] Bangladesh Army members are participating in UN peacekeeping missions, higher training, joint training and joint combat exercises with foreign armies across the world. It helps to understand more about other armies and their culture. Apart from broadening the horizon Bangladesh Army members get an opportunity to project our beloved country in a better way to the international community.

Findings.   Bangladesh Army members are highly inspired by so many sources where patriotism comes first. Being inspired, they are always ready to make supreme sacrifice for the cause of the country. This motivation and relentless contribution lead them to significantly contribute to the nation and work as the 'Pride of the Nation'. In turn, they earn unconditional love and respect from common people of Bangladesh.

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[15] Ibid

[16] Ibid

[17] Ibid

[18] Ibid

[19] Ibid

Charting the Future

Since independence, the commitment, sacrifice, and professionalism of Bangladesh Army personnel have been instrumental for the nation which is well recognized by the state and common people. But, changing socio-economic trends are likely to have both positive and negative impacts on military profession. However, society and culture take their own course, which we can hardly change being in the army. Thus, there is a need to work out our strategy to exploit the positive impacts and minimize negative effects. That's how being the most trustworthy organization our role is to move ahead with excellence for the cause of our beloved motherland.

Efforts at Individual End

Accomplishing the Vision of CAS.[20] Respected CAS reiterated his vision to see Bangladesh Army as the '**Pride of the Nation'** which he clearly articulated after the assumption of the command. He expressed his satisfaction by mentioning that everyone up to the junior most soldier concurred with his vision. He stated that everyone knows how to conduct to pave the way to establish Bangladesh Army as the pride of the country and encouraged all the members to conduct themselves in a way so that his vision can be achieved. Our job is to continue working for the same mission as a team.

Instilling Pride in Uniform.[21] Military profession demands highest dedication from its members which comes from motivation and motivation is rooted through the job satisfaction. Job satisfaction comes from the individual's mental makeup which is deeply influenced by the individual's contentment. Members of Bangladesh Army take pride in uniform and are not expected to have over materialistic perception rather remain satisfied with existing facilities and privileges. The magic of success lies beneath the better perception management, self-contentment, and correct attitude towards the profession which will lead to perfect military way of life taking pride in the uniform.

Recounting the History of LW.[22] With the call of the Father of the Nation, members of Bangladesh Army spontaneously participated in LW with their patriotic feelings without any hesitation. It clearly signifies that; military members are truly patriotic. Keeping the glorious history in their hearts, military members are working for the nation round the clock. However, at times they may fall short in respect of nurturing patriotism which demands periodical soft reminder. Periodic arrangement to remind about LW and contribution of our great leaders and heroes in different means will enhance the patriotic sense of our members.

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[20] Discussion with Commandant SI&T on 21st September 2022

[21] Instilling Pride in Uniform to Embrace Military as a Way of Life: An Introspection, A Research paper for MPhil by Brigadier General Saifur Rahman

[22] Opchit FGD

Loving the Nation and Army.[23]   Military ethos guides the members to be patriotic which drives them to work in a selfless manner giving priority to the interest of the country and organization before own interest. However, at times the sense of patriotism decays amongst few members due to over materialistic psyche. So, periodically it must be reminded to the members about the oath taken and supreme sacrifice of our predecessors for the independence of the country. We must never shift our focus of serving the nation which will come from true love for the motherland and the prestigious organisation.

Upholding Values and Ethos.[24]   Traditions, values and ethos of Bangladesh Army keep us united and cohesive. Once the members are indoctrinated with these virtues, the organization remains integrated. In combat, ethical choices are not always easy. UCs fight during crisis as they find their leader follows the military values and ethos. Therefore, men in uniform particularly officers must display and uphold military values and ethos at any cost with right spirit. Only then as leader one can implement the same. Senior members should take realistic efforts as mentor to instill the urge among the juniors to uphold the values and ethos of the organization.

Promoting Basic Soldiering.[25] Traditionally basic soldiering is very important institutional features in military profession. These include discipline, observing military customs and etiquettes, abiding by military ethos and values etcetera. Officers being the prime movers of Bangladesh Army should believe, practice and motivate the UCs to instill and follow basic soldiering. Generating positive attitude among the soldiers is the responsibility of the leadership. Therefore, fostering through proper training and motivation we can improve the positive attitude towards profession to be the 'Pride of the Nation'.

Efforts at Organizational Level

Pursuance for the Quality of Leadership.[26]   UCs are more conscious and educated these days. When a leader pursues excellence for him and also encourages his followers for the same, due respect comes automatically. Therefore, in order to earn respect and obedience of the led, leaders at all tiers, especially the officers, must establish their superiority in terms of competence, character and courage. In today's knowledge-based society the officers should pursue for the quality leadership and develop the UCs accordingly.

Fostering Ethical Command Climate.[27]   A strong and ethical command climate helps an organization to move towards its desired goal. It prevails when actions of leaders conform to the words, mutual trust exists between the leaders and the led and finally members feel contended,

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[23] Ibid

[24] Ibid

[25] Ibid

[26] Opchit, Rahman

[27] Ibid

secured and stress free. Leadership attributed with character, competence and courage of conviction will be the key to develop and maintain this desired ethical command climate. So, leaders should set himself by his believe, words and action and then expect UCs to follow the examples set for them.

Congenial Working Atmosphere.[28]   Good working environment develops the cohesiveness and boosts the level of performances. When a leader ensures the congenial working atmosphere, the soldiers obey the rules and display the basic soldiering spontaneously. Thus, commanders at all levels should offer the desired working atmosphere for their outfits to perform better. Knowing the capabilities of the UCs and employing them according to their merit is a good sign of such atmosphere.

Revising Motivational Methods and Means.[29] Motivation as an important psychological dimension plays vital role in enhancing job satisfaction. Leaders inspire and motivate their outfits which helps to improve leaders-led relation. Current practices of motivation in the units may be revisited. Periodical interactive sessions in the form of workshop, seminar on family values, changing socio-economic dynamics and its bad effects may be arranged at unit level. Family members may be allowed to participate and their suggestions should be duly evaluated and valued. Experts may take dedicated session for counseling during the period of mental stress which will work as a source of motivation to perform better.

Instilling Mentoring Culture.[30]   Mentoring is a powerful personal development, empowerment and effective relationship tool that develops over time. It is a partnership based upon mutual trust and respect between the leader and the led (mentor and mentee). The process supports and encourages members to manage their own learning to maximize their potential, develop their skills, improve their performance and become important members they want to be. Seniors need to equip themselves with the knowledge of mentoring to develop juniors in order to achieving professional development and worthiness of the outfit they belong to.

Implementing Accountability.[31]   In military, accountability has its utility. Besides welfare, every member of Bangladesh Army is accountable for his/her responsibility, sense of duty, behavior, conduct, and so on. Therefore, commanders at all levels must be just and impartial in identifying follies and ensuring justice. Any misdeeds are to be addressed as per merit. If rewards and punishments are applied properly, members of any Army will surely develop soldierly attitude.

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[28] Ibid

[29] Ibid

[30] Ibid

[31] Ibid

Ensuring Wellbeing of Life.[32]   Personal and administrative matters of the members are equally important to maintain the morale of any army. As such, apart from fulfilling basic and supplementary needs of life, organizational support on legal and social problems may be further extended to members and their families in their crisis moment.

Leading the UCs by Setting Examples.[33]   Leaders with their personal examples have greater influence over their UCs. Followers are always keen to study the attitude, courage, decision making ability of their leaders. Often UCs tend to read their commanders before they act under different situation. When the followers see that their commanders are doing something by themselves, they are inspired to do the same which impacts positively on the leadership. Therefore, leaders must not do something which is likely to have negative impact in the mind of UCs.

Emphasizing on Better Intake.[34]   A well-motivated, mentally sound and psychologically fit member is likely to learn and follow the basic soldierly attributes spontaneously with right spirit. Surely our selection processes are dynamic and time tested. Yet, no compromise should be made at any cost. In addition, positive branding of Bangladesh Army would offer the scope of getting better intake. In this regard organizational structure of ISPR may be expanded to cope with the growing media community of the country. Informative army website may also be a good medium for propagating positive aspects both at home and abroad to inspire young generation. At individual end serving members can share with the potential candidates regarding their own adventurous experiences, opportunities and personal development that can be achieved through a military career.

Recommendations

In view of foregoing, the following recommendations are put forwarded:

a.   The members of Bangladesh Army should always be spirited and motivated by the glorious history of LW. For upholding Bangladesh Army as 'Pride of the Nation' they should always contain patriotism in their heart to be committed and dedicated for dear motherland.

b.   The ethos and values, military traditions and customs should always be upheld by the members of Bangladesh Army to enhance the basic leadership and soldierly qualities.

c.   Officers being the prime movers of Bangladesh Army should believe and practise, and motivate the UCs in adhering to the basic soldiering attributes to shape up their attitude and outlook towards military profession.

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[32] Opchit, FGD
[33] Ibid
[34] Opchit, Rahman

Conclusion

As a developing country, Bangladesh has now started its journey to be a developed country by 2041. Keeping this in purview, Bangladesh Army is also marching forward and taking various steps to remain ever ready to serve the nation. Serving in Bangladesh Army is a matter of great pride. It has already earned a good name with its significant contribution for the sacrificing attitude of its member for the nation and her men. It is also significantly contributing to establish world peace under the banner of the UN.

Members of Bangladesh Army deal with a lot of responsibilities where interest of the country comes first and personal interest at last. Good reputation coupled with the military way of life entails the members of this organization in taking pride to put on the olive-green combat uniform. The uprightness, confidence and high standard of moral values make the members of the organization as the icons in front of common people. By showcasing the values, professional development prospects, and commitment to the nation and its people, members of Bangladesh Army can inspire the young generation to join the army as a proud member. The sacrificing mindset, dedication, professionalism, motivating power and working spirit of its members will take the organization into the pinnacle of success and materialize the vision of present Chief of Army Staff to see Bangladesh Army as the 'Pride of the Nation'.

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Discussion/Interview

10.   Discussion with the course members of National Defence Course 2023.

11.   Interview with Commandant School of Infantry and Tactics in September 2022.

Focus Group Discussion

12.   FGD with all Wing Heads of School of Infantry and Tactics in June 2022.

13.   FGD with Commanding Officers of Sylhet area in July 2022.

14.   FGD with officers of School of Infantry and Tactics in August 2022.

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UNBOXING CREATIVITY: THINKING INSIDE VIS-À-VIS OUTSIDE THE BOX

Brigadier General Md Syeedur Rahman, afwc, psc, MPhil

"If you never venture outside the box, you are probably not creative. But if you never get inside the box, you are certainly naive."

- Christopher Peterson[1]

Abstract

Creativity is considered as one of the most important soft skills of the 21st Century, because it develops innovative ways of solving complex problems. Military, with no exception also highly values creativity, and encourages thinking outside the box while discourages thinking inside the box. The 'box' refers to usual ways of solving a problem. But, despite extensive encouragement, most military members struggle to think outside the box. Therefore, a qualitative study is undertaken to identify the causes of the plight, and determine whether creative ideas generate from thinking outside the box only. Contrary to the common perception, the study revealed that creativity can also be generated by thinking inside the box because such method defines and limits the boundaries of a problem. Nevertheless, it has a tendency of limiting the potential ways of solving a problem instead of limiting the problem itself. On the other hand, there is not much debate when it comes to creativity by thinking outside the box. However, risk taking aptitude and acceptance of failure are the major challenges of thinking outside the box. More so, military being a mechanistic organisation develops its members to follow a set procedure, which incites its members to stay in a safe zone. As creativity is an essential requirement of a contemporary leader, instead of institutionally encouraging a particular method i.e. outside the box thinking, the military needs to put emphasis on creative and novel outcomes.

Keywords: Military, box, creativity, thinking outside the box, thinking inside the box, creative thinking, hybrid thinking.

Introduction

One of the most common phrases heard in the military is 'think outside the box', because it involves creativity and creativity is the key to solving multi-dimensional problems. Historically, it is also proved that military leaders, who could think and act creatively in challenging situations, came out victorious. But, can men in uniform think outside the box? Or are they wired to think

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[1] https://www.goodreads.com/author/quotes/57769.Christopher_Peterson (Accessed on 04 March 2022)

inside the box? Another key and relevant question is, do creative ideas generate from thinking outside the box only? The answers to this question largely depend on the purpose of military, the grooming process of its members, the normal environment of encouraging novel ideas, and the definition or interpretation of the 'box'. It is widely accepted that the military is destined to fight wars, and therefore its members are trained in a way that each of them performs any given task identically. Such a process somewhat instils the habit of adhering to doctrines, Standard Operating Procedures (SOPs), cultures, traditions, common practices, and so on. As a result, when anyone is asked to think outside the box, he becomes stressed, and stress usually leads to undesirable outcomes, such as feeling despised or rejected.

Albert Einstein once said that "creativity is seeing what no one else sees and thinking what no one else thinks". Thinking outside the box generally refers to coming up with unique or creative ideas that have never been done before in a given situation. Adhering to such ideas requires courage to face the risk of failure, which many prefer to evade because human beings prefer to stick to a routine and try to remain safe rather than being unique or creative. It is opined that our thinking occurs within a metaphorical and contextual box, and that when someone is asked to think outside the box, he feels precarious and nervous due to a new perspective.[2] Human minds have evolved over time to survive, so obeying orders, conforming to norms, and so on come naturally. We are creatures of habit, and our brains are designed to harmonize data in a homogeneous way. Furthermore, we socially nurture the psyche of thinking inside the box from young age. For example, at school, a child is rewarded for conforming to the rules, but not for being maverick. According to Louis R. Mobley, founder of the IBM Executive School, traditional teaching methodologies such as reading, lecturing, testing, and memorizing are counter-productive to creativity and create boxes in our minds.[3] As a result, most of us do not have a natural or nurtured ability to think outside the box.

Contrary to the belief of being conditioned to think inside the box, it is also true that we were rewarded in our early school years for innovative science projects, imaginative arts, quiz competitions, and so on. Such endeavour certainly encourages the young ones to be creative, but is it possible to instil the habit of thinking creatively among the men in uniform who are adults and have also undergone rigorous military training to follow set rules? NASA conducted a study in this connection where they analysed the relationship between creativity and age; and concluded that age has a significant impact on creativity, thus young people are found to be more creative than

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[2] Brad Deuster, 'Whoever told you to Think Outside the Box was Wrong' at https://www. braddeutser.com/whoever-told-you-to-think-outside-the-box-was-wrong/ (Accessed on 15 June 2022)
[3] August Turak, 'Can Creativity Be Taught?', Forbes Journal, May 22, 2011.

older ones.[4] So, theoretically it can be quite challenging to infuse the habit of thinking outside the box among the military members.

Modern warfare is becoming more complex day by day, hence the military requires innovative solutions. However, this does not imply that all solutions need to be developed outside the box. It is encouraging that most of us are quite capable of thinking effectively inside the box, and when faced with constraints, we naturally explore possible alternatives.[5] So, when the constraints are coherent and practical, most of us are quite capable of generating genuine ideas. Nevertheless, our habits limit our ability to think because we continue to rely on our brain's left hemisphere for information analysis and processing. As a result, by learning to use the right hemisphere of the brain, we can think differently about solving problems and identifying opportunities. In addition, if we can combine both hemispheres of our brain, we can certainly achieve spectacular results. However, sometimes we remain too conscious about thinking outside the box that we overlook the inside. So, rather than heavily prioritizing to think outside the box, hybrid thinking can be a good approach in solving complex problems. At this backdrop, this paper will endeavour to explain the box, and thereafter investigate whether creative ideas are generated by thinking inside or outside the box vis-à-vis relevant challenges thereof.

The Box of Creativity

'Box' refers to the common ways of looking at things, doing things, and making assumptions that almost everyone follows. A box can also be defined as a frame, a paradigm, a habit, a perspective, or a set of self-imposed limits for an organization, government, or even a team. In another sense, the box is metaphorical, in that an individual or group operates within certain established parameters that define who, what, and how to perform a specific task.[6] In the military, the box is the standard method of problem solving for which everyone is trained and developed. In the business world, the box is defined by direction, operations, people, and environment and is bounded by facts, observations, experiences, beliefs, and assumptions. Somewhat similar to business world, box in the military is bounded by doctrines, traditions, TTPs (tactics, techniques and procedures), preconceptions, training, and constraints (as shown in **Figure-1**). These elements usually guide military personnel to perform any assigned task indifferently.

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[4] Dennis Wayne, 'Age and Productivity among Scientists', Science, Volume 123, Issue 3200, pp. 724-725, April 1956.

[5] 'Breakthrough Thinking from Inside the Box' at https://hbr.org/2007/12/breakthrough-thinking-from-inside-the-box (Accessed on 04 March 2022).

[6] Michael Kallet, 'Think Smarter: Critical Thinking to Improve Problem-Solving and Decision-Making Skills', Chapter 27, O'Reilly Online Publication, 2022.

Figure- 1: Interpretation of the Box (Business and Military Domain)
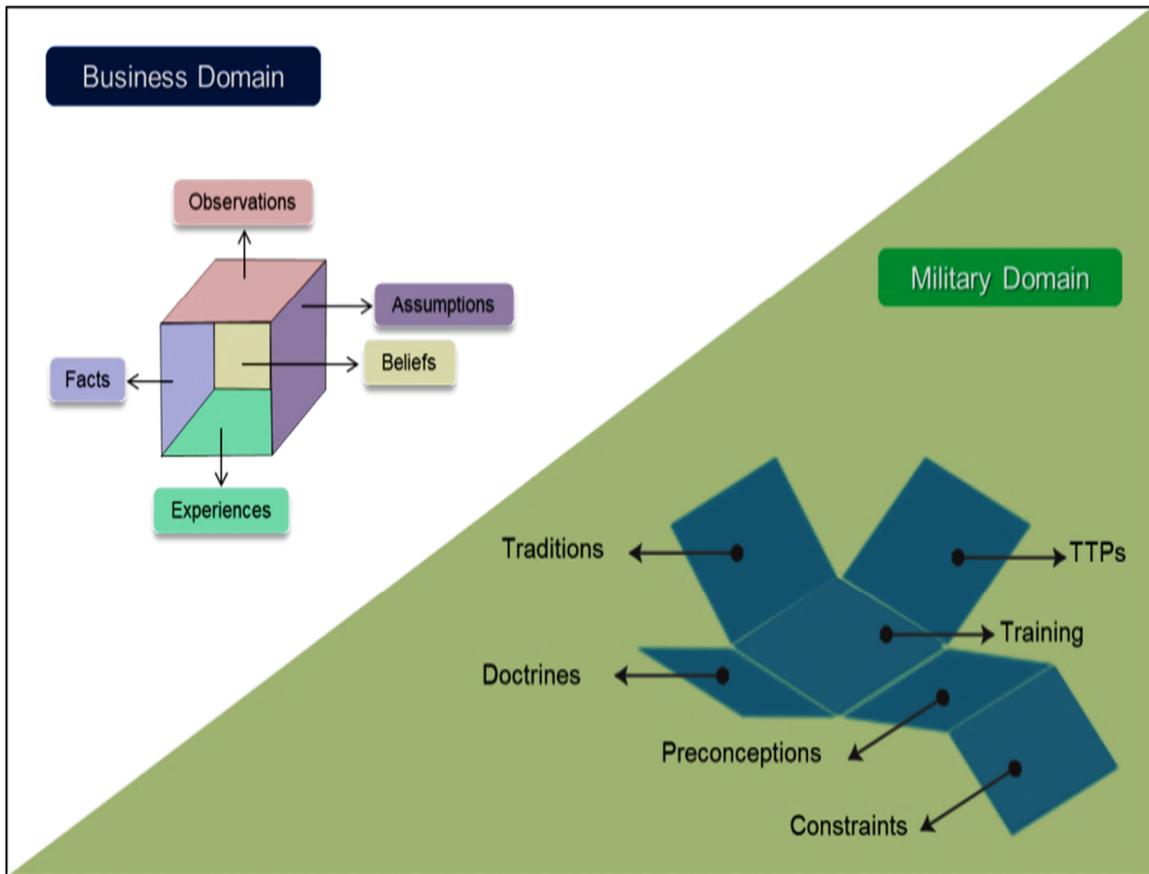
Source: Researcher's Own Construct

Some academicians opine that the box is like a room with walls, and we are born with these walls i.e., conventions/rules, common sense, physiology, and consciousness.[7] If we do not actively push these walls outwards, they tend to grow inwards over time. As a result, the box is psychological or metaphorical rather than physical. If we consider the box to be a molecular structure (where all the elements are interconnected; as illustrated in **Figure-2**), we find that elements such as human nature, individual knowledge, adversary, risk, acceptance, bias, and so on have a significant influence on our way of thinking, and 'psyche' is the core element amongst all these. As a result, when a military person psychologically embraces the military way of life, the organizational practices obstruct his ability to think creatively.

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[7] Micael Dahlén, Creativity Unlimited: Thinking Inside the Box for Business, Wiley; 1st Edition, 13 July 2009.

Figure- 2: Alternative Interpretation of the 'Box' in the Military
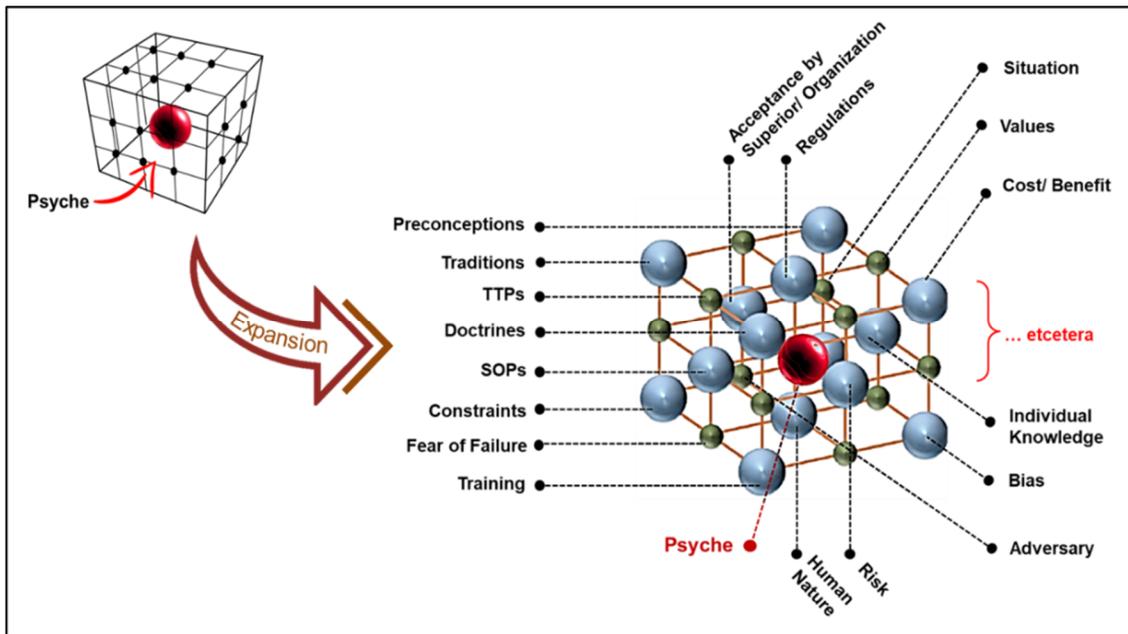
Source: Researcher's Own Construct

Creativity and Thinking

'Thinking' is the action of using one's mind to produce thoughts and connecting those thoughts with appropriate reasoning. Though it is a natural skill, it can also be developed through various social interactions. Thinking has three basic modes: convergent, divergent, and lateral which are shown in **Figure-3**. Convergent thinking uses logic and generally refers to the ability to give the correct answer to standard questions. Divergent thinking, on the other hand, uses imagination and refers to generation of creative ideas by exploring possible solutions. Lastly, lateral thinking uses both logic and imagination, and commonly referred to as 'thinking outside the box'. Two phrases that are frequently used in relation to thinking are 'creative thinking' and 'critical thinking'. Creative thinking is the process of seeing things from a different perspective to come up with something new and innovative; critical thinking, on the other hand, is the logical and sequential process of rationalizing, analysing, evaluating, and interpreting available information to make informed judgements. Both the aforesaid process are used for problem solving, but critical thinking is structured and methodical whereas creative thinking is fluid and somewhat experimental. To put it simply, critical thinking is close-ended and depends on tried-and-true methods, while creative thinking is open-ended and involves tapping alternative perspectives.

Figure- 3: Modes of Thinking
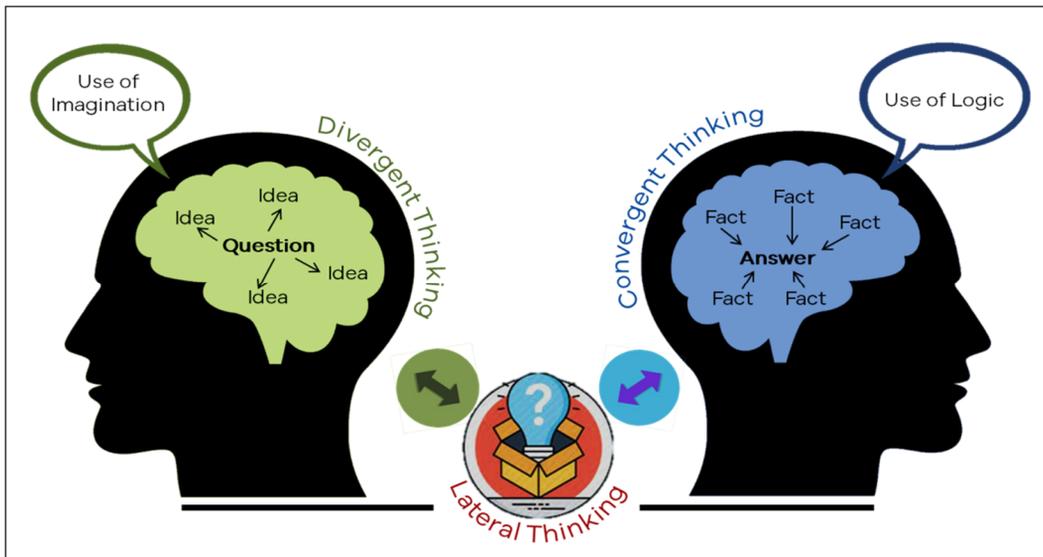
Source: Researcher's Own Construct

Although most people and organizations have some creative potentials, military organizations being characterized by formalization, rigid departmentalization, and a strict centralized chain of command tend to have very low levels of creativity.[8] In contrast, creativity is one of the most desirable attributes of a modern military leader. Interestingly, not only in the military, the corporate sector also recognises creative thinking as the most significant leadership quality.[9] Therefore, in today's VUCA (volatile, uncertain, complex and ambiguous) world, military leaders need to be creative thinkers in order to react swiftly to changing conditions or capitalize on transitory opportunities. However, the value of creativity in the military is well acknowledged, but reservation exists as to whether creativity is exhibited by only thinking outside the box or it can also be generated by thinking inside the box.

Thinking Inside the Box

Scientifically, the human mind works as a data processing computer which provides vast information to the brain. The brain then isolates each incident/ event as data and aligns those in a coordinated manner. This technique is an efficient way of handling data, therefore the human brain prefers to think in patterns. On the contrary, thinking in set patterns is discouraged in both military and business domain. It is assumed that people who think in a pattern or inside the box are not innovative, therefore incapable of generating unconventional/ counter-intuitive solutions. Contrary

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[8] Moorhead, G. and R. W. Griffin, 'Organizational Behaviour', 4th Edition, Boston: Houghton Mifflin Company, 1995.

[9] https://www-03.ibm.com/press/us/en/pressrelease/31670.wss (Accessed on 14 November 2022).

to the aforesaid belief, it is opined that knowing and thinking inside of the box is essential for creativity. Because, we often neglect the inside of the box while we endeavour to think outside of it and resultantly, we fail.[10] Thinking inside of the box is an effective way to be creative because it helps to understand where we have been, where we are now, and where we should go by developing situational awareness. Knowledge of the inside also permits methodical observation, experimentation, and adjustment, resulting in creative outcomes.

Scientific evidence revealed that imaginative (divergent) thinking is hard in the military as its members are indoctrinated into a culture that trains them to think within the box.[11] It is also observed that military members prefer logical (convergent) thinking, because it helps selecting options that meet feasibility, acceptability, and suitability criterion.[12] In general, military members prefer options that have a good record of success, and feel comfortable to continue with similar solutions since those do not violate established military conventions/ norms. But, such monotonous and tedious process aids in focusing on the problem (through systematic iterative progression) and is well capable of generating creative ideas.[13] Such a process may appear counter-intuitive to many, yet it works well when dealing with complex problems involving diverse individuals (with different background, ideas, and capabilities) typical of any military outfit.

Some academicians connect thinking inside the box with 'the Houdini Solution' where Harry Houdini is bounded in chains and lowered into the box of water. Resisting the box and fighting against the chains can be fatal, therefore, Houdini accepts the reality of the constraints on his movement, and work within them to find a way out. [14] Likewise, many critics acknowledge the drive-sharing application 'Uber' as a visionary and outside the box thinking, but some academicians opine it to be an inside the box thinking with an in-depth consideration of various business contexts and analysis of consumer demands. It is argued that all creative solutions share certain common patterns; hence, working within the parameters can lead to improved creativity rather than free-associative brainstorming. Therefore, most people can become more creative and productive by defining and limiting the boundaries of a particular problem. Since thinking inside the box limits the boundaries of a problem, it provides precise options conducive for selecting the best one (as illustrated in **Figure-4**) in contrast to redundant alternatives generated by thinking

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[10] Peter DeMarco, '7 Ways to Think more Effectively Inside the Box', at https://www.bizjournals.com/bizjournals/how-to/growth-strategies/2016/04/7-ways-to-think-more-effectively-inside-the-box.html (Accessed on 10 July 2022).

[11] Adam Lowther, Brooke Mitchell, Gerard Puccio, and Nathan Schwagler, 'Embedding Creativity in Professional Military Education: Understanding Creativity and Its Implementation', Strategy Bridge, August 10, 2020.

[12] https://smallwarsjournal.com/jrnl/art/how-we-think-thinking-critically-and-creatively-and-how-military-professionals-can-do-it-be (Accessed on 11 June 2022).

[13] Erika Storfeldt, 'Think Inside the Box' at https://amplifyinnovation.com/amplab/think-inside-box/ (Accessed on 03 July 2022).

[14] Drew Boyd and Jacob Goldenberg, 'Think Inside the Box', The Wall Street Journal, 14 June 2013.

outside the box. Some scholars have also established that the conceptual link between thinking outside the box and creativity is a myth, because we actually think in another box when we think outside of it.[15]

Figure- 4: Using the Box for Creative Thinking
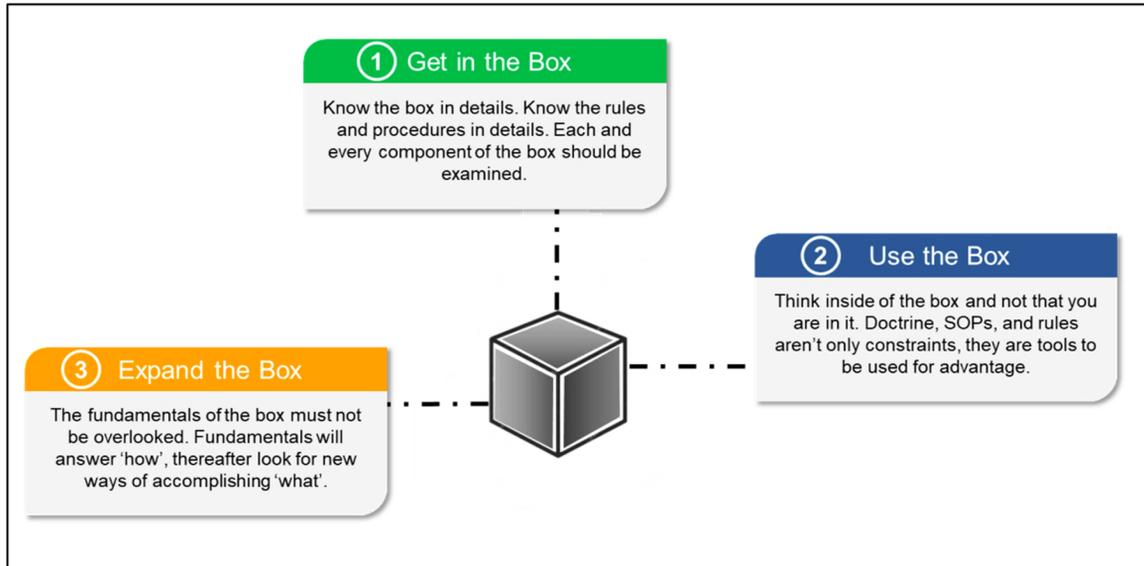
Source: Researcher's Own Construct[16]

The process of thinking inside the box is also known as 'constraint-based innovation' where clarity in defining the right constraints leads to novelty because most problems require clear thinking rather than thinking outside the box. While unrestricted creativity appears to be the ideal path to novelty, some of the most innovative outcomes are generally produced when innovation is constrained.[17] Nonetheless, the risk of such process is that wrong selection of constraints often produces unintended negative consequences. Therefore, some academicians opine that thinking inside the box generates many good ideas but it occasionally produces great ones.[18] Like any other psychological process, thinking inside the box has its weaknesses; first, it has a tendency to limit the potential ways of solving a problem instead of limiting the problem itself, second, it often constrains the ways to employ resources rather than constraining the resources, and third, it limits

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[15] Mark Mcguinness, 'Spark Your Creativity by Thinking Inside the Box' at https://lateralaction.com/articles/thinking-inside-the-box/ (Accessed on 03 January 2023).

[16] https://havokjournal.com/culture/military/want-think-outside-box-first-get-inside-box/ (Accessed on 09 April 2022).

[17] Fiona Murray and Elsbeth Johnson, 'Innovation Starts with Defining the Right Constraints' at https://hbr.org/2021/04/innovation-starts-with-defining-the-right-constraints (Accessed on 11 May 2023).

[18] Kevin Coyne, Patricia Gorman Clifford, and Renée Dye, 'Breakthrough Thinking from Inside the Box', Harvard Business Review, December 2007.

the human brain's capability and usually produces short-sighted ideas.[19] As a result, many experts opine that we need to think outside the box by approaching problems in innovative ways to generate creative solutions.

Thinking Outside the Box

The term 'outside the box' is thought to have originated in 1914 from the nine-dot puzzle mentioned by Sam Loyd in his book 'Cyclopaedia of 5000 Puzzles, Tricks, and Conundrums'. The puzzle required connecting all nine dots (in a 3 by 3 matrix) with four straight lines and without removing the pen from the paper. To answer the puzzle, one had to step outside the imaginary box (as seen in **Figure-5**), which gave birth to the expression 'outside the box'. The way an imaginary box is created while solving the puzzle (connecting the dots), the same way we become constrained by our assumptions when we try to solve a problem. Though assumptions are important in problem solving, the concern is that when an assumption changes, so does the solution. For example, when one of the assumptions for solving the nine-dot puzzle is altered (the dots are not put on a flat surface), the solution also changes (as illustrated in **Figure-5**). As a result, solutions to a particular problem varies depending on how an individual or institution makes assumptions.

Figure- 5: Imaginary Box and Effect of Assumptions in Problem Solving

Source: Researcher's Own Construct

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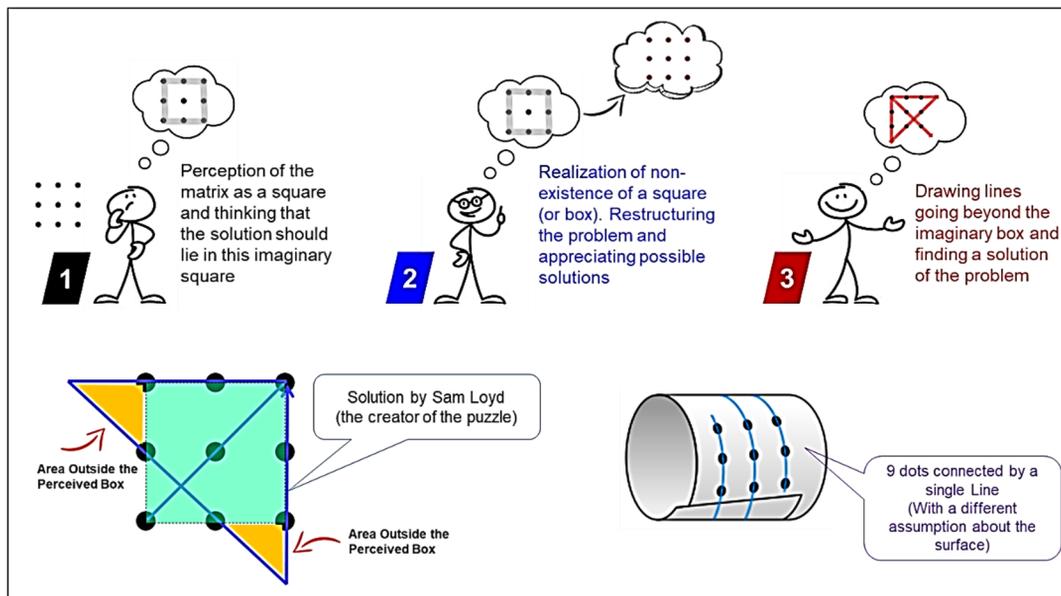
[19] https://medium.com/illumination/why-was-thinking-inside-the-box-so-wrong-1a66f84f5e9f (Accessed on 23 November 2022).

Solving a problem by thinking outside the box generally means ingenuity, creativity, wild idea, new perspective, etc and often it is correlated with meagre resources or something other than orthodox. Some academicians believe that thinking outside the box is a metaphor that supports creative thinking and can solve a wide range of problems faster than thinking inside the box.[20] A series of studies were conducted to examine the level of creativity across various professionals and all concluded that people who think outside the box solve problems better than others.[21] It is also opined that thinking outside the box is more innovative and allows adaptation to unforeseen situations.[22] In addition, Gestalt strongly suggests that thinking outside the box is the only creative approach to handle ill-defined problems,[23] and today's military deals with ill-defined or wicked problems on a regular basis.

Because of the complexity and unpredictability of modern warfare, contemporary military leaders need to be agile, dynamic, and creative. Moreover, only by thinking outside the box and questioning the status quo, one can produce best solutions to a problem and remain dynamic.[24] Because when we think inside the box, the ways of reaching a solution remains limited, whereas thinking outside the box provides numerous options. Though scientifically it is proven that one does not require very high level of IQ to think outside the box, people with average IQ is seldom seen being creative. This is primarily due to lack of mental aptitude for taking risks, and being overly cautious about accepting failure.[25] Such mind-set is prevalent not only among the general people, but also in the military. In 2008, 693 Army members were polled to evaluate the difference between 'creative potential' and 'practiced creativity' in the US Army, and the results suggested that the Army had enormous untapped creative potential.[26] Such finding also indicates that, although having lots of creative potentials, military members prefer to refrain from practising creativity owing to a variety of constraints.

According to neuroscience studies, thinking outside the box is generally hard and even harder for military members because restrictive military culture heavily influences an individual's aptitude of creativity.[27] In most cases, the military hierarchy rewards people who obey commands

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[20] Weisberg, Robert W., 'Out-of-the-Box-Thinking in Creativity', Oxford Academic, 01 September 2009.

[21] https://bizshifts-trends.com/think-metaphorically-outside-box-inside-box-beyond-box-creativity-requires-different-ways-thinking/ (Accessed on 23 November 2022).

[22] https://www.psychologytoday.com/us/blog/chaotic-cognition/202006/the-truth-about-the-box-in-outside-the-box-thinking (Accessed on 29 November 2022).

[23] Roy R. Behrens, 'Thinking Outside the Box', Gestalt Theory, Vol. 25, 2003.

[24] Timothy Sykes, 'Why You Need to Think Outside the Box', at https://www.entrepreneur.com/article/325989 (Accessed on 20 August 2022).

[25] Sternberg, Robert J. and Todd I. Lubart, 'Defying the Crowd: Cultivating Creativity in a Culture of Conformity', New York: The Free Press, 1995.

[26] Trudy C. DiLiello and Jeffery D. Houghton, 'Creative Potential and Practised Creativity: Identifying Untapped Creativity in Organizations', The Authors, Volume 17, Number 1, 2008

[27] Charles D. Allen, Stephen J. Gerras, 'Developing Creative and Critical Thinkers', Military Review, November-December 2009.

and carry out tasks in accordance with SOPs, regulations, and instructions. Though such practice is necessary for executing various military tasks alike, it also affects divergent thinking and discourages risk taking. As a result, to minimize stress, embarrassment and inconvenience, most military members prefer to remain inside the box. Apart from such attitude of remaining in a 'safe zone', several other tangible and intangible factors, for example, doctrines, customary practices, acceptance by superiors, group composition, peer pressure, etc also have substantial impact on the ability of thinking outside the box. It cannot be denied that the way physical training shapes our physique, the same way various military training shape our mental standards resulting in reduced practice of creativity.

Freedom is another significant barrier to thinking outside the box. Military systems and cultures are designed to penalize anyone who challenges the status quo, i.e. existing norms and beliefs. Colonel John Boyd of the US Air Force, for example, was dubbed a maverick for his infamous Observe-Orient-Decide-Act (OODA) loop, and bomber pilot Billy Mitchell was court-martialled for advocating airpower as the first line of defence and criticizing the Navy leadership for investing in battleships rather than aircraft carriers. Though both these officers were later found correct, they were subjected to extreme stress for such nonconformist ideas. Apropos, Milan Vego opines that military as an organization seldom fosters creativity because of hierarchical command structure, and its authoritarian system usually promotes conformity, rigidity, intolerance, and anti-intellectualism.[28] A recent study also revealed that the military unwillingly obstructs creativity because its structure discourages creative individuals from joining, and if they do, they are trained to hide their creative potentials to limit future divergence.[29] As such, convergent thinking (there is only one right way to polish the boots) is encouraged, and divergent thinking (not following the specified norms) is discouraged during basic military training.

Though there is little scientific evidence to conclude that the military is becoming less creative, it is undeniable that today's military leaders require more creativity than ever before. Therefore, even a systematic organization like the military needs to foster creativity in order to improve organizational proficiency. The current scarcity of resources also requires the military to be both imaginative and creative. It is true that even with unfavourable environment for creativity, the military generated creative ideas and innovations took place. Numerous historical examples show that when faced with a crisis, military members instinctively devised creative solutions. For example, during the Battle of Marathon in 490 BC Greeks could achieve victory against numerically superior Persians by thinking outside the box. In this battle, to compensate numerical inferiority the Greeks adopted 'Pincer Move'[30] technique for the first time in history of warfare.

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[28] Milan Vego, 'On Military Creativity', JFQ, Issue 70, 3rd Quarter, NDU Press, 2013.
[29] S. Da Costa et al, 'Creativity and Innovation in a Military Unit of South America: Decision Making Process, Socio-Emotional Climate, Shared Flow and Leadership', International Journal of Psychological and Behavioural Sciences, Vol:15, No:1, 2021.
[30] https://www.worldhistory.org/marathon/ (Accessed on 01 March 2023).

Creativity allows us to see beyond the present, and with the ever-changing military-political environment, modern military leaders need to be creative to become both strategic and tactical thinkers. As adversaries strive to rapidly adapt to changing conditions, ascertaining new approaches/ methods are becoming vital for success. It is difficult, but a key competitive advantage is that all humans biologically possess some elements of creativity. This unique quality helps us to adapt to varied problems and changing circumstances in effective ways. Some people also possess a 'flexible belief system'[31] who can overcome the challenges i.e. risk, fear, etc and resultantly remain capable of generating creative ideas.

One approach to develop the aptitude of creative thinking is to identify and then challenge all assumptions formed for solving problems. Another approach could be building new boxes (new intellectual frameworks or models) to structure thinking and thereafter develop novel ideas. It is widely believed that all persons with normal IQ can do moderately creative work, but the organizational environment determines both the level and frequency of creativity.[32] Therefore, the military should encourage ingenuity while discouraging risk aversion. Though some academicians argue that human beings lose their ability to think creatively as they grow older and it cannot be taught, many others opine that creative skills may be acquired. Motivation, resources, command style, recognition, flexibility, training, and other conceptual elements can increase creative thinking in the military at the organizational level, while willingness for innovation, affiliation with creative colleagues, brainstorming, mind mapping, acquiring knowledge, and so on can help in improving creative thinking abilities at individual level.

Hybrid Thinking: A Unified Approach to Creativity

It is important to comprehend that thinking outside the box is important but an over-attempt to do so may lead an individual to overlook the important details of the box. Therefore, the military may encourage 'hybrid thinking' where one becomes capable of thinking inside, outside, and across the box. For thinking inside the box, one should know the contents of the box i.e., problem, atmosphere, resources and make reasonable assumptions (including constraints) to reach a typical solution. Thereafter, the process of thinking outside the box can start where one should challenge all the previous assumptions and construct new boxes to canalise generation of new ideas. Finally, new ideas should be put into reality by prioritizing decisions, and upon evaluation, the new idea should replace the old one. But, regardless of the method used, it must be realized that only after mastering the inside, one can think outside the box. The most common mistake is that we tend to wander away from the problem as we begin to think outside the box. The figure below (**Figure-6**) depicts a possible approach of hybrid thinking that can enhance creative thinking skills among the military members.

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[31] A flexible belief is something one regards as true, but not absolute truth. He remains open to new stimuli and feedback that could add a new layer to the belief.

[32] Amabile, T. M., 'Motivating Creativity in Organizations: On Doing What You Love and Loving What You Do', California Management Review, Vol. 40, No.1, pp. 40-46, 1997.

Figure- 6: Suggested Steps of 'Hybrid Thinking'
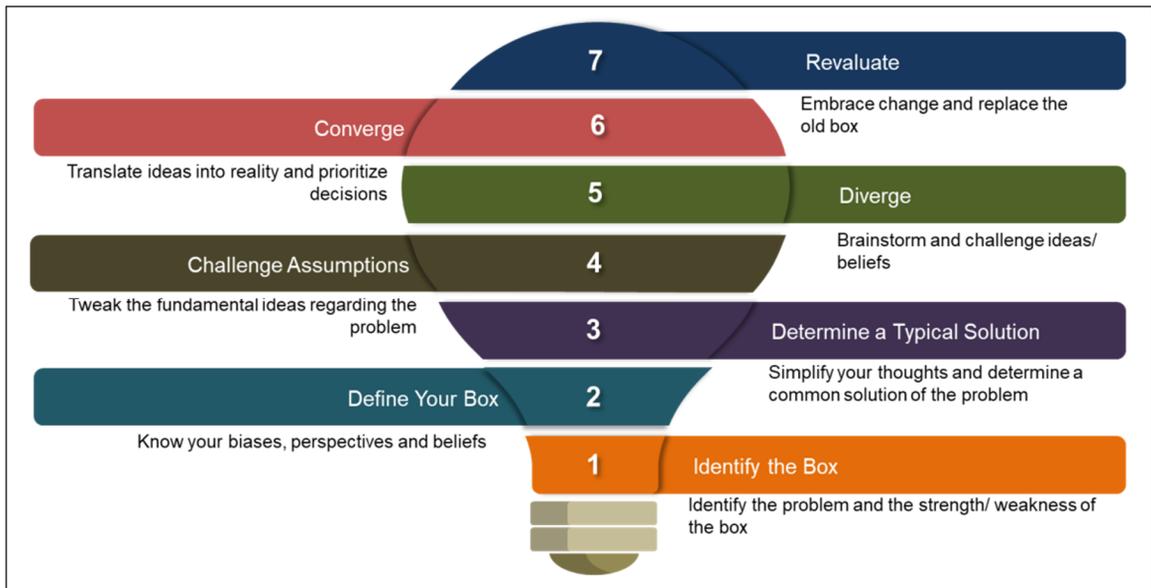
Source: Researcher's Own Construct

Conclusion

The box, in general, is all the conventional wisdom and the customary ways of solving a problem. It is also metaphorical within which an organization operates under certain parameters defining who they are, what they do, and how they do it. It does not represent the limits of the problem, rather through formation of assumptions it limits our thinking. Among convergent, divergent and lateral thinking, the latter is commonly known as 'thinking outside the box' or 'creative thinking'. Although military culture does not well-nurture creativity, contemporary warfare requires a military leader to be agile and creative in order to adapt to unpredictable situations. In addition to human brain being programmed to function in certain patterns; inherent rigidity, hierarchical control, and training system of the military limits our ability to think outside the box. Therefore, most military members feel uncomfortable when they are asked to do so.

Thinking outside the box is generally discouraged in the military, but many academicians opine that it is an effective way to be creative because such methodology promotes uncluttered thinking which is essential for developing novel ideas. As military members are accustomed with convergent (logical) thinking, the process of thinking inside the box allows them to focus on the problem. Resultantly, it can generate creative ideas through systematic iterative progression. More so, defining and limiting the boundaries of a problem leads to specific options conducive for military decision-making and problem solving. Thinking inside the box is also appropriate for the military as it works well while solving complex problems involving individuals from diverse

background. Nevertheless, major challenges of this technique are the tendency of limiting the potential ways and resources of solving a problem. As such, some academicians opine that thinking inside the box limits human brain's potential capability and usually generates short-sighted ideas. Therefore, instead of thinking inside the box one should think outside the box to be creative.

Thinking outside the box is commonly correlated to new ideas or something other than orthodox. Many academicians opine that thinking outside the box can solve a wide variety of problems, and capable of adapting to unexpected situations or ill-defined problems. Contemporary warfare also demands military leaders to develop ingenious ways of reaching a solution. But, thinking outside the box is quite challenging for many because the military lacks freedom, and most of its members prefer to evade risk and failure. In addition, various norms and trainings inculcate the habit of staying in a 'safe zone'. Though there is inadequate empirical data to conclude that military is becoming less creative, but ever-increasing scarcity of resources requires contemporary military members to be both innovative and creative. Historically numerous military leaders have become successful for being creative during unfavourable situations, and similarly to be successful in future warfare the military needs to promote the skills of creativity both at organisational and individual level because creativity is not just simply a mind-set but it is also a lifestyle. Moreover, it does not require coming up with an astoundingly unconventional thought forgetting various doctrines and regulations. Finally, whether we follow inside, outside or across the box methodology, it must be understood by all that creative thinking is a must requirement for the military leaders of the 21st Century.

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CONTEMPORARY CHALLENGES OF UN PEACEKEEPING OPERATIONS: PERSPECTIVE OF A SECTOR COMMANDER

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Abstract

Over the years, the United Nations Peacekeeping Operations have become increasingly complex and challenging. Despite enviable success in the field of global peace, peace operations are now shrouded with complex security threats including terrorism. Myriad activities of different actors range from simple harassing activities to attacking the UN camps, random use of IED, suicidal attack, etc. All these have complicated peace operations to the extent that the UN is failing to deliver its mandated task in many places and resulting in a lack of trust in blue helmets. Increasing resentment and violent protests against the UN peace operations in fact, do not go with the founding principles of the UN. Geopolitical complexity, with the current UN structure to undertake peace operations vis-a-vis belligerents enhanced capacity, capability and availability of simple and sophisticated equipment and arsenal are principal causes among many. Besides all these, the very structure of each mission coupled with command control, logistics operations, and administrative mechanisms especially at the operational and tactical level seems to impede coherent actions maintaining core UN values. The paper aims to highlight contemporary challenges of UN peacekeeping operations for better comprehension and effective contribution to global peace by all members of the UN.

Keywords: Global peace, security threats, suicidal attack, violent protests, mandated task, contemporary challenges, UN core values.

Introduction

Since inception, peacekeeping operations have transformed from rudimentary peace operations to complicated hybrid operations due to geopolitical changes coupled with increasingly innovative tactics by the belligerents. Terrorism has added an additional dimension with greater complexity. Today, blue helmets are exposed to extremely volatile and complex threats. Even the UN bases are being attacked. Peacekeepers no longer enjoy their natural protection privilege. Their freedom of action and movement was often obstructed by different actors under obtuse clauses. Although peacekeepers are not mandated to fight terrorism, this becomes inevitable as the issue of protecting civilians, which is an essential mandated task of all missions. Geopolitical complexity of the multipolar world has many anecdotes. Featuring a variety of actors and interests, it is really difficult to bring all under the platform of the UN with a unilateral objective of peace and harmony. From Secretary General down to commander at the tactical level are all shrouded with these challenges. Moreover, existing UN structure, command control and administrative mechanism especially at operational and tactical level seems impeding coherent actions adhering to core UN values. The paper aims to highlight present challenges of UN peacekeeping operations for better

comprehension and effective contribution to global peace by all members of the UN. The article has been articulated predominantly with the author's experience as a Sector Commander in Mopti, Mali from 02 October 2021 to 01 October 2022. Various journals, newspapers, and MINUSMA publications in various print and electronic media have also shaped various ideas and thoughts.

Generations of Peacekeeping Operations (PKO) Vis-a-Vis Challenges

Each generation of PKO has evolved to address newer challenges and varied security scenarios. Usually, UN PKOs are classified through five generations. Relations between generations of PKO and security challenges are briefly enumerated below:

a.   **1st Generation Peace Operations (Classical Peacekeeping).**   It is known as traditional PKO. Normally blue helmets are placed in buffer zone between conflicting parties usually in interstate conflict. Their role is to observe, monitor and prevent further escalation of conflict. United Nations Peacekeeping Forces in Cyprus (UNFICYP) deployed since 1964 maybe an example of such mission.[1] Challenges and threats are usually low and blue helmets enjoy organizational respect. Usually, these were the mission immediately after World War II. They operate under chapter VI of UN Charter.

b.   **2nd Generation Peace Operations (Civilian Task)**.   It is the extension of 1st generation peace operations. Civilians were integrated alongside military to perform election, disarmament, demobilization and rehabilitation (DDR), justice and correction, humanitarian aid, human rights, child protection, etc. During 2nd generation, peacekeepers were mostly deployed in an internal conflict situation. United Nations Transition Assistance Group (UNTAG) mission in Namibia may be one of this kind.[2] Challenges and threats are still moderate, and peacekeepers operate mostly under Chapter VI of UN Charter. After the World War II, many of newly independent countries from colonialism were entangled in violent internal conflicts. First generation mission was tailored with added civilian capacity to address these types of situations.

c.   **3rd Generation Peace Operations (Peace Enforcement)**.   These are peace enforcement missions with added reliance on elevated use of force, mostly conducted under Chapter VII of UN Charter. Peacekeepers have authority to forcibly separate belligerents coupled with the placement of embargo or other restrictive measures. UN Assistance Mission in Somalia (UNSOM) is an example of 3rd generation peace operations.[3]

d.   **4th Generation Peace Operations (Peace Building)**.   These are robust peace enforcement or peace building missions with elevated permission to use of force. If necessary, mission may cease local autonomy. It is characterised by volatile situation in an intrastate situation. UN Interim Administration Mission in Kosovo (UNMIK) may be an example of 4th generation peace operations.[4]

e. **5th Generation Operations (Hybrid Mission)**. It has distinct forms of mandate with high use of force under chapter VII. It involves simultaneous deployment of UN troops alongside Regional Organizations or international forces. Mali mission may be termed as a hybrid mission with the involvement of various partners like Barkhan, G5 Shahel, European Union Training Mission (EUTM), etc. though first two have been withdrawn in recent past. Mali mission is characterized by an asymmetric security scenario with 360-degree threats. It is difficult to draw clear boundary between threats and their actions.

Types of UN Mission and their Relative Position in Threat Potential Graph

All of us are familiar with the types of UN missions i.e. Peace Making, Peace Building, Peacekeeping and Peace Enforcement. The following diagram will portray a clear idea about their relationship with elevated threat scenarios or violence potentials:

Figure-1: Threat Potential Graph
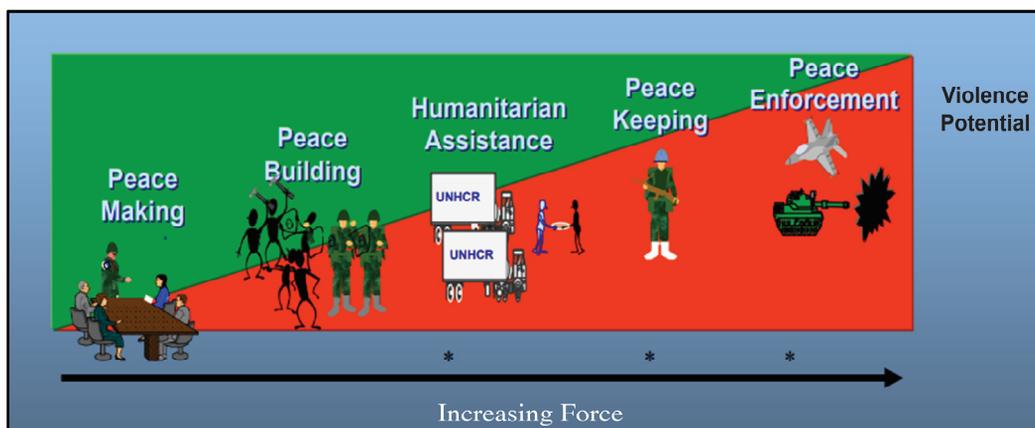
Source: Adopted from PSTC, EO 401.02[5]

Definition of Security in UN Parlance

Military professionals are very clear about conventional and unconventional threats. Conventional threats are generally associated with threats to nation, the aggression of war, insurgency, civil war, etc. On the contrary unconventional threats typically involve threats to survival, terrorism, transnational crimes, environmental, migration, energy etc. But UN did not define threats under conventional or unconventional terms. Rather Security Council, following article 39 of the UN charter determined security situation under threat to peace, breach of peace and act of aggression.[6] However, these terms are not defined in UN charter. Consequently, there is a lack of clarity and the military tends to shape its own idea of security while serving under the blue helmet.

Spectrum of Peace and Security

Visualizing spectrum of peace and security considering conflict line, ceasefire line and political directions is often confusing. Boundaries between peacekeeping, peace-making or peace building, and peace enforcement often overlaps each other, thus becomes increasingly blurred under certain circumstances. Due to overlapping, it is very difficult both for military commander and civilian counter parts to differentiate and decide their boundary of actions under varied situations. One needs to have a clear idea about various types of UN Missions, mandates and operational procedures to avoid over stepping and remain focused on key objectives of own UN Mission.

Figure 2: Relative Position of Various Types of UN Mission
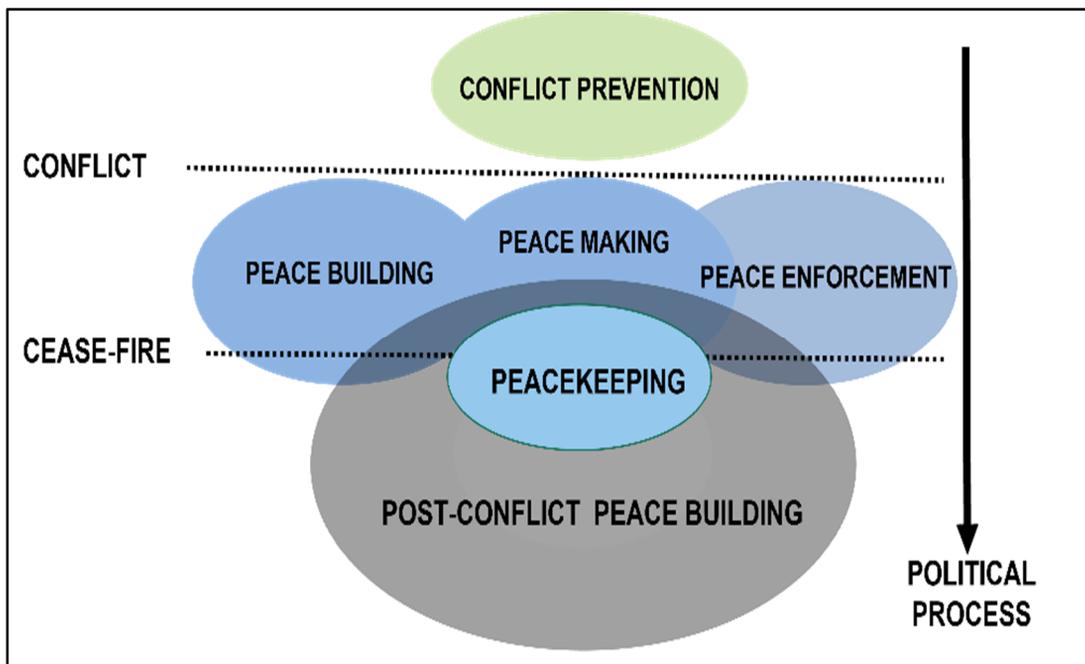
Source: UN PKO Principles and Guidelines 2008, DPKO, UN Secretariat[7]

Evolving Security Environment of 21st Century

New Pattern of Conflicts. Failed state, mass-scale refugee movement, economic breakdown, criminalization of the state, loss of the monopoly of the legitimate use of force, violation of human rights, and rise of paramilitary groups and private armies are salient characteristics of this new pattern of conflict. In this type of conflict, social factors, such as ethnicity are more important than political factors. Moreover, the blurred distinction between public and private soldiers is a common feature of the new patterns of conflict.

Shift from Interstate-to-Intrastate Conflict. When nation-states are major actors of interstate conflict, non-state actors are major actors of intrastate conflict. Figure-3 below shows that interstate conflict has been reduced over time and a surge of internal conflict in last few decades.

Figure 3: Shift from Interstate to Intrastate conflict
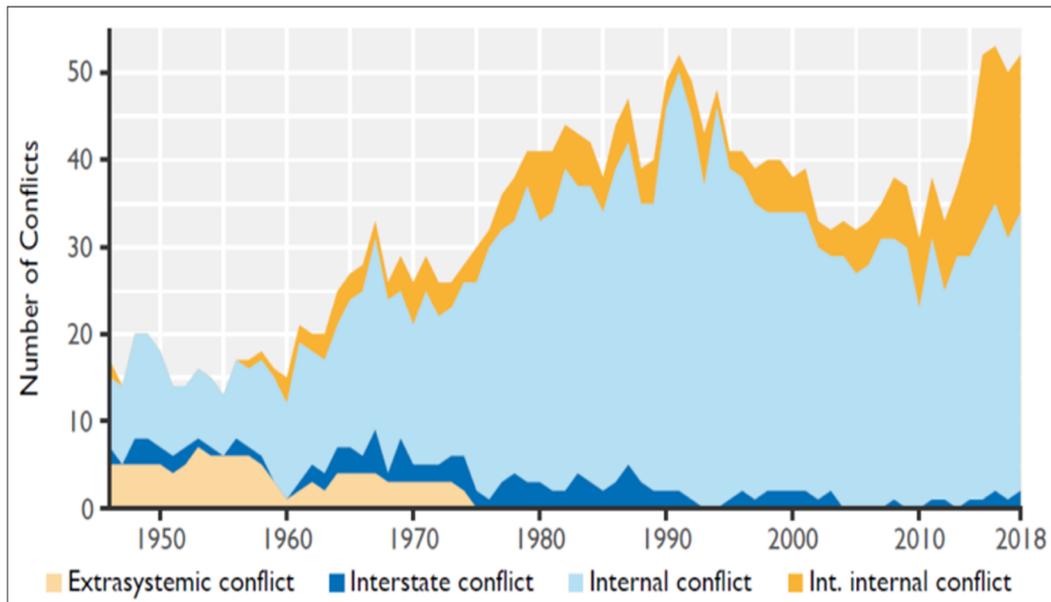
Source: Trends in Armed Conflict, 1946-2018[8]

Fragile and Failed State. World community witnessed birth of many new nations immediately after Cold War. It is debated that some of those countries are not capable to control its own territory because of internal and external factors. They are often categorized as fragile or failed state. In today's interconnected world, problem in one country may very well swipe away others through ripple effects. For example, incident in Tunisia triggered Arab Spring.

Internationalization of Local Conflict. In today's interconnected world, turmoil in one country may involve actors from different parts of the globe. Socio economic and political dynamics are very complex and different actors have different objectives. Special operation of Russia in Ukraine soon became an international issue. Similarly, internal conflict in Mali has become a regional concern, and multinational forces have been deployed under blue helmet to restore peace. Thus, internal or local conflict often emerge as an international conflict. Major global powers, regional bodies, sectarian affinities, etc. are key ingredients to internationalize local conflicts.

Strategic, Operational and Tactical Levels of Authority

In the field, while SRSG navigates within strategic and operational domains, component leaders mostly operate at the operational level. Component leaders help SRSG to shape his strategic decision. On the other hand, military units are operating at the tactical level. It is essential to understand the level of authority and one should not overstep his/her limit to avoid unnecessary embarrassment, misunderstanding, misjudgement, and mis-coordination. If SRSG directly calls Sector Commander and asks him to send patrol at a specific location then military chain of command is at stake and military commanders at all levels are uncomfortable. All three pillars of the mission need to judiciously utilize their levels of authority especially at operational level.

Figure 4: Levels of Authority
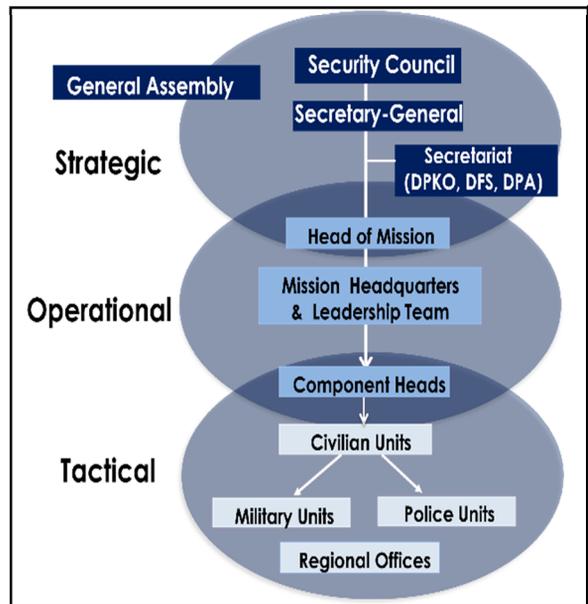
Source: Developing Cyber Peacekeeping: Observation monitoring and Reporting, June 2018

Present Challenges - Strategic Level

Lack of Unified Political Direction and Commitment of UNSC.   Major powers often show different outlooks and varied interests while addressing peace for trouble spots in different corners of the globe. The clash between east and west or emerging powers plays an increasing role in peacekeeping. It is often argued that members of the Security Council prioritize national interests over the interest of reconciliation or peace in fragile states.

Difficulty in Early Intervention.   Majority of current conflicts are intrastate in nature. Usually, it starts with violation of social and political rights, corruption, ethnicity, dominance, religion issues and demand for basic human rights. Normally UN does not intervene unless it has created much turbulence in the region. Therefore, by the time a local problem becomes international, it is often too late to intervene.

Challenging Mission Mandate vs Key Principles of Peacekeeping.   Increasingly robust mandate with the evolution of peace operation often contradicts key principle of peacekeeping i.e. consent of the host state, limited use of force and impartiality. We got to remember that peacekeeping operation is not like fighting war, where the aim is to defeat enemy.

Regional Dynamics. Intrastate conflicts are often related with regional dynamics. Without integration of regional bodies, accomplishment of mission mandate is very difficult. Terrorism is a common problem in African Sahel Region. Without coherent effort by all Sahel countries, it will be impossible to stop terrorism in this part of Africa.

Force Generation. Under complex and elevated threat scenarios, Troops Contributing Countries (TCCs) are not willing to contribute their force and resources in all UN missions. It results inadequate force which is detrimental to mission accomplishment. Despite shortage of aviation unit and Combat Convoy Company, office of military affairs could not yet fulfil demand of MINUSMA. Considering heightened risk and offered clause in the memorandum of understanding, many countries are not willing to send aviation or other costly elements.

Budgetary Constraints. Though PKOs are proven as a cost-effective tool to maintain global peace and security in more than 70 years of its history, it has always suffered from lack of a political, financial and military investment. Even after budget approval, delayed payment by member states creates difficulty for Department of Peacekeeping Operation (DPKO).

Gender Mainstreaming. The number of military women serving in field missions is very low. According to the UN Uniformed Gender Parity Strategy 2018-28, the Office of Military Affairs' goal is to reach 25% female participants by 2028. By 2022 participation of women should be 9% for troops' contingents. At present, actual strength is far below than expected. It is dangling between 2% to 4% only.

Present Challenges – Operational Level

Protection of Civilian (POC). Under the aegis of the DPKO, most of the ongoing UN missions are explicitly mandated to protect civilians. The civilian protection mandate raises a series of questions for the peacekeepers in terms of training and equipment. Feasibility of civilian protection in large countries like Mali, DRC, CAR is questionable comparing the force ratio. More so, protection of civilian issue inadvertently brings military with a direct confrontation with terrorists. Though the primary responsibility of POC lies with the host government, the UN is often blamed for occurrence of any such event.[9]

Joint/Coordinated Operation with International Partners. Blue helmets operate under specific UN mandate, maintaining impartiality, which is a core principle of PKO. Working with international force or regional forces may compromise impartiality of UN Forces. More so, mission and tasks of those forces are widely different than that of UN, focusing mostly on counter terrorism. Chadian peacekeepers in Northern Mali badly suffered during initial period of mission due to their wide participation in joint operation with Barkhan Force.

National Caveats. Despite a Memorandum of Understanding (MOU) and Statement of Unit Requirement (SUR), few countries have placed restrictions on use of their contingents i.e. no deployment beyond UN camp at night, organization of a patrol should not be less than a company,

availability of a minimum Level II hospital within the Area of Operation (AOO) for conducting any given mission etc. These caveats pose serious impediments in performing mission mandate and at the same time demotivate other contingents who do not have such restrictions. Besides national caveats there are undeclared caveats too.

Expectation Management.   Locals' expectation is very high. If mission cannot make delivery within a reasonable time frame, credibility is often questioned, and confidence of locals starts waning. At the same time, spoilers and manipulators take advantage. Locals are even not ready to accept mission mandate that does not allow peacekeepers to engage terrorists. Security is the main concern of locals and they often demand MINUSMA to amend their mandate. In Congo, mission is facing enormous challenges from civilian since they could not materialise their mandate even after 23 years.

Pro-active Posture.   At times troops and police contributing countries are reluctant to adopt a pro-active posture that could lead them to confront with spoilers. Troops Contributing Country's (TCCs) passivity may be related to the nature of the threat related to terrorist groups.

Non-Cooperation from Host Country.   It is very difficult to perform mandated tasks if there are restrictions imposed by host country on UN operations, ground and air movement, surveillance or reconnaissance mission, etc. in certain area. MINUSMA Mission in Mali is facing this challenge which seriously hampers operational responsibilities in some areas.

Conduct and Discipline.   Despite the UN policy of zero tolerance for Sexual Exploitation and Abuse (SEA) cases, still it remains as a potential challenge. Besides, Human Rights Abuse issues also degrade and defame the UN at places. In the second quarter of 2019, the United Nations received 38 allegations of sexual exploitation and abuse (SEA) involving UN personnel, including civilian and uniformed personnel from peacekeeping operations.[10]

Lack of Intelligence.   Collection of information, sifting, analysing, and producing effective intelligence remain as grey areas. As such, the UN led operations become reactive. Patrols visit the village once perpetrators have completed their actions and left the place of occurrence.

Command Control (C2) Issue.   There is a UN policy on 'Authority, Command and Control in UNPKO' published on 25 October 2019.[11] The Policy is clear on strategic level C2 issue but there remains ambiguity at operational and tactical level. It is to be noted that ground actions are taken at tactical level, hence C2 issue should be well defined at this stage. More so, current practices of Regional Joint Operational Cell (RJOC) or Area Security Coordination Meeting (ASMT) or Crisis Management Meeting suffers from the dilemma of who is under whom. Head of Office apparently remains in the helm of affairs despite his or her position not at the apex. Sector Commander, who is the sole custodian of security does not lead security coordination meeting. Since RJOC is under HoO, he/she tries to manipulate his/her own choice of actions. Similar notion is observed in crisis management meeting. On the contrary Mission Support Cell (MSC) who is

supposed to coordinate logistical issues with Sector Headquarters (SHQ) often communicates directly with military units. Knowingly or unknowingly MSC tries to bring military logistics Chain of Command under their direct control. Logistics Section (G4 Branch) and Engineering Section (G8 Branch) are supposed to work in coordination with MSC but they are under-command to Sector Commander (SCMD). Impetus of the force is lost due to such uncomfortable attitude or perception.

Intervention by Civil Pillars.   In an integrated mission, it is a shared responsibility to complement each other in fulfilling the mission mandate. Every situation needs intervention from political, military, police and host government. Only, pushing military does not pay dividends. If there is a large demonstration planned against the UN Force, leaders from civil, military and police should simultaneously take action to curve the demonstration and minimise its effect.

Registered or Unregistered Mercenary/Private Military and Security Company (PMSC).   Mercenary/Private Military Armies are often criticized for their human rights violations, shadow activities, non-transparent contract and disregard to international law. Though they are working for some actors, they are not legitimate actors. Their accountability, and response by peacekeepers towards them in mission areas remains as a grey area.

Present Challenges - Tactical Level

Shortage of Major Operational Equipment.   TCC goes through a systematic UN Peacekeeping Readiness System (PCRS) process before deploying their contingents in the mission areas. However, often it is found that deployed UN contingents are not properly equipped as per their MOU. For example, in Sector Centre of MINUSMA, none of the Infantry contingents are having any vehicle mounted jammers as per MOU which is one of the most critical equipment against any Improvised Explosive Device (IED) threat.

Non-adherence to MOU and SUR.   Due to the increasingly robust mandate and high level of threats, contingents often express their unwillingness to perform operational tasks without declaring any national caveat. At times, it becomes very difficult for Force Headquarters (FHQ) and SHQ to deal with such situations. Besides, few contingents do not conduct pre- deployment training in the home country following the UN guidelines. It causes unnecessary delay for the contingent to become Fully Operationally Capable (FOC). Thus it affects the overall operational activities of UN Peacekeeping Operation (PKO).

Rotation of MSOs in HQs.   Rotation of MSO's varies from 6 months to 12 months. It takes minimum 2 to 3 months to acclimatize prior delivering effectively for the mission. Again, with their rotation, institutional memory is often lost. The relievers are also not always joining prior departure of his/her predecessors. This is more applicable for Sector Commander. By the time he understands the complexity of mission and establishes his link and acceptances with different actors, it is time to return home.

Scarcity of Logistics/Delayed Supply. The paucity of funds and lengthy financial approval process of the UN creates scarcity of logistics or even causes delay in supply on ground. For example, the lack of camp protective materials increases the vulnerability of the UN camps and compels to employ more troops to ensure the security of the UN camp rather than employed for conducting operations.

Force Ratio. In most of the UN missions, the effective force ratio is not maintained in comparison to the AOO and prevailing threats. It becomes very challenging to ensure the UN mandates with such a lower force ratio status. For example, AOR of Sector Centre in Mali is almost equal to Bangladesh, but there are only two infantry contingents to cover such a vast area.

Requirement of Professional Units, MSOs and MILOB. Professionalism is the key ingredient of success in any military operation. Complex Mali Mission with 360^0 threat demands highly professional outfits. Though contingents are deployed through United Nations Peacekeeping Capability Readiness System (UNPCRS), few of their operational capability, capacity and conduct remain questionable. Success at tactical level is very important to shape operational and strategic outputs. In 2022 MINUSMA suffered 14 deaths which is the highest among all missions[12]. Still few contingents like BANBAT or Sri Lankan Combat Convoy Company did not suffer any casualty. No doubt, this is because of their sheer professionalism. On the contrary, the professionalism of the MSOs and MILOB are also very important to ensure the effective functioning of FHQ and SHQ under complex situations with integrated missions. It demands proper understanding of job and pro-active gesture. Competency of officers should get priority over representation from different countries. If Chief of Staff of a sector does not know his job, the consequence of that sector may be jeopardized.

Linguistic Barriers. Although English and French are the official languages in UN missions, military contingents and MILOBs often face difficulties when they operate in rural areas and need to conduct key or local leader's engagement. For example, there are 68 languages spoken in Mali, including sixty-three indigenous and five non-indigenous languages. Besides, Bambara makes up 46% of the primary language spoken in Mali though French is the official language. Even French speaking Senegal and Togo Contingents in central sector faced difficulties during operations.

Civil-Military Coordination (CIMIC). CIMIC activities are essential to win the hearts and minds of locals in remote or vulnerable areas. Many contingents do not have any funds of their own to conduct such activities. According to the UN system, Quick Impact Projects (QIPs) or Trust Fund Projects are aimed at elevating civil military relations. But these are coordinated by HoO and he takes a lion share of projects. In 2021 Sector Centre of Mali witnessed 19 projects implemented by civilian pillars followed by only 02 projects for military and 02 projects for police. Whereas military should have lead since they are widely dispersed and traverse remote areas. In Central Sector during several occasions, military patrols were refused entry in the villages since they could not fulfil minor demands of villagers i.e. water, treatment issues etc.

Communication Gap.   Due to multiple local languages and inadequate information operation from FHQ to Sector HQ, locals remain in dark about UN activities, especially beyond city areas. Besides urban communication centres, rural areas to be integrated within overall information operation to curb terrorist information campaign and build trust on UN forces. It must be remembered that, information operations enable, enhance and protect senior leadership's intent while influencing and denouncing opponent's intents. UN mission needs to invest heavily on electronic, print and social media.

Position of Sector Commander.   All UN activities of the field missions are founded on three pillars i.e. civilian, military and police. At the sector level, HoO leads civilian pillars. SCMD leads military pillar and Police Commissioner leads the pillar of police. But HoO works with a status of Director (D1), Police Commissioner being equivalent to full Colonel enjoys the privileges of professional status (P4) and surprisingly SCMD has been nominated as simply Military Staff Officer (MSO). During participation in the combined programme, the demonstration of positional authority through various gestures of some of them causes embarrassment. More so, there is a vast difference in parks and privileges among these three statuses, despite SCMD need to undertake enormous stress and challenges.

Ways Forward for Better Peacekeeping Operations

Peacekeeping operations had challenges in the past and it will continue to have newer challenges in future too. Despite challenges, UN peacekeeping missions have displayed an array of success in many troubled parts of the world and proved its resilience. Hopefully, UN will continue to do so in the future days to come. Adaptation with changing scenario is of paramount importance. Progressive capability building, true commitment of key world leaders, adoption of an integrated approach, cooperation with regional organizations, organizational reform, overcoming linguistic problem, modifications of UN practices, political support and unity of purpose within UNSC are few of the pragmatic ways forward to make peacekeeping effective and relevant in the coming days. Without prejudice to diplomatic or political concern, deployment of professional military contingents, military staff officer, observer and senior leadership will further embolden Security Council effort to establish peace in troubled areas of the globe. Civilian leadership both at HQ and sector level may be changed every after three/ four years to avoid stereotyped actions and bring new ideas with fresh blood. Under continuous stressful situation some of them cannot perform effectively.

Conclusion

Despite increasing challenges, UN PKO possibly remains as the last option to bring peace and stability in the troubled areas of this planet. Since 1948, the UN has completed many successful missions despite having lot of challenges. With the advent of technology, innovative ideas, and complex situation, the security situation is ever more challenging than before. Peacekeepers in the

coming days need to accept the challenge and it is almost certain that peacekeepers can do it. Despite complex security situations and extensive use of IEDs in Mali by terrorists, some contingents navigate these challenges with sheer professionalism and dedication. Though 14 peacekeepers were killed in action in Mali in 2022, Bangladesh Infantry Battalion and Sri Lankan Combat Convoy Company did not suffer a single casualty. With appropriate equipment, training and proper mind-set, it is very well possible to override threats from any actors. Coordination and cooperation among three pillars especially at operational and tactical level is invaluable. At strategic level, prominent world leaders including UN hierarchy should uphold peace above all beyond petty interests and contribute unconditionally. At the same time the core values of UN that is integrity, professionalism and respect for diversity to be truly upheld despite cast, creed, colour and politics. UN has proved its resilience in the past and surely it will do the same in future despite new challenges of 21st century.

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ENSURING AUSTERITY: AN EXEMPLARY ENDEAVOUR OF BANGLADESH ARMY FOR ENHANCING ORGANIZATIONAL EFFICIENCY

Lieutenant Colonel Md Abdullah Hossain Mallick, psc, Infantry

"No country has an abundance of resources in the world, and ours is no exception. As such, we should observe austerity where possible."

> *- General S M Shafiuddin Ahmed, SBP (BAR), OSP, ndu, psc, PhD*

Abstract

The post-pandemic situation, war between countries and effects emanating therefrom have poised the concept of austerity at various levels of the society. Bangladesh Army being a significant part of the looked upon society has also been promoting austerity within. With prudent guidance from senior leadership, attempts to materialize austerity have been noticed. Avoiding redundant expenditures, judicious use of resources and minimizing low priority needs are the focused agendas. However, to effectively materialize the concept of austerity, prime contributing factor would be a paradigm shift in the mindset of the users of various resources. Despite meticulous efforts from leadership, the concept and its importance are yet to be felt by heart at all levels. As a result, redundant expenditure of resources has been noticed on various instances. Unnecessary competitive attitude in organizing various programmes, impractical financial expenditure in maintaining various sports teams, avoidable vehicular movement, etcetera are areas to ponder. However, before these can be addressed, the essence and core concept of austerity needs to be understood by all. Men and women in uniform must identify the resources as well as how they can minimize the usage while performing their responsibilities without losing desired level of effectiveness. Every member of Bangladesh Army needs to be forthcoming in curtailing avoidable resource expenditure while performing operational, training and administrative duties.

Keywords: Austerity, extravagance, manpower, time, resources, organizational efficiency.

Introduction

The impact of the pandemic, followed by unrest in some parts of the world, has deeply cautioned the economy of Bangladesh (BD). Considering the country's current economic and societal constraints, austerity is the order of the day. As no exception, BD Army, being the pride of the nation, has already drawn the attention of its members towards austerity at all levels. Although the senior leadership of BD Army has very timely identified and addressed the concern, its seriousness is yet to be entirely conceived by all. Before the pandemic, with the economic growth and stability of the country, BD Army has also aligned itself with an acceptable level of expenditure for maintaining day to day life of its members. In the recent past, the necessity of maintaining

austerity might have been felt differently due to the country's stable economy and sustained growth. However, with the changing economic situation, in a few cases, the earlier level of acceptance exceeds the necessity threshold and embarks into extravagance. When extravagance is not even desired with adequate resources, austerity implies more psychological adaptation, using the less while having the sufficient (Shurkin, 2013). Although various purchase plans to modernize BD Army remain under the direct supervision of competent authority, expenses of multiple events organized at different levels remain uncontrolled. Going against the idea of austerity, various resources like manpower and time are utilized competitively for the visual glorification of events and programmes, which needs immediate attention and appropriate measures.

Before delving into how to ensure austerity in BD Army, members of this organization need to know its sacred benefits first. In an era characterized by budget constraints, strategically implementing austerity measures while utilizing national resources like fuel, gas, electricity and water is prudent for the army now. Embracing austerity within the organization yields a conducive environment for all members that extends far beyond mere financial savings. By adhering to disciplined financial practices, BD Army may ensure judicious utilization of manpower to enhance its operational capabilities and reduce work fatigue and mental stressors. This introductory study explores the multifaceted advantages of maintaining austerity within the military domain, shedding light on how prudent resource management can yield a more efficient and sustainable army.

This paper will primarily focus on identifying the core concept of austerity and its significance in the military context. In doing so, the researcher has used primary and secondary data and collected the latter from published books, journals, reports and articles. To get more definite records, unstructured interviews were conducted among the officers of various ranks of BD Army. The article finally outlines the benefits of maintaining austerity and plausible measures that can be taken to ensure austerity in BD Army. Finally, the paper will put forward a few recommendations.

Understanding Austerity

"Failure of maintaining AUSTERITY results from one's inadequacies in understanding resource handling, ethical standing and ownership."[1]

- *Brigadier General Jamal Hossain, ndc, afwc, psc*

General Meaning. The first record of the word 'austerity' in English comes from around the late 1300s. It ultimately derives from the Greek *austere*, meaning "harsh, rough, and bitter." Austerity means sternness, severity, extreme self-discipline or minimalistic living (Blyth, 2013). The word is often used in an ante economy in which the government has scaled back services and access to certain goods during times of economic crisis (Pettinger, 2018).

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[1] Personal Communication

According to Islam.   It is advised for the Muslims to adopt the life of moderation, simplicity and austerity which is the essence of Sunnah. But such a lifestyle is not possible for those to practice who lead an extravagant life. Accordingly, the Quran warns, with language of great severity, against such:

كُلُوا۟ مِن طَيِّبَـٰتِ مَا رَزَقْنَـٰكُمْ وَلَا تَطْغَوْا۟ فِيهِ فَيَحِلَّ عَلَيْكُمْ غَضَبِى ۖ وَمَن يَحْلِلْ عَلَيْهِ غَضَبِى فَقَدْ هَوَىٰ

"Eat of the good (and wholesome) things which we have provided for your sustenance. But commit no excess therein, lest my wrath should justly descend on you, and those on whom my wrath descends surely perish". (Surah Ta Ha, Verse- 81)

وَ ٱلَّذِينَ إِذَآ أَنفَقُوا۟ لَمْ يُسْرِفُوا۟ وَلَمْ يَقْتُرُوا۟ وَكَانَ بَيْنَ ذَٰلِكَ قَوَامًا

"And those, who, when they spend, are neither extravagant nor niggardly, but hold a medium (way) between those (extremes)."(Surah Furqan, Verse-67)

وَلَا تُسْرِفُوٓا۟ ۚ إِنَّهُۥ لَا يُحِبُّ ٱلْمُسْرِفِين

"Waste not by extravagance. Verily, He likes not those who waste"

(Surah Al-An'am, Verse-141)

Simple living was one of the principles of Prophet Muhammad's (pbuh) life. He led a simple life with a contented soul. Asma` the daughter of Abu Bakr (may Allah bless upon them) reported that the Prophet Muhammad (pbuh) said: *"Spend according to your means; and do not hoard, for Allah will withhold from you."* (Al-Muslim, Book of Zakah, Vol 3, Hadith No. 2378).

According to other Religions.   In all other religions, commandments are mentioned not to be extravagant. Humankind is ordered to emphasize maintaining austerity in every sphere of life. In Hinduism, there are sayings by different scholars that 'human life is meant for austerity and austerity puts aside our selfish ambitions for a higher purpose' (Practice of Austerity, 2012). In Buddhism, it is noticed that the monks practice the most austere lifestyle through starvation, shaving their heads and wearing simple robes in quest for enlightenment (Niwano, 1993). The Bible also states that 'austerity means valuing what the Lord provides and not being wasteful and being austerity-minded helps you to be prepared for difficult times' (What does Bible say about, 2016).

In the Context of BD Army.   The military is not only a profession but also way of life that requires dedication, selfless service, a sense of duty and responsibility to accomplish any assigned task. To carry out day-to-day activities or any operation, an Army commander often faces a scarcity of resources in terms of manpower, money, time, etcetera. To ensure the best use of resources, people must understand the differences between efficiency, effectiveness and austerity. Let us make it very clear by giving a simple example. Providing timely meals thrice in a mess guarantees effectiveness. Reducing the mess bill of one mess by providing the same menu as

another ensures efficiency. Reducing bills by deducting an extra dish/item from the existing menu is austerity. A survey was conducted among the members of BD Army to determine the basic understanding of austerity (Figure 1); most of them have regarded austerity as the judicial use of scarce resources by a military commander. The resources of BD Army are manpower, money, time, and other critical resources, including fuel, gas, electricity and water. Although curtailing ceremonial events was one of the options to mark, most of the respondents did not opt for this.

Figure 1: Meaning of Austerity in the Context of BD Army
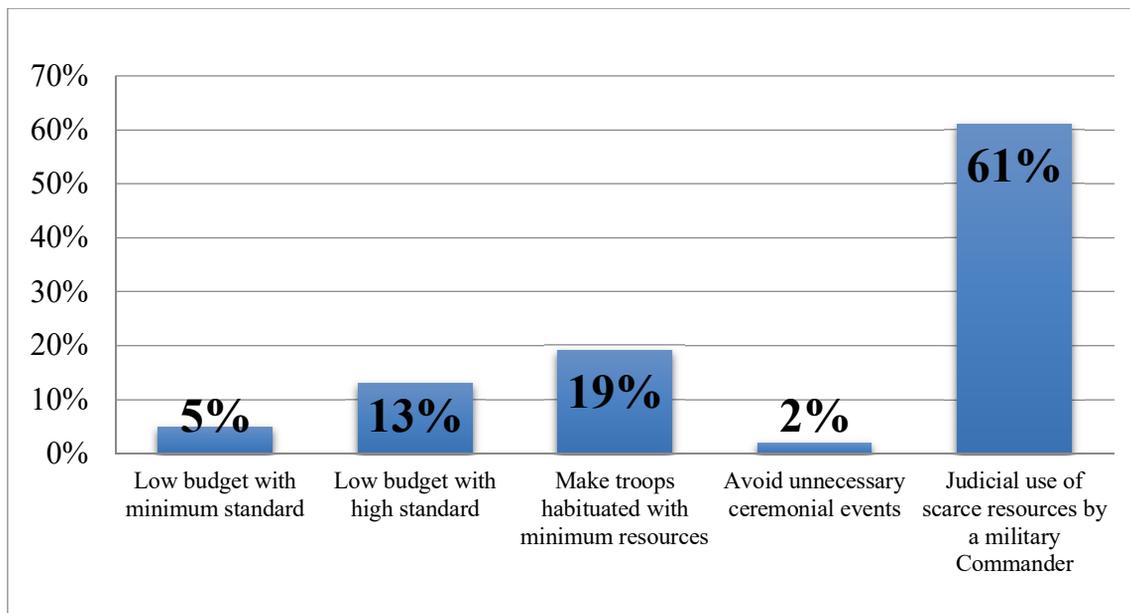
Source: Author's Construct based on a Survey

From an aligned perspective, we can define austerity in a military context as carrying out various operational, administrative, training and other activities with minimal resources while reducing expenditures. Such initiatives could include reducing unnecessary employment of personnel for events, restricting the usage of critical resources, limiting the use of money and goods and reducing under-command's work fatigue.

Significance of Austerity in BD Army

Maintaining austerity is now one of the core principles of the hierarchy of BD Army. It needs to be adopted by all levels of command and all must understand the concept of austerity. As part of military culture and tradition, BD Army organizes various games and sports, training competitions and other social and cultural programmes. While managing these events, many people, resources and time are utilized. Apart from the events, fuel, water, gas and electricity usage

is also a matter of great concern. There are scopes to minimize employment and utilization of resources in all sectors while organizing various events. Besides, there are chances to save critical resources like gas, electricity, water and fuel daily. Given these, the concept of austerity emerges as an obvious need aimed at optimizing manpower, money, resources and time in daily military life.

Benefits of Maintaining Austerity

"Judicious and constructive spending with wisdom and gratitude is part of Ibada and ultimately leads to wealthiness."[2]

- Brigadier General Rabbi Ahsan, ndc, psc

Day-to-day life expenditure is often a significant component of the Army's budget. Avoiding extravagant attitudes in daily life can contribute enormous benefits to other important areas like healthcare, education, infrastructure development etcetera which can help boost the overall growth of the Army. Being austere, one minimizes personal and organizational requirements following the Almighty's order and instruction by ensuring a healthy societal environment. It helps people understand the proper use of manpower, time and resources. Less engagement in administrative jobs frees more manpower for training, thus assisting in the development of the members of Army. It requires a proper understanding of the concept of austerity and a positive attitude to implement it.

Following the Command of the Almighty. Austerity would allow us to follow the path shown by the Almighty. In various religions, we are commanded not to be extravagant in any aspect of life. Since the ultimate destination for all of us is the afterlife, being austere is necessary. In accordance with this, one of the greatest companions of Prophet Muhammad (SM), Anas ibn Malik, stated that "I entered the Prophet's room when he was reclining on a couch whose material was weaved with a string. Under his head was a pillow made of hide and filled with bast, with no shirt to separate his body from the couch. Umar came in and tears sprang to his eyes. The Prophet asked him what he was crying for". Umar said, "What I am crying for is that I know for certain that you are dearer to Allah and more honored by Him than the emperors of Persia and Byzantium. I see they are enjoying all the comforts of this world and you are in this state." The Prophet said to him, "Umar! Would you not be satisfied to know that they have what this life offers and we have the hereafter?" Umar said, "Yes, indeed, Messenger of Allah!" He said, "And it is so." (Al-Bukhari in Al-Adab Al-Mufrad, Ahmad, and Ibn Hibban). This hadith tells that the ultimate comfort is in the hereafter, not in this life, and the Almighty would reward those who understand the meaning and practice austerity.

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[2]Personal Communication

Presence of Maximum Manpower for Training. While the Army needs to prepare skilled manpower to fight on the battlefield, its members must undergo continuous training throughout the year. Although various types of training are conducted in both training institutions and the formations, the presence of students in different training curriculums of the formations often remains ignored due to huge administrative commitments. Despite the mindset of the senior leaders to ensure the maximum presence of the under-commands in various training of a formation, the uncontrolled employment of manpower other than in training activities reduces their participation. With scarce manpower in the units, employing the under-commands judiciously in administrative requirements would ensure their maximum presence in training activities. Austerity in utilizing manpower for administrative work offers presence of more members of the formations in various progressive training, e.g. on job training, refresher training, preparatory classes for upcoming courses, etcetera. Such efforts would enhance the effectiveness of all members of BD Army. Therefore, the organization can expect to receive maximum output with minimum effort. To ensure this, one needs to prioritize the tasks at hand. One can follow the Eisenhower Decision Matrix (Figure 2) and set priority between tasks.

Figure 2: The Eisenhower Decision Matrix

Source: https://www.eisenhower.me/eisenhower-matrix/

Manpower is a critical resource for training. In this regard, the Chief of Army Staff (CAS) of BD Army has stated that 'a good commander will always provide the resources required for conducting practical and realistic training. Training enables the subordinates to understand the responsibilities, knowledge and skills needed to accomplish their mission' (Ahmed, 2020). Therefore, the maximum presence of manpower in training would indeed contribute to the development of their professional efficiency and overall, the Army would be immensely benefited.

Offers a Conducive Environment.   Never-ending needs, materialistic minds and a sense of better possession may create unhealthy competition in any organization. Such race destroys a peaceful family life, a well-bonded society and a healthy environment. The less we consume the more sustainable and aware of the environmental issues we are. If we closely think about how much money we spend on things we do not need, is sometimes disappointing; things that add to our overconsumption lifestyle and aid our throwaway culture (Sølver, 2019). Recently, the outfits contest each other in decoration, food items, or even utilizing manpower while organizing various events to show credibility (Figure 3) whereas, most of the usual administrative events (especially various celebrations) did not take place during the restricted period of the Covid pandemic and that did not hamper securing a healthy environment in BD Army.

Figure 3: Excessive Decoration of Events

Source: Author's Collection

Preparing similar dress for the participants of an event (Figure-4), offering a lavish food menu, wearing a different dress in two events are detrimental to culture. In most cases, to cope with others, many must make a lot of extra expenditures against their will and financial capacity. Since the members have different lengths of service and salary structures, maintaining the present trend puts peer pressure on most of them. If austerity is practiced in all aspects, this competition could be prevented and a well-bonded society will be presented to the country. In this way, people can be happier with what they have by limiting life's needs and avoiding the idea of being extravagant. People who save money report better well-being, including less psychological distress. And people who buy the minimum and consume less show the lowest depressive symptoms, so there's a positive mental health effect (Stieg, 2019).

Figure-4: Similar Dress Culture

Source: Author's Collection

Reduces Work Fatigue and Mental Stress. According to Rashid (2016), when an individual's workload becomes overwhelming, it results in distress and keeps him under physical and mental pressure. There is perhaps no context where stress and emotional well-being are more important than they are in the military. The CAS of BD Army often reiterates that 'stress is the enemy of rationality' (Ahmed, 2020). In the Army, time constraints, overwhelming expectations, unscheduled demand and lack of flexibility result in severe work fatigue and mental stress among its members (Figure 5).

Figure 5: Causes of Growing Work Fatigue and Mental Stress

Source: Researcher's Construct

To reduce stress or fatigue, it is essential to recognize the potential for strains during any event or situation (Bambra, 2019). Physical stress results from excessive workload, whereas mental stress results from the difference between reality and expectations emanating from thoughts or feelings (Eslar, 2019). Maintaining austerity in employing manpower helps to reduce work fatigue and stress in the workplace (Osborne & Locke, 2022). An appropriate delegation of responsibilities among the officers is a must to minimize the time and can very well contribute to achieving the goal (Meraj, 2017).

Judicial Use of Critical Resources. Some people living in the cantonments sometimes misuse critical resources like gas, fuel, water and electricity. Such practice is prevailing due to the abundance of supplies in the recent past. The gas stoves often burn, the water taps continue to flow, and the lights, fans, and ACs are switched on even when nobody uses those facilities. Besides, the authority had no control over the vehicles' mileage until the leadership recently imposed a systematic restriction. Lowering requirements would give someone inner peace when available resources do not meet expectations. Maintaining austerity helps to reduce expectations (Shurkin, 2013). When the requirement is less, it is evident that minimum resources, manpower and time will be invested for a particular task. This would also enhance the overall standard of BD Army as an organization. People must focus on what should have been done rather than how they want to see something done.

Correct Utilization of Time. Before any event, people sit for numerous conferences due to a lack of proper planning to accomplish a task. Traveling, waiting and attending these conferences consumes a lot of time. Change of plan at the last moment and re-scheduling of events are also common phenomena. Eventually, the work cannot be completed in time and frequent change in plan consumes a lot of energy, time and resources. For example, a unit's fitness inspection was shifted thrice a year in a cantonment. Change in such an event costs much time, labor and money, which are irrecoverable. Besides, additional time at the office (especially at night) and continuous rehearsal before cultural events seriously and negatively impact the well-being of families. Time is the most precious element of everyone's life - correct use of time benefits every member of the Army. Habituation and respect to maintain and complete the maximum possible activities within scheduled time is austerity. Utilizing minimum manpower would free more men for training and other important administrative requirements. This would ultimately offer more time for people to work on useful things for the organization's progress. Proper utilization of time - one of the symbols of austerity - may also be added as a significant factor of stress management.

Ensuring Austerity in BD Army

"Austerity should be maintained at all levels of the military, starting from top to bottom, not vice versa"[3].

- Brigadier General Mohammad Adil Chowdhury, ndc, psc

Austerity can be maintained in all aspects of military life. It starts with correct time management, proper distribution of manpower for various tasks and economizing expenses. Ensuring justness in proportion to its purpose to the greater interest of the Army is austerity. Maintaining austerity does not mean misery or avoiding requirements (Mahmood, 2016). Rather, austerity denotes the efficient use of three critical dimensions - manpower, time and other resources (Figure 6).

Figure 6: Dimensions of Ensuring Austerity
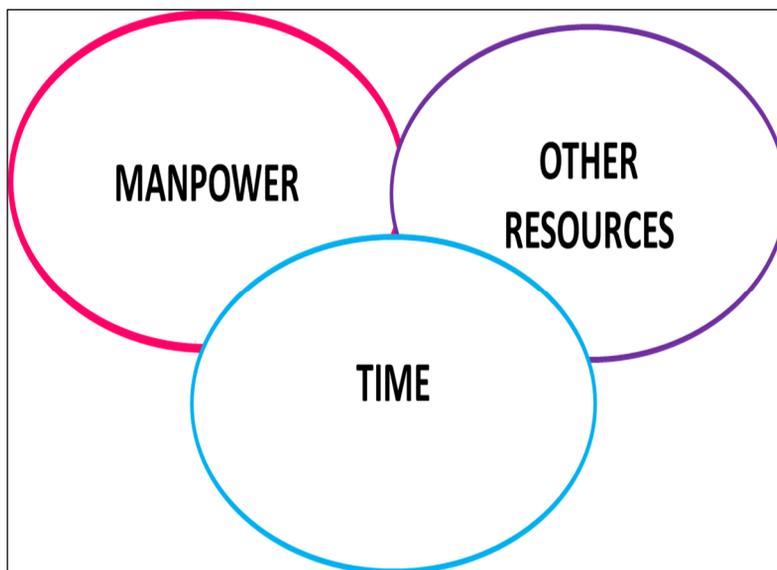
Source: Author's Construct based on Study

First Dimension- Manpower.   The Chief of Army Staff of BD Army states that, "we have many effective people who are doing the right thing at the right time, but unfortunately, not all are efficient" (Ahmed, 2020). Efficiency in using manpower is a prerequisite to ensure austerity in the Army. A survey was carried out on how austerity can be maintained regarding manpower (Table-1). In that, 61% preferred simplicity over lavishness to save manpower for any task.

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[3]Personal Communication

Table-1: Dimension – Austerity Regarding Manpower

Serial	Suggestions	Survey Result
1.	Involving fewer troops from each unit to reduce the workload	23%
2.	Preferring simplicity over lavishness in any arrangement	61%
3.	Involving less manpower but spending more time	10%
4.	Involving only experts (event management) from outside	6%
	61% prefer simplicity over lavishness in any arrangement	

Source: Author's Construct based on a Survey

Apart from imposing simplicity in arrangement, a few leadership and management qualities also need due attention to maintain austerity:

a.   Proper planning needs to be done to prevent extra employment. Without a comprehensive plan, a simple job turns into a complex one. Comprehensive and foreplanning simplifies the job and minimizes the employment of additional manpower.

b.   Selecting the right person for the right place must be ensured to maintain austerity. Only simplicity in the arrangement can solve the issue if selection of appropriate personnel for a particular task is done judiciously.

c.   Skilled manpower accomplishes a job with incredible speed by minimizing the employment of others. There is no alternative except to create skilled manpower for any organization to maintain austerity.

d.   Proper distribution of jobs and adequate preparation to undertake any responsibility are the ways to maintain austerity. There is a saying, 'everybody's job is nobody's job'. Therefore, proper distribution of work and developing a sense of responsibility among all must be implemented by all levels of commanders to maintain austerity.

e.   Creating an unambiguous environment is necessary to maintain austerity. An ambiguous environment delays the process, where efforts of manpower and time are wasted.

f.   Understanding the objective and importance of the task is required to maintain austerity. Unnecessary or more employment of manpower than needed is a result of misunderstanding the aim and significance of the task.

g.   Eradicating zero-error syndrome may help in achieving austerity. Rigidity in the decision-making process and unreal expectations leads to zero-error syndrome. Ultimately, it affects the efficiency and efforts of any outfit.

Second Dimension - Time. Time is the most valuable asset for human life and the development of any organization. Maintaining scheduled programmes as planned is necessary to achieve austerity. There are a few more measures to be taken, which are appended below:

a. Delay in the scheduled programme is to be avoided.

b. Rescheduling the programme is to be avoided.

c. Last-moment cancellation of a scheduled programme is to be avoided.

d. For an unavoidable reason, if a programme/event is rescheduled or canceled, the news must be notified to all concerns as soon as possible.

e. Duration of a programme/office is to be appropriately maintained. Excessive office work beyond the scheduled time, night-time office, and more extended conference sessions should be avoided.

f. Practice/rehearsal sessions of any cultural programme may not begin much earlier than the D Day (the final event day). It would save valuable personal time for all participants, ultimately assisting their well-being.

Third Dimension – Other Resources

Use of Vehicle. For a programme/event of a longer duration, vehicles may not wait at the venue for hours together. Detailing a common vehicle for a group, like using a coaster/microbus for office pick up and drop, and during other gatherings, may be introduced and practiced. Proper vehicle maintenance, especially during lay-off days, must be ensured.

Water, Gas and Electricity. Austerity can be maintained by saving national resources through continuous motivation and a comprehensive monitoring system. Spot checking system may be developed to identify the reluctance of an individual or outfit to use water, gas and electricity judiciously.

Food and Menu. A broad and general guideline may be circulated to set a standard for selecting a menu on different occasions. Lavish and expensive items may be avoided. All may practice a comprehensive and detailed plan with a pre-sanctioned budget to minimize wastage.

Organizational Money. A general/broad guideline might be introduced to decorate events/programmes. A pre-expenditure sanction system may be introduced for common events by higher headquarters to minimize expenditure. Judicial use of existing resources can prevent extravagance and lavishness of spending.

Use of Paper. Expediting digitalization in office management is to be ensured. A paperless office management system may be developed to maintain austerity.

Unnecessary monthly, quarterly, half-yearly and yearly reports and returns may be discontinued after required study.

Personal Expenses.   Using multiple credit cards and taking excessive loans/overdrawing salaries from the bank may be strongly discouraged. Clearing monthly bills by all members is to be monitored. Wearing the same dress collectively on an occasion by a group may be discouraged.

Conclusion

The economic inflation in the country could turn in to a severe one unless addressed in due time with necessary measures like austerity. To cope with the austerity measures taken by the government, many steps have already been taken in BD Army to reduce day-to-day expenditures. However, people often fail to understand the essence of austerity and remain extravagant. It occurs due to a plea for comfort, a desire to achieve perfection, or to accomplish personal interest. These ultimately make any environment more challenging and complex during such an economic crisis that extends globally.

Austerity ensures the efficient allocation of critical resources, preventing wastage and maximizing the utility of available funds. By practicing financial discipline, the members of this organization follow the commandments of their respective religions, which must be a great accomplishment for anyone who believes. Austerity encourages more participation in training, thus maintaining high combat readiness. It promotes innovative and adaptive thinking, pushing the army to find cost-effective solutions and create a conducive environment. Moreover, it encourages correct utilization of time, careful planning and prioritization and reducing work fatigue and mental stress. By avoiding excessive expenditures, the military becomes less reliant on external funding sources, enhancing the efficiency and sustainability of the organization.

Leaving the practices of being extravagant, austerity should be taken in true spirit and adhered to positively. Commanders at all levels should propagate this ideology by setting personal examples. The leaders should also find ways to avoid several malpractices that go against the principles of austerity and guard those. Through this, a massive amount of time, money and resources can be saved and utilized more productively. Overall, simplicity can build a progressive lifestyle in BD Army that can only be attained by maintaining austerity in all aspects.

Recommendations

In light of the above discussions, the following recommendations are made to maintain austerity in BD Army:

a.   Appropriate higher headquarters may impose clear and specified restrictions on using excessive manpower, resources, and time.

b.   As a top-down approach, commanders at all levels may grow a sense of acceptance while arranging any event with the minimum possible resources available.

c.   The formations/institutions may introduce time-bound exercises (weekly/monthly) on austerity.

d.   Forecasting the events, all headquarters may ensure well-coordinated sound planning, avoid last-moment change and provide flexibility to all levels of commanders.

e.   All training institutions and formations may include 'austerity' as a subject in their training curriculum at all levels.

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MILITARY CONSCRIPTION WORLDWIDE AND THE CONTEXT OF BANGLADESH: A PROPOSAL FOR INTRODUCING COMPULSORY MILITARY TRAINING

Lieutenant Colonel Abdullah-Al-Hossain, psc, ASC

"It may not be doubted that the very conception of a just government in its duty to the citizen includes the reciprocal obligation of the citizen to render military service in case of need and the right to compel."

- The Supreme Court, United States, 7 January 1918

Abstract

Military training is a key factor to protect our motherland from foreign aggression. Preparedness plays a vital role in integrating the mass people of the country and providing a platform for fighting an orchestrated war. The geographical location of Bangladesh possesses a great threat of future conflicts. Bangladesh is surrounded by both regional and international superpowers, which needs especial attention to fight against powerful armies for its survival. Military education to mass population and creating a strong reserve force can help us to overcome all those challenges for Bangladesh. The mandatory enlistment of citizens for military service, commonly known as 'Military Conscription' is an age-old tradition worldwide. At present it continues in many countries under different names and forms. These countries demand a specific amount of military service from all her citizens. At this backdrop, alongside with brief history of military conscription and state of conscription worldwide, this study will succinctly answer few questions like; Should Bangladesh introduce conscription for military service or military training? What should be the training modalities? What benefits the country will derive from this endeavour? Who all are eligible for this training? How to negotiate the challenges that may arise during execution of such plan? To answer all these questions, a detailed study on these aspects has been carried out through interview, survey and literature review with the aim to focus on the feasibility of introducing compulsory military training instead of conscription.

Keywords: Conscription, military education, reservists, compulsory military training.

Introduction

The mandatory enlistment of citizens for military service, commonly known as 'Military Conscription' is an age-old universal tradition. At present it continues in some countries under different names. These countries demand a specific amount of military service from all her citizens. For small countries there are reasons to adhere this concept of compulsory military service due to perpetual military, diplomatic and trade pressure from neighboring regional or international powers

and super-powers. The French revolution in 1970 has opened up the horizon of military conscription extensively, where young men were compelled to perform for powerful large military. As a result, most of the European countries copied the system in peacetime. They introduce that all men will serve for nation at least 1–8 years on active duty in a certain age and later on they will be kept as reserve force. Many countries conscript male soldiers not only for armed forces, but also for paramilitary agencies. Few countries employed them for domestic service or non-combatant rescue operations.

Over the years, array of reasons has made conscription controversial. These include conscientious objection[1] ; political objection[2] and ideological objection[3]. As a result, many young people were forced to leave country or seek asylum in another country. However, selection systems of some countries like Switzerland, Finland, and Germany etc, accommodate these attitudes by providing alternative service outside combat-operations roles or even outside the military.

In the modern days, many countries do not conscript soldiers. New ideas of hiring retired soldiers or professionals serve the purpose, for example Wagner group is fighting for Russia in Ukraine. This idea of relying on such arrangement, depends on war-fighting requirements and the nature of conflicts. Many countries in the world have abolished conscription. They prefer to conserve their power and start conscription during wartime. Countries involved in wars, arch rivalries or wants to dominate the region are most likely to implement conscription by force. The democratic countries are less likely to implement conscription than that of autocratic countries. There are a few exceptions, such as Singapore and Egypt. The former British colonies are less likely to have conscription. They are mostly influenced by British anti-conscription ideology. The military power house of Europe, United Kingdom has abolished conscription in the year of 1960. In Bangladesh, conscription has never been existed, though it was a former British colony.

The Army Act 1952 of Bangladesh has kept a provision of compulsory military service. Bangladesh government has never implemented it so far. In Bangladesh Armed Forces, people join voluntarily and the number is quite high. The Legal enlistment age is above 18 years and 22 years for officers- with slight differences due to technical arms and services[4]. Under these contexts, Bangladesh has a lot of challenges to keep a strong reserve force that can be utilized during the wage of war. In addition, these reservists can be employed in asymmetric warfare. There is a

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[1] The right to refuge by an individual to be enlisted in the military service on religious and philosophical ground is termed as 'Conscientious Objection'.

[2] 'Political Objection' denotes to the refusal, for example, to service for a disliked government or unpopular war.

[3] A perceived violation of individual rights.

[4] Permanent Mission of Bangladesh in Geneva 1997. Response to Quaker United Nations Office inquiry, 17 November 1997.

provision for some training in the form of exercise during summer and winter training where Bangladesh Ansar and Village Defence Party (Ansar &VDP) alongside the BNCC are integrated as Unconventional War Forces (UWF). However, the UWF lacks in essential military training. As such, compulsory military training for the youth instead of military service can be an option for Bangladesh to have a very strong reserve.

At this backdrop, alongside brief highlight on the history of military conscription and state of conscription worldwide, this study will succinctly answer few questions like; Should Bangladesh introduce conscription for military service or military training? What should be the training modalities? What benefits the country will derive out of this endeavour? Who all are eligible for this training? How to negotiate the challenges that may arise during execution of such plan? To answer all these questions, a detailed study on these aspects has been carried out with the aim to focus on the feasibility of introducing compulsory military training instead of conscription.

Methodology and Limitation of the Study

The methodology of this study is essentially analytical in nature. In this paper, both primary and secondary data has been used and analysed. Books, journals, newspapers and published articles have been accessed to make this article informative and descriptive. A wide variety of relevant literatures about conscription have been analysed to find out relevant data. Interviews of selected persons have also been conducted arbitrarily to substantiate the ideas put forth at the subsequent part of this paper. Additionally, a survey with open ended questions has been carried out among the students of public universities. However, this study will remain confined to military training for integrating the youths as reservists in the army only and provisions for sister services and paramilitary forces have not been examined due to the purview of the study.

History of Military Conscription

Ancient Times

The Babylonian Empire during 1791–1750 BC, has used a system of conscription called Ilkum. In this system, all eligible persons have to serve in army during war. In peace time they used to provide labour for other activities of the country. In that time, in the European continent by feudal laws, land owners of the medieval period enforced a system where all peasants, freemen commoners at the age between 15 to 60 living in the countryside or in urban areas, were summoned for military duty by the king or the local lord respectively.

Military Slavery

In the Middle East, military slave system existed during the 820s and 830s. Turkey's military slaves were called as Mamluks or Ghulam. The Ottoman empire used them to dominate

the entire Europe and Middle East. In Egypt, Mamluks were widely used and sometimes they tried to dominate the government system.

Photo-1: Conscripted Soldiers of Ottoman Empire

Source: Collected from Internet (The Ottomans and Mamluks – Cihan Yuksel Muslu)

World Wars

The system of conscription was in vogue during World War I and World War II. However, the range of age limit for conscription was adjusted in different times to meet the national demand in different countries. To protect France from the invasion of European monarchies, they introduced compulsory enlistment of its citizens in military during the year 1800 and 1813. Almost all the European countries declared conscription before world war I. In World War I, the United States of America and the United Kingdom were mostly dependent on voluntary services.

Photo-2: Registration for Voluntary Services at New York City during World War-I

Source: The Book on 'World War I and American Art'

Modern Era

The Russia- Ukraine war is a perfect example of modern days conscription. Russian invasion started on 5th November 2022. Since then, over 300,000 people were conscripted. They were sent to reinforce Russian troops operating in Ukrainian areas. The Ukrainian government has also ordered for conscription for its male citizens.

State of Conscription by Continents

Conscription in Asian Countries

The conscription in Asian countries vary from country to country. It mostly depends upon whether the country is ruled by democratic government, monarchy or military.

Table-1: Conscription in Asian Countries

Serial	Country	Yes/No	Gender	Remarks
1.	Afghanistan	No	N/A	Abolished in 1992
2.	Armenia	Yes	Male	The citizens aged between 27 to 50 are registered in the reserve force and may be conscripted during war
3.	Bangladesh	No	N/A	Government can recruit volunteers during war
4.	China	No	N/A	The male citizens of 18 years age and above are required to register for military service but the policy is not in vogue. Policy is exempted for Hong Kong and Macao
5.	Cyprus	Yes	Male	Alternative service available
6.	India	No	N/A	No policy in this regard but government can conscript for national interest under article 23
7.	Indonesia	No	N/A	In the event of war, the government will draft all men and women
8.	Malaysia	No	N/A	The government suspended national service from January 2015 due to budget cuts
9.	Myanmar	Yes	Male and female	Citizens must receive military training but it was not enacted as a law
10.	North Korea	Yes	Male	All men over the age of 17 effectively have to enlist
11.	Pakistan	No	N/A	Constitution has the option but it has never been implemented

Source: A Handbook of Military Conscription and Composition the World Over

Table-1 shows most Asian countries have conscription option but it is not implemented and military ruled countries having conscription.

Conscription in South American, African and Australian Countries

The South American countries mostly have volunteer service. In Africa, few countries adopted compulsory service and few goes for alternative services. In Australia, there is no conscription for its citizens.

Table-2: Conscription in South America, Africa and Australian Countries

Serial	Country	Yes/No	Gender	Remarks
1.	Argentina	No	N/A	Voluntary service available, conscription may be ordered for specified reasons
2.	Bolivia	Yes	Male & Female	When annual number of volunteers falls short of goal
3.	Brazil	Yes	Male	The recruits have been volunteers in recent years
4.	Chile	Yes	Male	Volunteer Service
5.	Venezuela	Yes	Male	Alternative service available
6.	Algeria	Yes	Male	Compulsory training mandatory
7.	Angola	Yes	Male	Compulsory training mandatory
8.	Egypt	Yes	Male	Alternative service available
9.	Australia	No	N/A	Abolished by parliament in 1972
10.	New Zealand	No	N/A	Abolished in December 1972

Source: A Handbook of Military Conscription and Composition the World Over

Table-2 shows that only African countries have conscription. Latin American countries have voluntary service and Australian countries have abolished conscription.

Conscription in European Countries

The European countries mostly adopted alternative service except France. The details are given in the table below:

Table-3: Conscription in European Countries

Serial	Country	Yes/No	Gender	Remarks
1.	Austria	yes	Male	Alternative service available, volunteer for female
2.	Cyprus	Yes	Male	Alternative service available
3.	Denmark	Yes	Male	Volunteers service for recruitments. No Conscription now a days.
4.	France	No	Male & Female	The system suspended for peacetime in 2001
5.	Germany	No	Male & Female	The conscription system suspended for peacetime since 1 July 2011
6.	Greece	Yes	Male	Alternative service available
7.	Italy	No	N/A	Suspended for peacetime in 2005
8.	Lithuania	Yes	Male	The country selects 3000 to 4000 men's each year
9.	United Kingdom	No	N/A	Abolished in 2018
10.	Ukraine	Yes	Male	Abolished 2013, reinstated in 2014 and ongoing

Source: A Handbook of Military Conscription and Composition the World Over

Table-3 shows that a few countries reinstated conscription as per their requirement.

Conscription in North American Countries

The pattern of conscription in all North American countries is almost the same except America. The details are shown in Table-4.

Table-4: Conscription in North American Countries

Serial	Country	Yes/No	Gender	Remarks
1.	Canada	No	N/A	Occurred during 1917-1918 and 1940-1945, now abolished
2.	El-Salvador	No	N/A	Legal but not practiced
3.	Mexico	Yes	Male	Alternative service available
4.	Jamaica	No	N/A	No policy in this regard is promulgated
5.	USA	Yes	Male	The policy is that all male citizens needs to undergo military training between age 18 to 26 years. The option remains open till 35 years of age

Source: A Handbook of Military Conscription and Composition the World Over

It may be interesting to note that the United States of America adopted modern version of conscription for its own national interest.

Arguments against Conscription

There are some general arguments against conscription which may vary from country to country. However, there are some universal views.

Gender Discrimination

Men's rights activists have always opposed military conscription, or compulsory military service due to gender discrimination. The female rights organizations also raised their voice against conscription in several countries of world.

Economic Feasibility

In present days almost all the militarily advanced countries have abolished conscription after calculating cost benefit ratio. They have given more emphasis for use of modern technology instead of men. Western countries assume that the loss of human life is more important than the equipment and armaments, so they have reduced their forces significantly. The cost of military training, procurement of advanced weapons and arms is a costly affair. It is not easy and feasible for all countries. The geographical location, threat and regional politics sometimes determine the needs of conscription. For example, Switzerland doesn't need conscription but Ukraine needs conscription for its survival and sovereignty.

Loss of Productivity

Many scholars opined that the work effort for conscription is a loss project. In peace time, the loss of productivity from most fit persons of the country always affects its economy. It subtracts the productivity opportunity of a country. In wartime the impact is more severe, when civilian professionals are forced to fight. The country does not get their contribution as a working member of other sectors.

Arguments for Conscription

There are some strong arguments for conscription. It varies from country to country based on their geo-political position and vision.

Political and Moral Motives

The world order is changing quickly from bi-polar system to multi-polar system. Many regional and sub-regional countries are coming up to dominate the world. New military alliance and expansion of some other military organizations have forced many countries to think about conscription or compulsory military training. For example, Russian-Ukraine war has forced European countries to think about compulsory military training for its citizens. At the same time

moral motives of Iran and Israel have compelled their citizens for conscription. Future war will be much more volatile and complex; therefore, preparedness is necessary to face any consequences.

Photo-3: Conscription Process in Iran

Source: Author's Collection from Internet

Contribution in Economy

There are many unskilled, un-trained and jobless people in least developed or under developed countries. The basic training in military organizations make people physically fit or skilled labour. It also makes them mentally robust to take challenges in life. They can be utilized for national development projects. For example, building national highways, dams, ensuring port security or peace time service organization. They can be sent to other countries on contract basis for bringing remittance. The confidence they gain during training helps them to be a small entrepreneur. This is how military training can contribute to national economy.

Induction of Women in Military

In the history of warfare, women also have been conscripted in many countries. Women actively took part and contributed immensely in World War I and II. The perception regarding women's physical ability has changed drastically. Nowadays many nations have inducted women in military service. A nation can not develop keeping aside half of its population, thereby women can be conscripted in military service. At present, countries like the USA, the UK, India, China, Bangladesh, Bolivia, Norway, etcetera have already drafted women in military service.

Compulsory Military Training and Bangladesh Perspective

Argument for Compulsory Military Training

In the above literatures it has been observed that compulsory military service and training are in vogue in many countries for the youth, especially in the developed countries. In the context of Bangladesh, critics argue "compulsory military training is more important than compulsory military service. Bangladesh being in the course to becoming a develop country; need to think about compulsory military training for her young generation and everybody must have military way of understanding like China".[5] A lot of young men/women are trained by Ansar and VDP authority and initiative is required to have proper training so that those men and women can be effectively utilized in military.[6] Military training will enable the young generation to be more motivated, disciplined and dedicated to the service of the nation. It will drive them to be more loyalist and patriotic to the nation and will considerably increase military power as a reserve force.

A survey was conducted among the student of five public universities. A good number of students responded to the questions related to compulsory military training set for them. The first question was - Do you think that compulsory military training is necessary for the youths of Bangladesh, since she has a smaller size of forces? The answer is depicted in Figure - 1 where 84% respondents strongly agreed.

Figure-1: The Necessity of Compulsory Military Training for the Youth of Bangladesh
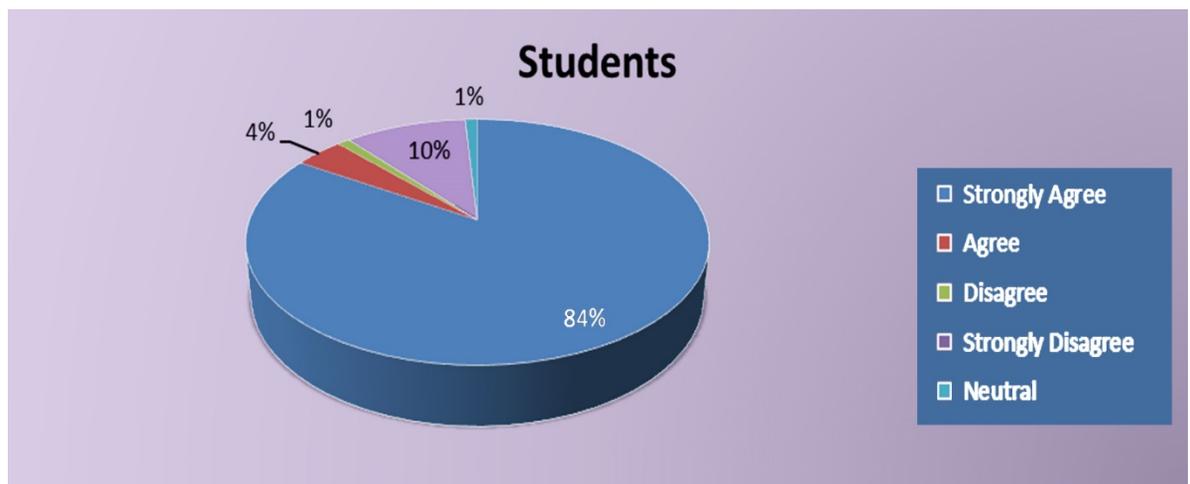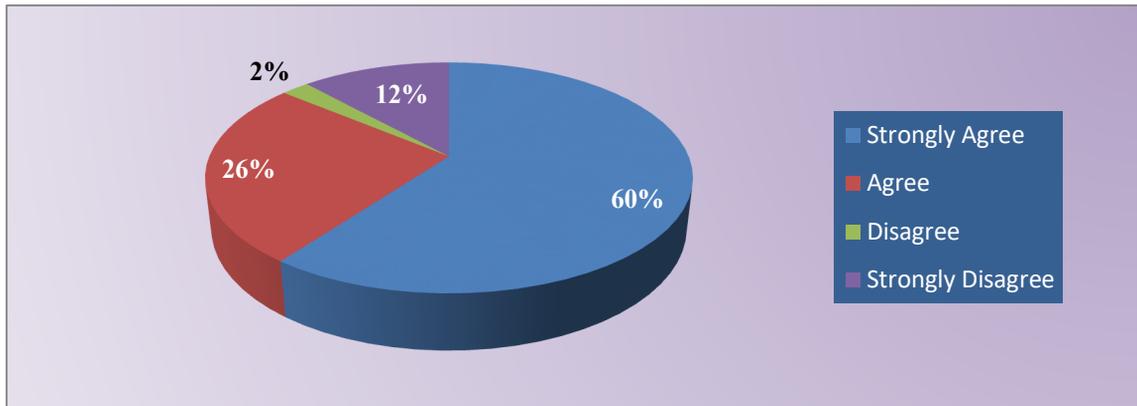

Source: Survey Conducted by the Author

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[5]Interview, Brigadier General Abul Kashem Md Fazlul Kader, ndc, psc. Dhaka, dated 20 April 2023.
[6]Interview, Brigadier General KH Md Mozammel Haque, BSP, psc. Dhaka, dated 23 April 2023.

Next, the respondents were asked to give opinion on the statement --- It is difficult for Bangladesh to maintain a large regular force due to huge financial involvement. The comments are reflected in Figure - 2 where 60% responded agreed strongly, 26% agreed and 14% viewed negatively.

Figure-2: Financial Constraints for Maintaining Large Regular Forces for Bangladesh

Source: *Survey Conducted by the Author*

Next proposal was set for the respondents mentioning that Bangladesh has only two neighbors who maintain a large quantum of forces. A strong reserve with trained youths can play a vital role in image building and defending the country's national interest in time of need. The comments are reflected in Figure-3, where 87% responded positively and rest viewed negatively.

Figure - 3: A Strong Reserve with Trained Youths can Play a Vital Role in Defending Our Motherland
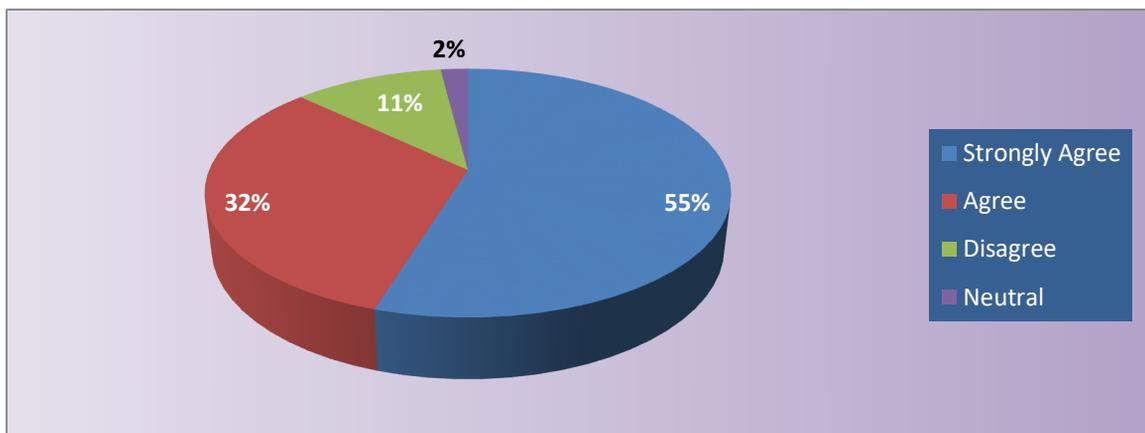
Source: *Survey Conducted by the Author*

In the survey, the author proposed that both males and females should undergo compulsory military training depending on physical fitness. The comments from respondents are reflected in Figure-4, where 71% responded positively and 28% viewed negatively and 1% remained neutral.

Figure - 4: Male and Female should Undergo Compulsory Military Training
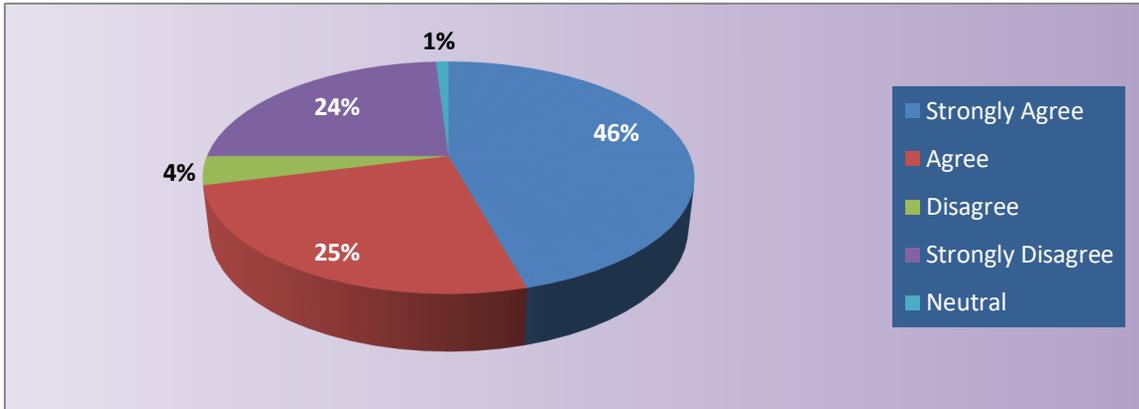
Source: Survey Conducted by the Author

The next survey was made about the duration of the compulsory military training. The comments are reflected in Figure-5, where more than 65% responded for 12 weeks training.

Figure - 5: The Duration of Compulsory Military Training

Source: Survey Conducted by the Author

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The final question was whether the youths who complete military training successfully should be given some incentives/advantages in their carrier and other priority in some other fields. The comments are reflected in Figure-6, where 89% responded positively and 8% viewed negatively and 3% remained neutral.
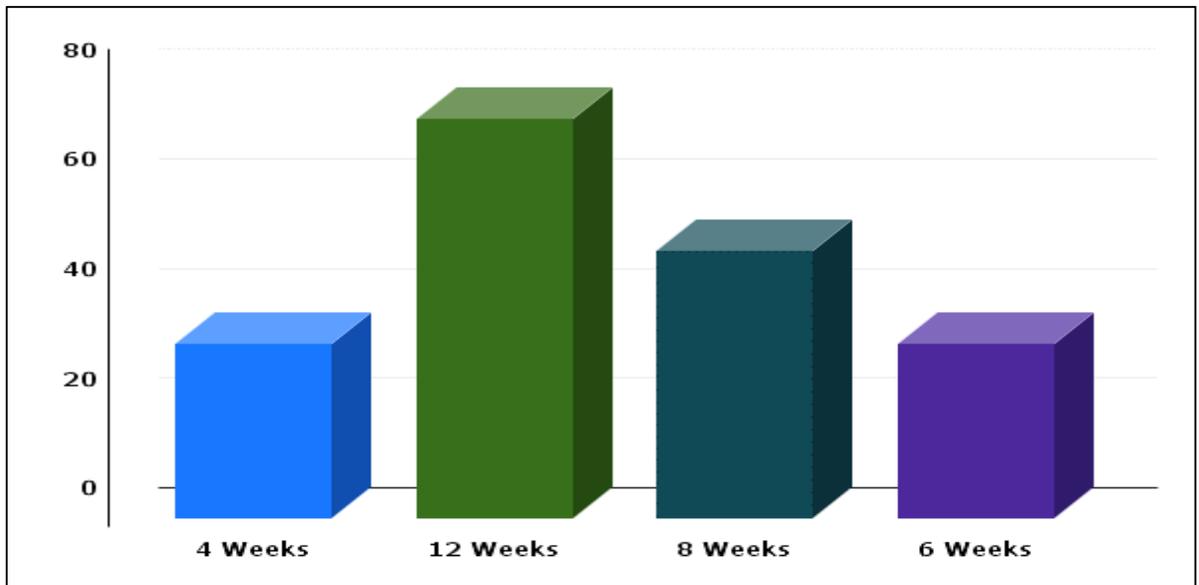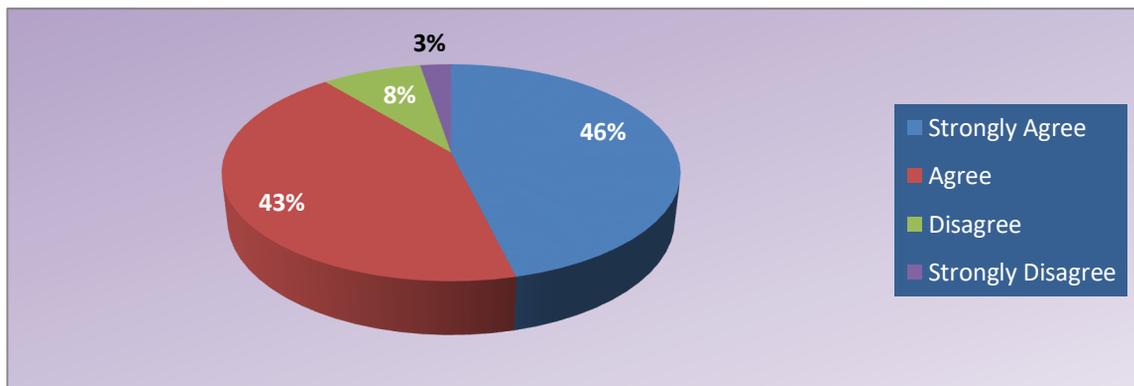
Figure – 6: Providing Incentives/Advantages in the Carrier

Source: Survey Conducted by the Author

General Opinions of the Respondents

The survey could also extract some general views about compulsory military training. The crux of those comments is enumerated below:

a.   All citizens of the country should be trained properly so that they can protect themselves from any unwanted situation. The training should be completed within 25 years of age.

b.   Military training investment for young population may give dividend for developing countries like Bangladesh, especially on health, education and production sectors.

c.   Compulsory military training for youths ensures national defense, builds civic responsibility, develops valuable skills, and fosters social cohesion, creating a prepared and united citizenry.

d.   A few people will try to misuse this training; therefore, appropriate measures must be taken to avoid extremism/militancy.

e.   We should make military training compulsory for our young generation, which will develop their nationalism, character, strength and courage to win and sustain in any adverse and challenging situation.

Argument against Compulsory Military Service or Training in Bangladesh

Brigadier General Rafiqul (Retd) highlights that the foreign policy of Bangladesh is 'friendship to all and malice to none'. Bangladesh has friendly relations with neighboring countries. She does not need compulsory military service in future. The glorious history of our Mukti Bahini during the war of independence teaches us that people participate voluntarily. The country has an existing trained, smart and professional military. In case of war, working men and women will come forward to meet the needs of the country. Moreover, the geographical location and geopolitical situation of Bangladesh is not like that of Israel or North Korea. So there is no need for compulsory military service in Bangladesh.[7] He also points out that everyone does not need compulsory military training, since expanding BNCC would be enough for this purpose. Hence, there is no need to waste huge budgets on compulsory military training. Moreover, if military trained persons are left out of the military, they may be encouraged to join any banned organization or extremist group and do anti-state activities which can be inconsolable to our society. Additionally, those who retire from the military, we keep them as reserve. According to the existing conventional rules, they can be summoned and used in combat situations.[8] Brigadier General Jahid (retd) opines that compulsory military training will be a big challenge to implement.[9] There will be issues like international pressure (Neighboring countries not likely to accept it positively), political disagreement (question of necessity), financial implication, acceptance in the society (not all are willing), inadequate training facilities and chance of increase of social crime. Brigadier General Ali (retd) opines that prevention of extremism may be a great challenge.[10] Therefore it may not be required for Bangladesh. To him, the existing Para- military forces can serve the purposes.

Counter Arguments for Necessity of Compulsory Military Training in Bangladesh

In the war situation arranging military training will be much more difficult than that of peace time. Many trained combatants may be unable to fight and therefore, it will be always wise to train a certain portion of people for reserve. BNCC training comprise of only basic para military training without weapons. Therefore, it will not give expected result during the period of crisis. Compulsory military training always add advantage to the forces and nation at the time of need. A certain group of people should be initially targeted for proposed training.

Likely Target Group for Compulsory Military Training

Young generation of the country comprising both male and female may be the target group for compulsory military training. The following groups may be given preference:

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[7]Interview, Brig Gen Syed Md Rafiqul Islam, SPP. Dhaka, dated 19 April 2023.
[8]Ibid
[9]Interview, Brig Gen Abu Jahid Siddiqui (Retd). Op cit.
[10]Interview, Col Md Ali Reza Khondker, SPP, psc (Retd). Dhaka, date 10 March 2023.

    a.   Students aged 18 and above .

    b.   Cadets of BNCC aged 18 and above.

    c.   Participants of Scouts and Girls Guide aged 18 and above.

Arrangements for Training Facilities

Training for regular military, Para-military and different security forces are conducted in their concerned training institution. Similarly, compulsory military training may be conducted for the youth of Bangladesh in places/institutions like Arms/Services Recruit Training Centres, BNCC Training Establishments, Police Training Centres, Ansar and VDP Training Centres and also in Fire Service and Civil Defence Training Centres to minimize infrastructural and resource cost.[11]

However, these training may be conducted in three stages.[12] In the **1st stage** or initial stage, basic military discipline & training in unit level may be conducted for new comers. In the **2nd stage** or intermediary stage, weapon training and basic tactical training in recruit training centres may be conducted. In the **3rd stage** implies the higher level of training in BMA/BIPSOT/NDC for officers and intellectual persons. Brigadier General Hafiz (retd) opines that firstly, HSC passed students may be trained by BNCC and they may participate in Winter Training of Army Exercise and secondly university passed under-graduates may be trained in different training institutions.[13]

Duration of Training

There are varied opinions about the duration of military training. The interview of selected persons has projected a range of three months to one-year duration. However, a longer period will demand greater cost and effort and will also invite other difficulties like discontinuation of study and delay in career build up. On the other hand, shorter period for training will be cost effective and purposeful. Therefore, a twelve-week training module may be planned and conducted with specific knowledge of basic military tactics and weapon training.

Subjects and Field of Training

Training may be conducted on following matters:

    a.   **Basic Military Training**.   It may include tactical implication of our geographical features, history and culture of BD, Liberation War, importance of military training, discipline etcetera.

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[11]Interview, Brig Gen Abul Kashem Md Fazlul Kader, ndc, psc. Op cit.
[12]Ibid
[13]Interview, Brig Gen Hafiz Ahsan Farid, SGP, ndc, psc (Retd), Dhaka, date15 March 2023.

b.   **Weapon Training.**   Weapon training may include basic data and information of the available weapon like Rifle, Sub-Machine Gun, Light Machine Gun, Pistol, Grenade, Rocket Launcher etc. Following aspects of weapon training should be included:

(1)   The striping and assembling of weapons.

(2)   Proper maintenance of weapons.

(3)   The basic knowledge of firing techniques.

(4)   A good number of firing practices.

c.   **Training on Minor Operations/Tactics.**   Basic knowledge and on ground practice on following operations/subject matters may be included:

(1)   Raid

(2)   Ambush

(3)   Patrol

(4)   Camouflage and concealment

(5)   Operations behind enemy line

(6)   Intelligence collection

(7)   Administrative support like, ration collection and distribution

(8)   Fire Fighting and disaster management

(9)   Jungle Training or mountain training

(10)   Riverine training

Likely Impediments for Conduct of Training

The likely difficulties in the provision for compulsory military training are as follows[14]:

a.   Approval of government.

b.   Allocation of budget.

c.   Necessary infrastructure.

d.   Requirement of training materials

e.   Modalities of training and planning.

f.   Requirement of food, accommodation and transport.

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[14]Brig Gen Abul Kashem Md Fazlul Kader, ndc, psc. Dhaka, dated 20 April 2023.

Proposed Incentives for the Trainees

In Bangladesh, for recruitment of students to impart compulsory military training, few incentives may be given. For example a credit may be added to under-graduate students. HSC passed students may get additional bonus point for admission in universities. They may be given priority in government jobs. In the USA, a man who does not register with the Selective Service neither applies for citizenship nor receives federal financial aid and grants or loans. He cannot apply for public colleges or universities, or, in some states, cannot obtain a driver's license.

Outcome of the Training

Compulsory military training for youth enable our young generation to be more motivated, disciplined and dedicated to the service of the nation. It will also increase our military capabilities to a considerable level. The other benefits are:

  a. The confidence building among the young generation.

  b. It will inculcate patriotism and leadership traits to our youth.

  c. It will enhance endurance and tenacity to overcome challenges by younger generation.

  d. They will act as reserve force. We may utilize them during national crisis.

  e. They will learn how to overcome challenges in life.

Suggested Options for Bangladesh

Bangladesh may opt for short duration of military training instead of compulsory military services. During the survey most of the responders advised for 12 weeks military training. We may carry out a pilot project as an experiment and see the feasibility of the research. Besides following options may be tested on trial basis:

  a. A pilot project may be taken where young men and women (aged above 18) will be trained. We may keep them as reservist or ever ready for national crisis.

  b. Students may be given some credits in their curriculum for taking this training. They may be given priority for government jobs.[15]

  c. Considering the cost benefit ratio, we may train our young generation for instilling nationalism.

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[15] Interview, Prof Dr. Md Jasim Uddin, Department of History, Jahangirnagar University, Savar, date25 April 2023.

Recommendations

The study suggests following recommendations:

> a.   Bangladesh Army may conduct a 12 weeks compulsory military training for young men or women above 18 years of age as a pilot project by using existing training facilities.
>
> b.   Bangladesh Army may utilize infrastructure of BNCC, Ansar & VDP to overcome the financial constraint and train younger generation.
>
> c.   Instead of conscription Bangladesh Army may provide basic military training to the youths who will act as a strong reserve force for the nation.

Conclusion

Military conscription is an age-old tradition in the world. History reveals that small countries were more in need for conscripting her citizens to counter the pressure of big neighbors and safeguard her natural resources. In modern days, this concept of conscription is in vogue. During World War I and II European countries conscripted men and women randomly as fighting forces. In recent time, conscription has started in Russia at the outbreak of war with Ukraine. The context of Bangladesh is strikingly different from many other countries with regards to warfare due to her geo-political and geo-strategic location, size of force, constitution, foreign policy, defence strategy and so on.

Bangladesh does not enjoy the possession of a big regular force. The financial involvement and budget constraints are major impediments for her to maintain a very big size of force. Hence, it may be a good option to impart compulsory training to the youths who will remain ever ready to fight for their motherland in addition to the reservists from regular forces. These training will instill patriotism in them and they will be able to serve the nation better with added confidence and leadership qualities. Some critics argue that this type of initiative may incur negative outcome as there are possibilities of extremism and deterioration of law and order in the society.

We have to remember that this nation fought the Liberation War valiantly by the call of the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman and the participation of young men and women was remarkable. At the same time, we must realize that the context of Liberation War and the future warfare would be completely different. Thus, maintaining a well accounted, trained and strong reserve would pay much dividend especially in asymmetric warfare.

This study, therefore, focused the necessity of compulsory military training for the youth alongside the training modalities and overall outcome. The analysis of survey result, interviews of defence scholars and academicians helps us to draw a conclusion that Bangladesh needs all-out effort to uphold the constitution and maintain amiable relationship with all countries, but if

provoked, she will not stop to repulse. Therefore, Bangladesh should be in possession of a strong defence force comprised of both regular and enlisted young reservists so that any aggression to our dear motherland can be repulsed quickly.

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THE CRITICAL ROLE OF VISUAL SKILLS IN COMBAT VEHICLE IDENTIFICATION TRAINING: BANGLADESH ARMY PERSPECTIVE

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Abstract

The lack of institutional 'combat vehicle identification training' for combatants in peacetime is a major concern in Bangladesh Army, despite its rapid modernisation of versatile combat vehicles. Soldiers, including junior officers, have limited exposure to different combat vehicles, making it difficult to identify their own combat vehicles, let alone those of their enemies. This limited exposure increases the risk of fratricide, which could weaken morale and cohesion if allied or own combat vehicles are accidentally targeted. Additionally, if a neutral vehicle such as a UN or humanitarian vehicle is targeted, it could have catastrophic consequences in the international forum. Combat vehicle identification training is necessary to avoid such scenarios. It is also essential for obtaining accurate intelligence on the enemy's formation and purpose, avoiding trigger shyness among soldiers, and enhance reconnaissance missions. Modern technologies for combat vehicle identification, such as passive and active signaling devices, interrogation/response systems, and situational awareness systems, have been used in recent conflicts. However, human visual skill is considered as the most reliable factor due to potential technological glitches and environmental constraints. Other armies have recognised combat vehicle identification as a critical component of their training, and several platforms have been developed for this purpose. It is crucial for Bangladesh Army to provide combat vehicle identification training to prevent fratricide and promote effective combat operations.

Keywords*: Combat vehicle identification, fratricide, human visual skill, recognition training platforms.*

Introduction

In modern warfare, the ability to identify combat vehicles is critical to prevent friendly fire and obtain accurate intelligence about enemy formations. Bangladesh Army has made significant strides in modernising its arsenal with advanced combat vehicles, such as tanks, armoured personnel carriers (APC), self-propelled artillery guns (SPG), multiple launch rocket systems (MLRS), reconnaissance and surveillance vehicles and others. However, despite this advancement, there is currently no institutional combat vehicle identification training for combatants in peacetime. This lack of training makes it difficult for soldiers, including junior officers, to identify their own combat vehicles, let alone those of their enemies. Currently, orientations are limited to specific arms, and soldiers do not have enough exposure to different combat vehicles. This limited exposure increases the risk of fratricide.

While some may argue that soldiers would receive few days orientation on their own and enemy combat vehicles just before the outbreak of hostilities, this is impractical and unfeasible. No professional armies resort to such training once they have the opportunity to conduct similar training in peacetime. Additionally, our main concern is, when an unfamiliar combat vehicle suddenly appears, a soldier must make a split-second decision to shoot or avoid a target in a fluid situation. In such scenario, if allied or own combat vehicles are accidentally targeted due to friendly fire, this can damage morale and cohesion. Furthermore, if a neutral vehicle, such as a UN or humanitarian vehicle, is unintentionally targeted, it could have catastrophic consequences on the international stage. The excuse of battle chaos and confusion would not be a sufficient explanation and would only expose our weaknesses, which our adversaries would fully exploit. Therefore, it is essential to provide combat vehicle identification training to avoid such scenarios.

This article aims to highlight the critical role of visual skills in combat vehicle identification training and provide a framework for developing effective methodologies. It explores the historical evidence of fratricide in combat and discusses the necessity and importance of combat vehicle identification training in preventing fratricide, obtaining accurate intelligence, and enhancing soldiers' target acquisition skills. The article also highlights the limitations of relying solely on modern technologies for combat vehicle identification and emphasises the importance of human visual skill in this task. The article then discusses combat vehicle identification training methods used by other armies and the current status of combat vehicle identification training in the Bangladesh Army, which is found to be lacking. The article identifies the factors affecting combat vehicle identification and their impact on training and proposes methodologies for combat vehicle identification training, including determining learning objectives, developing training materials, and evaluating soldiers' combat vehicle identification skills. Overall, the article emphasises the need for comprehensive information on vehicle recognition and realistic training scenarios to develop soldiers' skills in combat vehicle identification.

Historical Evidence of Fratricide in Combat

Fratricide is a tragic and unfortunate occurrence in military history, and combat vehicles such as tanks, IFVs, and APCs have not been immune to such incidents. The significance of combat vehicle identification training and proper communication protocols to prevent fratricide in military operations is evident from several incidents involving combat vehicles, as illustrated by the following examples:

Battle of Kursk (1943). Poor communication and inadequate identification procedures led to a Soviet T-34 tank firing on another Soviet tank during the Battle of Kursk, resulting in the death of the crew inside.[1]

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[1]   Mark Edele (2018, Jul 13). The Battle Of Kursk: 75 Years On. *Pursuit*. Retrieved from https://pursuit.unimelb.edu.au/articles/the-battle-of-kursk-75-years-on

First Lebanon War (1982).   In 1982, during the Israeli invasion into Lebanon, two Israeli tank battalions mistakenly engaged each other in the Baka Valley, resulting in the loss of six Israeli tanks and a significant number of crew members were killed or wounded. The cause of this incident was the failure to identify the tank as a friendly vehicle.[2]

Gulf War (1991).   In the air and ground war phases of Operation Desert Shield and Desert Storm, American forces caused 24% of US casualties (35 out of 148) and 15% of US injuries (72 out of 467) due to friendly fire. American forces accidentally destroyed almost 80% (27 out of 35) of the US M1 Abrams tanks and Bradley Infantry Fighting Vehicles (IFV) that were lost in combat.[3]

Afghanistan War (2001-2021).   In 2014, a US soldier mistakenly fired a missile at a friendly Afghan National Army (ANA) vehicle, resulting in the deaths of five ANA soldiers. The incident occurred due to confusion and miscommunication.[4]

Iraq War (2003-2011).   Inadequate identification procedures and poor communication led to a US A-10 Warthog aircraft mistakenly firing on British tanks during the Iraq War. The incident resulted in the death of one soldier and injury to several others.[5]

Importance of Combat Vehicle Identification Training

Preventing Fratricide.   Combat vehicle identification training is crucial to prevent fratricide, a major concern for tank crews due to their limited vision and quick engagement in uncertain conditions. Anti-tank crews, unconventional warfare forces (UWF), and small group operations (SGO) can also contribute to the risk of fratricide. The presence of close air support (CAS) further complicates the issue, as it increases the likelihood of mistaken identity between friendly and enemy forces.

Obtaining Correct Intelligence.   Our troops can obtain accurate intelligence about the enemy's formation and purpose by correctly identifying their combat vehicles. This information is critical in determining the enemy's location and the types of reconnaissance/surveillance vehicles, tanks, and artillery pieces they are using.

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[2] Major Charles R. Sherrill. (1985). Armored Vehicle Identification: The Key To Survival. *Global Security.* Retrieved from https://www.globalsecurity.org/military/library/report/1985/SCR.htm

[3] Briggs, Ralph W.; Goldberg, Joseph H. (1995, September 1). Battlefield Recognition of Armored Vehicles. *Human Factors: The Journal of the Human Factors and Ergonomics Society.* doi:10.1518/001872095779049381.

[4] Five Afghan soldiers killed in air strike by NATO-led force. *Reuters.* 06 Mar 2014. Retrieved from https://www.reuters.com/article/uk-afghanistan-strike-idUKBREA251I120140306

[5] Wounded British soldiers condemn US 'cowboy' pilot. *The Guardian.* 31 Mar 2003. Retrieved from https://www.theguardian.com/world/2003/mar/31/iraq5

Identification of Friend or Foe (IFF). Training on identification of friend or foe (IFF) is crucial to avoid fratricide and obtain accurate intelligence. Accurate reporting enhances our plans by identifying safe flight corridors, landing zones, restricted operating zones, and other key areas. At the tactical level, IFF training can help a straggler rejoin his/her own side.

Preventing Trigger Shyness. Proper combat vehicle identification training can prevent trigger shyness among troops, as soldiers who are not adequately trained may hesitate to shoot, leading to potentially dangerous situations in combat.

Acquisition of Target. Soldiers must possess the critical skill of acquiring a target, which enables them to identify combat vehicles that are camouflaged or difficult to see in limited visibility situations such as night missions. Additionally, this skill enhances reconnaissance missions by identifying other vehicle signatures, such as sound and track prints.

Enhancing Situational Awareness. Combat vehicle identification training can enhance soldiers' situational awareness, allowing them to better understand the battlefield and respond to threats quickly and effectively.

Adapting to Changing Situations. Soldiers can adapt to changing situations on the battlefield by properly identifying combat vehicles, including identifying enemy vehicles that have been modified or disguised to look like friendly vehicles.

Avoiding Civilian Casualties. Combat vehicle identification training can help soldiers avoid targeting civilian vehicles, which can cause civilian casualties and damage to infrastructure.

Modern Technologies for Combat Vehicle Identification

Achieving battlefield awareness relies heavily on combat vehicle identification, which has led modern armies to utilize various sensors, communications, computation systems, and state-of-the-art technologies in recent conflicts. Some examples of using current technologies in combat vehicle identification are as following:[6]

Passive Signaling Devices. The passive signaling system includes infrared paint and tape, identification panels, smoke markers, and other devices that allow friendly units to identify each other without taking any action or requiring a response.

Active Signaling Devices. Active signaling devices emit electromagnetic energy through various systems such as infrared beacons, chemical lights, etc.

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[6]C. S. Boyd *et al*.(2005), "Characterisation of Combat Identification Technologies," *TENCON 2005 - 2005 IEEE Region 10 Conference*, Melbourne, Qld., pp. 1-6. doi: 10.1109/TENCON.2005.301282

Interrogation/Response System.   Interrogation/response systems enable identification through 'the process of query and response'. These systems include various technologies such as Radio Frequency identification tags, Radar Beacons, Battlefield Target Identification Devices, Individual Combat Identification Devices, Optical Combat Identification Devices, Secondary Surveillance Radar Systems, Radio Based Combat Identification, and Automatic Dependent Surveillance-Broadcast.

Situational Awareness Systems.   The situational awareness system offers a digital operational picture of the combat force on a map. In the world, a few known situational awareness systems include Blue Force Tracking, Joint Blue Force Situational Awareness programme, and Battlefield Command Support System.

Emerging Technologies.   Modern armies are also attempting to integrate new technologies for combat identification, with Nanotechnology and Biomimetic being notable examples of such technologies.

Human Visual Skill as the Key to Combat Vehicle Identification

Relying solely on technology for combat vehicle identification is not feasible due to several issues. While technology offers benefits in other aspects of life, human visual skill remains the most reliable factor. Firstly, potential adversaries may have superior technology, and using automation could facilitate their detection and interception. Secondly, technology is susceptible to environmental constraints, such as extreme temperatures, fog, dust, and humidity. Thirdly, modern recognition technology requires power to operate, adding to the logistic burden of individual soldiers. Fourthly, the automated recognition system is likely to be inflexible to tactical commanders due to multiple incompatible platforms. Finally, automated recognition software is not entirely reliable in a complex and evolving battlefield due to technological glitches, as exemplified by the 1988 USS Vincennes incident.[7] Additionally, current systems can only sort out friend or foe, making it difficult to discriminate between threat and neutral entities, such as INGOs, UN, WFP, medical, media, and civilians.

Combat Vehicle Identification Training Methods Used by Other Armies: Emphasising Human Visual Skills

Combat vehicle identification has been recognised as a critical skill by other armies for over a decade. Despite having technological advantages, these armies have prioritised human visual

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[7]C. S. Boyd *et al*. Op Cit. (2005)

skills as the primary method for combat vehicle recognition training. Few of the notable training systems are:

     a.   '**Insight'** used by the British Army.

     b.   '**Recognition of Combat Vehicles (ROC-V)'** used by the US Army.

     c.   '**Combat Identification Training System (CITS)'** used by NATO.

Current Status of Combat Vehicle Identification Training in Bangladesh Army

Bangladesh Army lacks proper and effective training on combat vehicle identification, with a shortage of appropriate training aids and instructional materials. Recognition training is not prioritized in the training curriculum, and although some officers provide recognition training during armour-infantry cooperation cadres, it is insufficient. Additionally, soldiers have limited exposure to other arms and services' combat vehicles and equipment during training, with tank and anti-tank crews having only limited exposure to each other's equipment during winter training, cycle ending, and infantry-tank cooperation cadres. Overall, the current state of combat vehicle identification training in Bangladesh Army is limited.

Factors Affecting Combat Vehicle Identification and Their Impact on Training

Poor weather and visibility conditions, ever-changing tactics and strategies employed in warfare, the complexity and diversity of combat vehicles, and the presence of friendly or neutral vehicles in the battlefield are factors that significantly impact the effectiveness of combat vehicle identification training programmes. These factors can make it challenging for soldiers to accurately identify friendly and enemy combat vehicles, leading to deadly incidents such as fratricide. To address these challenges, soldiers must receive comprehensive and up-to-date information on vehicle recognition, and realistic training scenarios must be used to help them develop their skills.

Proposed Methodologies for Combat Vehicle Identification Training in Bangladesh Army

Bangladesh Army needs to pay minimum attention to the proposed combat vehicle identification training to prevent fratricide during combat, despite the difficulty of finding space for new training. Thus, we should develop a training programme for combat vehicle identification training by considering its necessities, current status, and challenges associated with it. The first step is to determine the learning objectives, which may include:

Table 1: Learning Objectives

Level	Objective	Task
Novice	Detect combat vehicles	Observe various factors such as shape, outline, silhouette, reflection, scale, shadows, spacing, movement, and changes in light to detect combat vehicles.
Experienced	Recognise broad class of combat vehicles	Recognize tanks, infantry fighting vehicles, armoured personnel carriers, self-propelled artillery guns, amphibious vehicles and other combat vehicles.
Veteran	Identify friendly and enemy combat vehicles	Accurately determine the enemy tank's type and weak points, and select the appropriate weapon and take positions for destruction while avoiding detection. Also, identify friendly combat vehicles to avoid friendly fire incidents

Source: Author's Own Construct

Once the learning objectives have been established, the next step is to develop a focused syllabus and training materials. The syllabus should concentrate on the combat vehicles found in the Bangladesh Army inventory and potential hostile combat vehicles. Training materials should include images and videos of combat vehicles, track signature, track model, engine sound databases, real and scale models. In the long run, as part of training aid, technology-based training may be used involving modern technologies such as virtual reality (VR) and augmented reality (AR). This approach exposes soldiers to different scenarios and enables them to identify combat vehicles in an immersive battlefield environment.

The last step is to evaluate soldiers' combat vehicle identification skills through various techniques, such as long/short range photos, obscured/camouflaged vehicles, track signature, engine sound tests, common vehicle identification, night skills, and virtual simulations.

Step-1: Determine the Learning Objectives

a. **Objective-1: Detect Combat Vehicles.** Detecting the presence of combat vehicles is the primary objective of this training, achieved by observing various factors such as the combat vehicle's shape and outline, silhouette, background, reflection, scale, shadows, spacing, movement, and changes in light. Details are enumerated below:

(1) **Shape and outline.** A combat vehicle's shape is distinct and recognisable, although it may be modified by external attachments. It also has sharp edges that can create a contrast against its surroundings.

(2)   **Silhouette.**   A combat vehicle will be readily visible if it is silhouetted against the skyline or lacks a vertical background.

(3)   **Reflection.**   All metal surfaces reflect light, and reflection from optical devices may be visible from a far distance. It should be borne in mind that the direction of the natural source of light is continually changing and that surfaces which reflect light vary according to this direction.

(4)   **Background.**   A combat vehicle must blend with the background. If otherwise, it will be revealed by the contrast in colours and tones.

(5)   **Scale.**   Combat vehicles can be easily detected when they are positioned near objects that are much larger or smaller than them in the same vicinity.

(6)   **Shadows.**   The shape of a combat vehicle can be revealed by its casting. If the hatches are open, it will cast shadows of a distinct shape.

(7)   **Spacing.**   Combat vehicles can be easily detected even if they are camouflaged or located in areas with poor visibility, as long as they are placed in a uniform manner.

(8)   **Change of Light.**   The effectiveness of camouflage for combat vehicles can vary throughout the day due to the constant changing position of the natural light source. What may be effective at one time of day could later become ineffective or even reveal the position of the vehicle.

(9)   **Movement.**   It is always challenging to camouflage combat vehicles when they are on the move since their movement typically generates a visible dust cloud (tell tale dust), making it easy to detect them.

b.   **Objective-2: Recognise Broad Class of Combat Vehicles.** The intermediate objective of this training is to enable soldiers to recognise the broad class of combat vehicles, including tanks, infantry fighting vehicles, armoured personnel carriers, self-propelled artillery guns, self-propelled anti-aircraft guns, and amphibious vehicles.

(1)   **Tank.**   A tank can be identified by their size, distinctive turret, tracks instead of wheels, heavy armament, thick armour, and engine exhaust located at the rear of the vehicle emitting smoke and noise. It's important to rely on multiple identifying factors to confirm that a vehicle is a tank, as some tanks may be disguised to look like other vehicles.

Figure1: Tank T-90
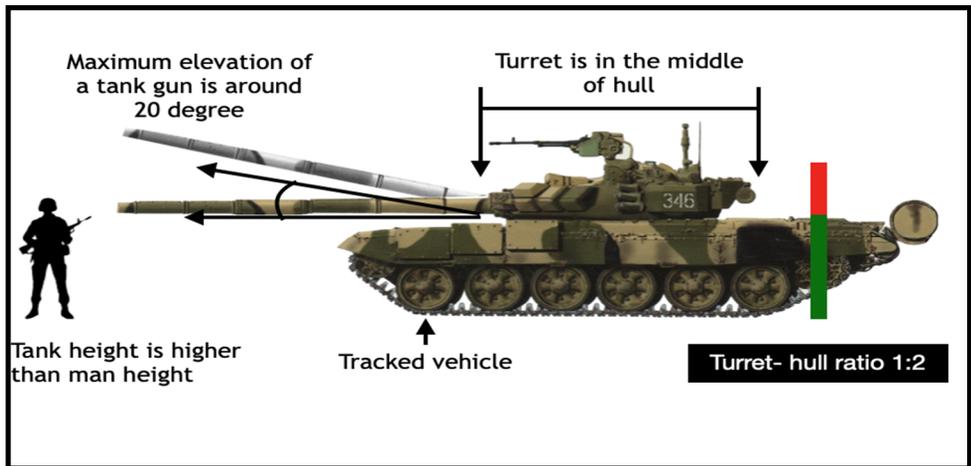
Source: Developed by Author

(2)   **Infantry Fighting Vehicles (IFV).**   An IFV can be identified by its turret, caterpillar tracks, heavy armor, small size compared to tanks but larger than armoured personnel carriers (APC), and diverse armament.
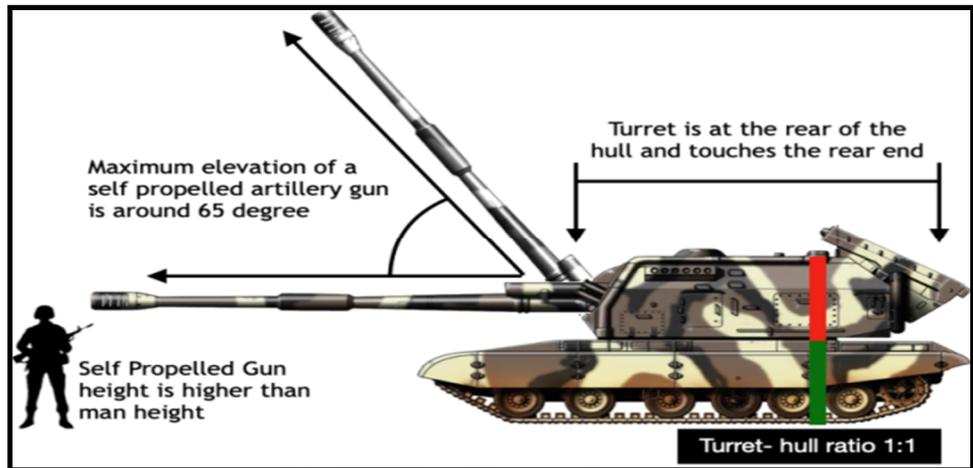
Figure 2: BMP-3 Infantry Fighting Vehicle

Source: Developed by Author

(3)   **Self Propelled Guns (SPG).**   An SPG can be identified by its large turret, long gun barrel, prominent muzzle brake, smaller crew compartment, ammunition storage in the hull, and larger tracks or wheels.
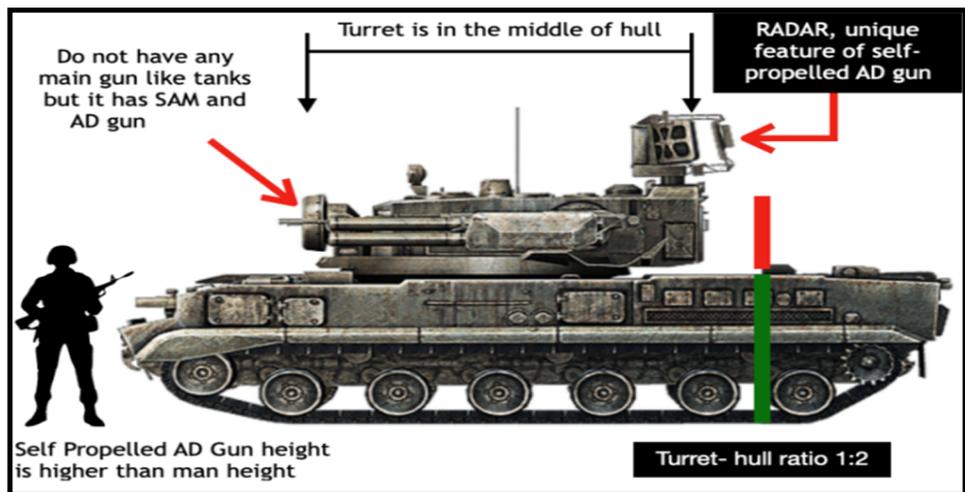
Figure 3. 2S19 MSTA- S Self Propelled Gun

Source: Developed by Author

(4)   **Self Propelled Anti Aircraft (SPAAG).** SPAAGs usually have multiple anti-aircraft guns, radar and sensors, and may be wheeled or tracked.

Figure 4. TUNGUSKA SAM SA-19 Self Propelled Anti Aircraft Gun

Source: Developed by Author

(5)   **Amphibious Vehicles.**   Recognising amphibious vehicles is important because they typically have a boat-shaped nose in their side view. These vehicles have thin armor to assist their amphibious capabilities, making them less protected and more susceptible to anti-tank mines and weapons. Additionally, their amphibious capabilities offer different mobility deductions over restricted terrain.

Figure 5. BMP-1 and BTR-80 Amphibious Vehicles
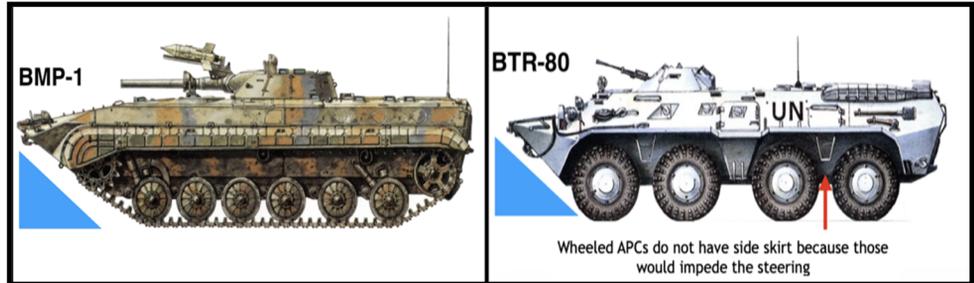
Source: Developed by Author

(6)   **Night Recognition through Muzzle Flash.**   During military operations at night, combat vehicle identification can be aided by their distinctive muzzle flashes. Tanks typically have larger muzzle flashes compared to IFVs and APCs, while SPGs have a different muzzle flash because of their muzzle brake. In contrast, SPAAGs are easier to detect due to their voluminous tracer fire directed at hostile aircraft. By recognising these differences, soldiers can quickly differentiate between different categories of combat vehicles in the battlefield.

Figure 6. Muzzle Flash of Various Combat Vehicles
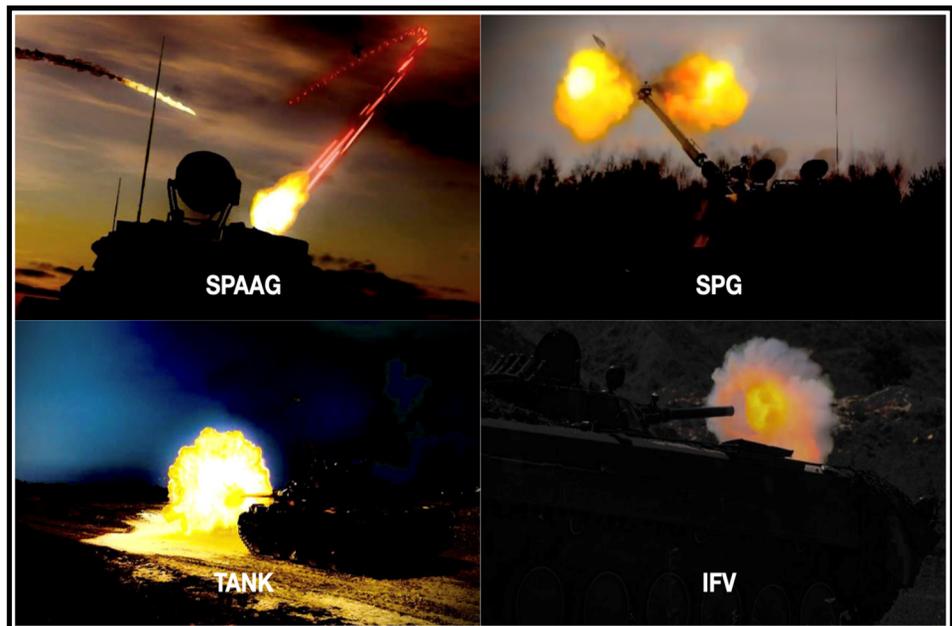
Source: Developed by Author

b.   **Objective-3: Identify Friendly and Enemy Combat Vehicles.**   Combat vehicle identification is crucial in destroying hostile combat vehicles because it allows soldiers to distinguish between friendly and enemy combat vehicles, which reduces the risk of fratricide. Proper identification also enables soldiers to determine the type of enemy combat vehicles, which is essential in selecting   the appropriate weapon to destroy it. For instance, different types of tanks have different armour thicknesses and weaknesses, so knowing the enemy tank's type can help soldiers choose the most effective weapon to destroy it. Moreover, if soldiers can accurately determine the enemy tank's weak points and optical sensors, they can take positions from where they can destroy it while avoiding detection. Few techniques are illustrated below:

(1)   **Tracks and Suspension Systems.**   Soldiers can identify different types of tanks by analysing the pattern of tracks and suspension systems, such as torsion bar or bogie wheels, flat or suspended track, road wheels pattern whether it is evenly spaced or gap in between.

Figure 7. Tracks and Suspension Systems
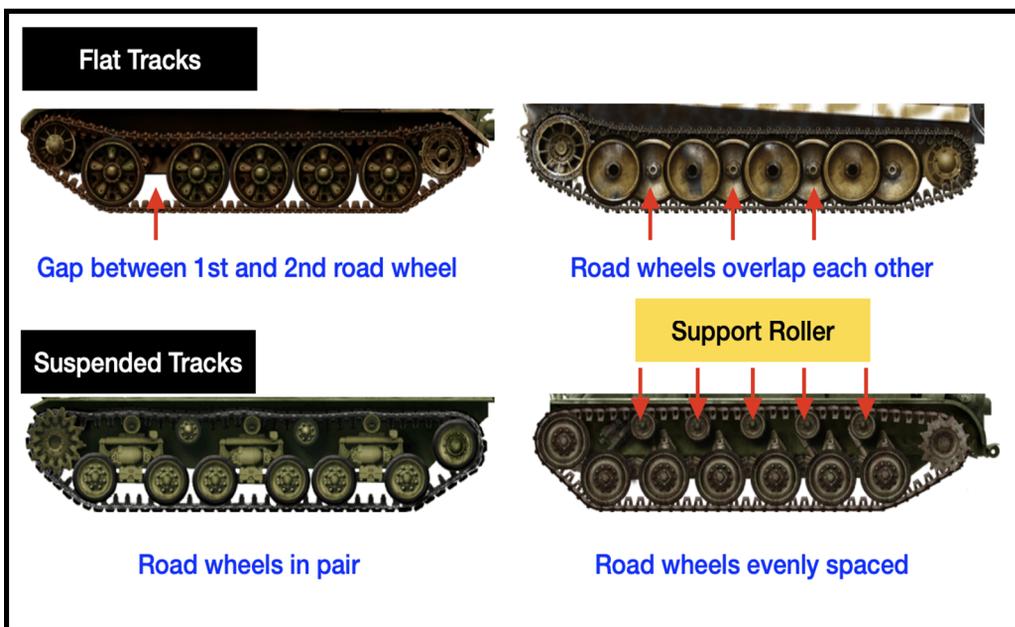
Source: Developed by Author

(2)   **Side Skirts Design and Number of Road Wheels.**   Identifying tanks in open terrain is relatively easy using certain visual cues. The number of road wheels and skirt design are easily distinguishable from longer distances, making them effective markers for tank identification.

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Figure 8. Skirt Design and Road Wheels
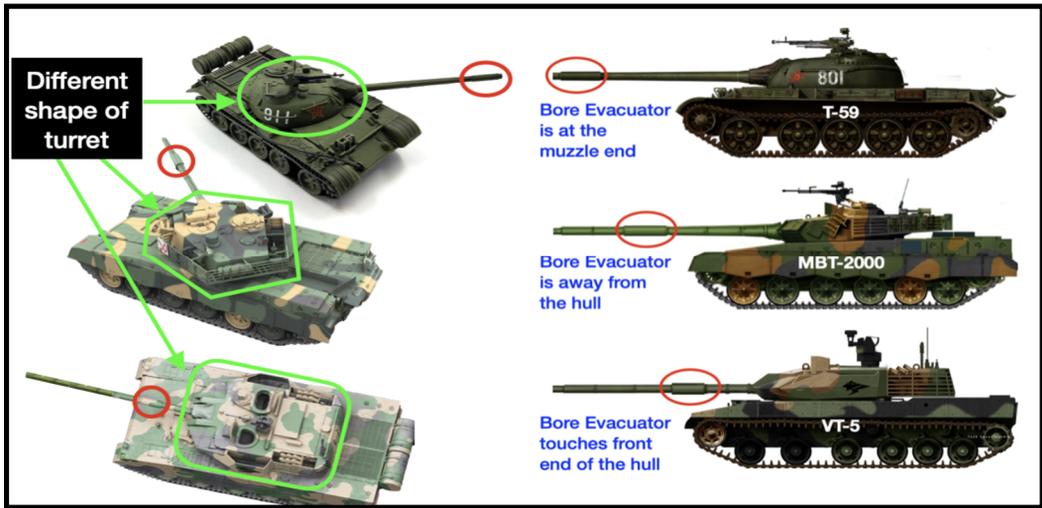
Source: Developed by Author

(3)   **Type of Turrets and Main Gun Features.**   Examining the turret can be a useful method to identify tanks since tanks often remain in hull-down positions with their turret exposed to observe and engage targets. Key features to observe include the location of the bore evacuator, which is a distinguishing feature of the main gun; and the shape of the turret, whether it is spherical, angled, conical, or squared.

Figure 9. Type of Turret and Location of Bore Evacuators

Source: Developed by Author

(4)   **Identify Similar Combat Vehicles.**   Identifying combat vehicles accurately can be extremely challenging and difficult, especially when vehicles are manufactured by the same companies and have similar appearances. Common theories and techniques may not always be reliable for identification. However, many countries make modifications to their vehicles to meet their own specific requirements and to differentiate them from those of other countries.

(5)   **Weak Points Identification.**   Last but not the least, the ultimate end of identification training is to find out the areas of vulnerability of any combat vehicles for engaging enemy target effectively, e.g. Ukrainians recently used motolov cocktail to suppress Russian tanks in Kiev. Volunteer civilians were taught vulnerable points of a tank through twitter[8] and asked to aim those areas to neutralize tanks.

Figure 10.   Technique of disabling tanks with Molotov Cocktail in Urban Warfare
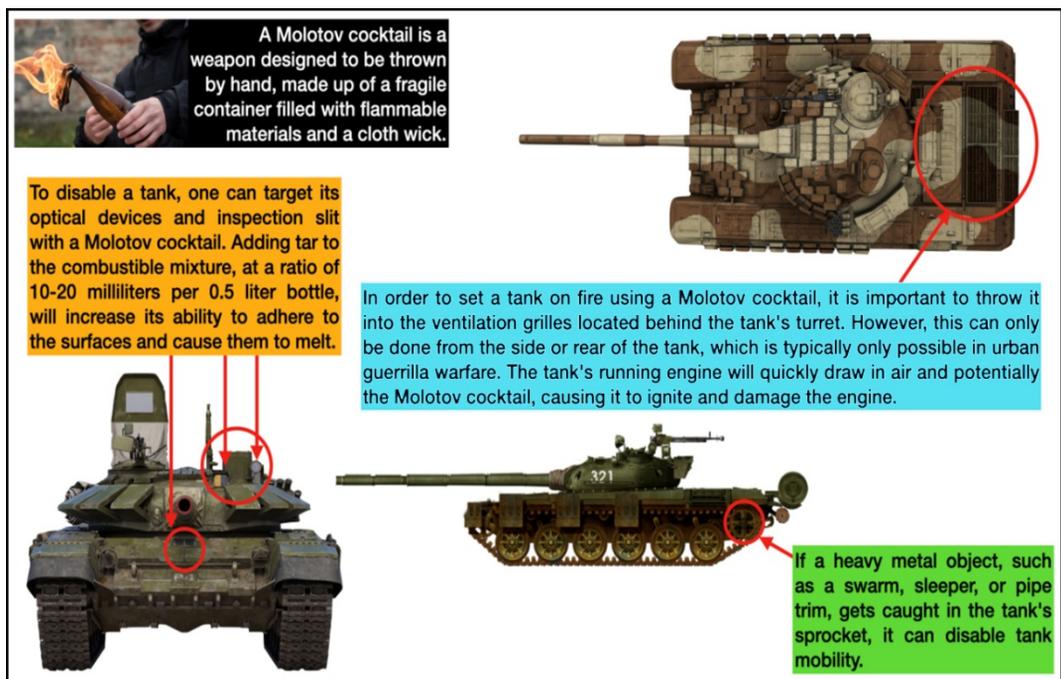
Source: Developed by Author

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[8] Retrieved from https://twitter.com/SpencerGuard/status/1497583325816385537

Step-2: Develop Training Materials

a.   **Pictorial Database of Combat Vehicles including Night Mode.**   To begin with, it is necessary to create a pictorial database comprising our own and enemy combat vehicles as well as neutral entities, e.g. vehicles of World Food Programme (WFP), Red Cross, INGO, etc. These pictures should depict various combat vehicles at different ranges, with an initial focus on short-range orientation. As soldiers gain experience, they can be introduced to long-range photos, including full frontal, broad, and oblique views, while being taught the fundamentals of recognition. Each photo should highlight key recognition features. Night vision **i**mage of combat vehicle has to be in the database as well. It is the most difficult part but repeated training and experience will lead to success.

Figure 11: BMP-2 with Key Recognition Feature[9] and Thermal view of Tank T-72[10]
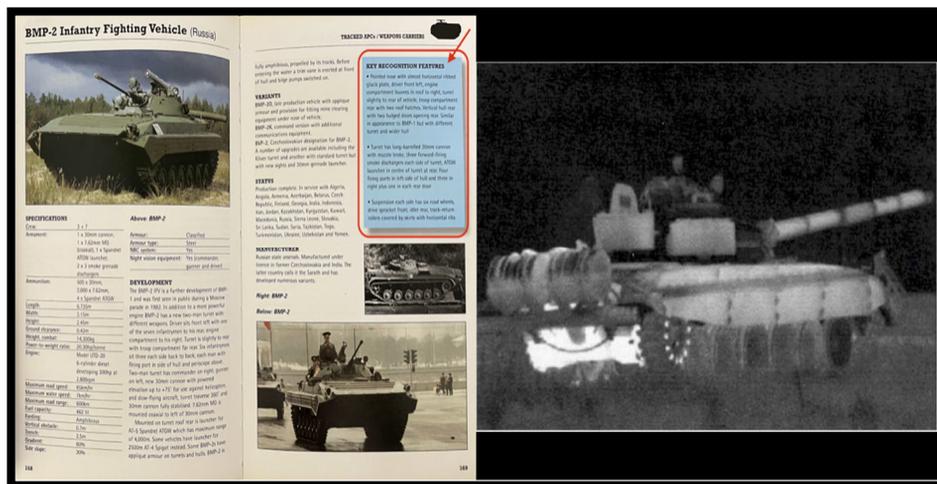
Source: Author's Own Collection

b.   **Engine Sound Database.**   For sound-based combat vehicle recognition training, an amplifier is needed to enhance the available engine sounds stored in a memory card. By repeatedly listening to different engine sounds at varying ranges, soldiers can become experts in identifying combat vehicles at night even without the aid of a night viewing device. In this regard anonymous British ex-8th Army tank driver said, *'In the desert, you didn't have to see a Panzer IV - its engine note was enough to identify it and then you got out quickly!!'*

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[9] Christopher F. Foss. (2006). Jane's Tank Recognition Guide (pp 168-169) . New York: Harper Collins Publishers.
[10] Source: https://sturgeonshouse.ipbhost.com/topic/1574-thermal-signature-of-afv/

c.   **Track Signature and Model Pictorial Database.**   Photograph of the combat vehicle's track signature and a physical track print model is necessary to provide identification training using track signatures. This training aims to teach soldiers to distinguish combat vehicles by examining their track prints on the ground. In the initial phase, soldiers should be taught to differentiate among tracks of different vehicles; such as engineer vehicles, tanks, APCs and wheel-based vehicles. Once this is mastered, experienced soldiers can progress to identifying the track signature of specific vehicle categories, e.g. track signature of T-59 or VT-5 tanks. This training will enable an independent tank-hunting party to locate a tank/APC hide and carry out the mission.

Figure 12: Track signature of different tanks

Source: Developed by Author

d.   **Video Clips of Combat Vehicles.**   Trainee soldiers can gain a more comprehensive understanding of moving targets by using films and video clips, while also being able to view real-time combat situations.

e.   **Real Models and Scale Models.**   It is important for soldiers to be familiar with the combat vehicles available within their formation. Training institutions may also display the available combat vehicles of each arms and services, using real models to enable troops to correctly identify their own vehicles. Additionally, efforts can be made to create realistic models of hostile combat vehicles by skilled craftsmen and artists, which can aid our troops in better identifying and assimilating hostile targets. However, considering the cost, effort and space; scale models of own and enemy combat vehicle may be prepared and displayed.

Figure 13. Actual and Scale Model of Tank T-69 IIG

Source: Developed by Author

f.   **Modern Technologies.**   Modern technologies such as augmented reality (AR) and virtual reality (VR) can be used to enhance combat vehicle identification training. Some ways to use these technologies are discussed below:

    (1)   **AR Training.**   Soldiers can use AR to view virtual vehicles overlaid onto the real world, allowing them to practice identifying vehicles in a realistic environment.

    (2)   **VR Simulation.**   Soldiers can be immersed in a virtual battlefield simulation using VR, where they can practice identifying vehicles and distinguishing between friendly and enemy forces.

    (3)   **Interactive Learning.**   Soldiers can use interactive modules to learn about the different types of vehicles used in the battlefield, their distinguishing features, and how to identify them. These modules can include 3D models and animations to help soldiers better understand vehicle identification.

    (4)   **Scenario-Based Training.**   Soldiers can be exposed to different scenarios in a virtual environment, such as identifying vehicles at different times of day or in various weather conditions. This can help soldiers to develop their skills in a more realistic setting.

    (5)   **Team Training.**   Soldiers can use AR and VR to train as a team, allowing them to practice communication and coordination skills while identifying vehicles in a simulated environment.

Step-3: Evaluating Soldiers' Combat Vehicle Identification Skills

    a.   **Indoor Exercises.**   Soldiers can be tested on their ability to identify different combat vehicles in a controlled setting. This can include using scale models and track models of vehicles, projection of camouflaged, obscured and partial view of combat vehicles, audio testing of various engines and thermal vision flashcards for night identification.

b.   **Simulations.**   Soldiers can be evaluated on their ability to identify vehicles in a virtual simulation, where they can practice identifying vehicles in a more realistic environment. The simulation can be designed to replicate the battlefield, including different weather conditions and times of day, to challenge soldiers' identification skills.

c.   **Field Exercises.**   Soldiers can be evaluated on their ability to identify vehicles in a field exercise, where they can use binoculars and other equipment to identify vehicles in a real-world setting. The exercise can be designed to replicate the conditions of the battlefield, including the presence of track prints, other vehicles and personnel through actual models.

Conclusion

Combat vehicle identification is an essential aspect of military operations. Its importance lies in the fact that poor identification of combat vehicles can result in devastating outcomes, including friendly fire incidents, loss of life and equipment, and collateral damage. Several military operations throughout history serve as examples of how poor communication and inadequate identification procedures can result in tragedy. Therefore, it is critical for modern armies to prioritize and continually improve combat vehicle identification training to ensure the safety and success of military operations.

Bangladesh Army currently lacks proper and effective training on combat vehicle identification, with a shortage of appropriate training aids and instructional materials. Poor weather and visibility conditions, ever-changing tactics and strategies employed in warfare, the complexity and diversity of combat vehicles, and the presence of friendly or neutral vehicles in the battlefield are factors that significantly impact the effectiveness of combat vehicle identification training programmes. To address these challenges, a comprehensive and up-to-date training programme for combat vehicle identification is needed in Bangladesh Army.

In the long run, technology-based training may be used to enhance the effectiveness of combat vehicle identification training programmes. Virtual reality (VR) and augmented reality (AR) technologies can expose soldiers to different scenarios and enable them to identify combat vehicles in an immersive battlefield environment. Such technologies can also simulate different weather and visibility conditions, as well as the presence of friendly or neutral vehicles on the battlefield.

Last but not the least, combat vehicle identification is a critical aspect of military operations. Bangladesh Army, like other modern armies, must prioritize combat vehicle identification training to ensure the safety and success of military operations. A comprehensive and up-to-date training programme, focusing on both human visual skill and technology-based training, is necessary to address the challenges faced by the Bangladesh Army. Continuous training and collaboration with other friendly armies can also enhance the effectiveness of combat vehicle identification training programmes. Ultimately, effective combat vehicle identification training can

help soldiers carry out their missions effectively while minimising the risk of friendly fire incidents and collateral damage.

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TURKIYE-SYRIA'S EARTHQUAKE: A WAKE-UP CALL FOR BANGLADESH

Lieutenant Colonel Md Faizul Kabir, psc, Engineers

"We learn from every natural disaster. Whether it's a fire or a flood, we learn something from it, so we can respond to the next one better."

—Malcolm Turnbull

Abstract

Disasters teach us life lessons, such as the devastating 7.8-magnitude earthquake and aftershocks in Turkiye and Syria. The Turkiye-Syria earthquake was one of the worst natural tragedies in recent times. The most important details from the Turkiye-Syria earthquake are that the devastation was underestimated. Turkiye has improved its emergency response and catastrophe management since 1999 but has shown major shortcomings in contingency planning, coordination, and emergency resource use. Turkiye's military and intelligence complex had advanced technology and resources available to respond to the earthquakes, but they were underutilized. The Disaster and Emergency Management Team is supposed to prepare the nation for disasters and mobilize resources to respond. The Turkiye-Syria earthquake showed the importance of professional emergency response, which requires agency coordination, and regular training. Bangladesh is also at risk of moderate to major earthquakes and tsunamis. Based on the earthquake zone map from 1993, 26% of Bangladesh is at high risk for earthquakes, 38% is at intermediate risk, and 36% is at low risk. Effective response plans should be examined to avoid mismanagement of crisis resources. Risk assessments are essential for assessing high-risk regions and taking precautions. Preparation is essential for disaster management, including military and civil society participation. Sustainable development requires reducing the socio-economic repercussions of all environmental disasters. The government of Bangladesh has put various strategies and programmes for managing disasters into action. However, the earthquake that strike Turkiye and Syria highlights the need for thorough disaster preparation as well as approaches that are successful in responding to natural disasters.

Keywords: Natural disaster, Turkiye-Syria earthquake, disaster management, vulnerability, contingency plan.

Introduction

Worldwide over one million earthquakes occur annually, or two per minute. Urban earthquakes are among the worst natural disasters. An M7 earthquake releases 32 Hiroshima atomic bombs. Millions of people died since 1970 in Armenia, Ecuador, Guatemala, China, Haiti, India, Iran, Indonesia, Mexico, Japan, Pakistan, Turkiye, and Peru.[1] On 6 February 2023, an Earthquake

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[1] https://www.paho.org/en/health-emergencies/earthquakes

of 7.8 magnitude and aftershocks devastated Northwest Syria and Southeast Turkiye. The 280-mile-long, 180-mile-wide earthquake was tremendous. Scientists suggest the Arabian plate migrated northward and pushed on the Anatolian plate, causing this devastating earthquake. This earthquake is among the deadliest in modern history.[2]

The 17 August 1999 earthquake, one of Turkiye's most devastating natural disasters, profoundly reshaped the nation's perspective on catastrophic events. Turkiye had limited search-and-rescue and humanitarian aid expertise, and communication technology was crude. Turkiye has improved its emergency response and catastrophe management since then. Numerous buildings have been built to earthquake-resistant building codes. The government established a national disaster management agency to coordinate emergency responses. Despite this, the number of poorly constructed structures that are susceptible to earthquakes has increased since socio-economic conditions and the ability for affordable housing have both worsened. However, the Disaster and Emergency Management Team, which is supposed to prepare the nation for disasters and mobilize resources to respond, has shown major shortcomings in contingency planning, coordination, and emergency resource use.[3]

Bangladesh is extremely susceptible to climate change impacts and natural disasters.[4] Approximately 80% population is vulnerable to droughts, earthquakes and floods, while 70% population is vulnerable to cyclones.[5] BD is at risk of moderate to major earthquakes and tsunamis. Recently a shallow M4.3 earthquake rocked Bangladesh on 05 May 2023 early Friday morning (5:57 a.m.), 23 kilometers (14.292 miles) southwest of Dhaka. Bangladesh has been free from significant earthquakes for more than a century, with the last major one being the 8.1 magnitude Great Indian Earthquake in 1897.[6] Local experts say Dhaka is vulnerable to Madhupur Fault tremors due to rapid urbanization, population density, and high-rise construction. Sustainable development requires reducing the socio-economic repercussions of all environmental disasters. Realizing this, Bangladesh has implemented many disaster management plans and programmes. The Turkiye and Syria earthquake shows the need for rigorous disaster preparedness and effective response methods to mitigate natural disasters.

Facts and Effects of Turkiye-Syria Earthquakes

On February 6, 2023, at 4:17 a.m. (Turkey Time), a powerful 7.8 magnitude earthquake rocked both Turkiye and Syria. The epicenter was situated approximately 23 miles west-northwest

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[2] https://en.prothomalo.com/opinion/editorial/lvk7ns4qi4

[3] https://www.cbgabd.org/2023/03/09/earthquakes-in-syria-and-turkey-lessons-for-the-world

[4] https://reliefweb.int/report/world/world-risk-report-2017

[5] https://reliefweb.int/report/bangladesh/bangladesh-disaster-risk-and-climate-resilience-programme

[6] https://www.thedailystar.net/opinion/news/tremors-sylhet-might-hint-bigger-earthquakes-2107261

of Gaziantep.[7] In the vicinity of the epicenter and in Antakya, the earthquake registered a maximum Mercalli intensity of XII, which is categorized as 'Extreme'. Later, at 13:24, another earthquake of magnitude 7.7 struck the region, with its epicenter located 95 kilometers (59 miles) to the north-northeast of the initial quake. The aftermath was characterized by extensive damage and the tragic loss of ten thousands of lives.

Figure-1: The locations of the Main Earthquakes during Turkey-Syria Earthquakes 2023
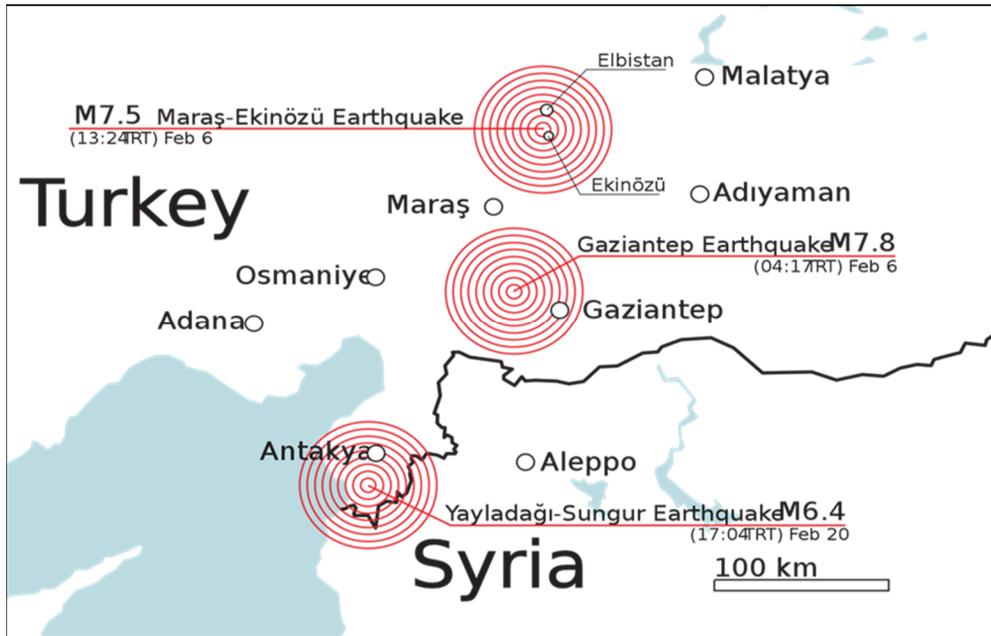
Source: Author's Collection

Turkiye bore a heavy burden in the wake of the earthquake, with a tragic loss of 50,783 lives, 297 people still missing, and 107,204 individuals suffering injuries. The catastrophe reverberated across the nation, affecting a staggering 15.73 million residents, and causing damage to 4 million buildings, of which 345,000 were completely demolished. Cities like Mersin, Antalya, Mardin, Nigde, and Konya demonstrated immense solidarity by providing shelter to over 2 million residents displaced from the afflicted provinces. The earthquake also dealt a significant blow to Turkiye's agriculture sector, with a sharp 20% decline in production. The United Nations reported widespread devastation to agriculture, animals, fisheries, aquaculture, and rural infrastructure. Furthermore, the earthquake left its mark on education, with 516 university buildings damaged, including 106 that suffered severe structural impairment.

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[7] "M 7.8 - Kahramanmaras Earthquake Sequence", National Earthquake Information Center, United States Geological Survey.

Figure-2: The Destruction in Kahramanmaras City Centre, Southern Turkiye

Source: Author's Collection

Figure-3: Cracks on Road

Source: Author's Collection

Syria faced a grim toll, with 8,476 fatalities and 14,500 injuries. Among the victims were 2,153 children and 1,524 women. In government-controlled areas, notably in Aleppo and Latakia, there were 2,248 reported deaths and 2,950 injuries attributed to the earthquake. In regions held by rebel forces, the impact was even more severe, resulting in 4,547 deaths and 2,200 injuries. Tragically, the Syrian Observatory for Human Rights noted that some individuals passed away in hospitals, while others were buried before official registration. This earthquake marked the most significant seismic event ever recorded by Syria's National Earthquake Centre.

Figure-4: Damages in Syria

Source: Author's Collection

Disaster Management in Turkiye-Syria Earthquake

Figure-5: Turkiye - Syria Earthquake - 2023

Source: Author's Collection

Just after the earthquake, Disaster Management Teams were sent to the affected places and citizens were advised not to occupy damaged buildings. President proclaimed a three-month emergency in the 10 affected regions on 7 February and sent 25,000 rescuers. The administration requested foreign aid with a level four alert.

Seventeen countries supplied search and rescue assistance. Turkish rescue workers looked for survivors beneath crumbled buildings. Approximately 8,000 individuals were evacuated from the debris. Relief shelters and motels housed 380,000 people. Rescuers and victims were troubled by snow, rain, and frigid temperatures. Searchers had to wear winter gear. The damaged road severely hampered aid delivery.

Turkiye has a Disaster and Emergency Management Directorate (AFAD) because of its long history of seismic activity. The authority predicted a 7.5-magnitude earthquake in Pazarcik three years before the 7.7-magnitude tremor. In 2019, the organization drilled in expectation of adjacent city assistance. But they didn't anticipate the tremors to hit at least 10 cities that were supposed to offer assistance and hundreds of square kilometers worth of towns.

Figure-6: Searches for Survivor in Turkiye

Source: Author's Collection

President Bashar al-Assad convened an urgent cabinet conference to plan a rescue operation. Aleppo, Hama, and Latakia governates were the most hit. President ordered all organizations including civil defense, health, etc. related to disaster management to the afflicted governates. He stated that medical, food, and shelter were desperately needed. President al-Assad directed the Ministry of Internal Trade and Consumer Protection to distribute food and supply teams. Technical personnel inspected buildings and evacuated occupants. The Ministry of Water Resources assessed dam, reservoir, and water station damage quickly and ensured water access.

Over 2,000 White Helmets volunteers searched and rescued in all affected areas. They requested to humanitarian organizations for vehicles, equipment, and tools. After 15 hours, Hama's rescue and recovery efforts concluded. In government-held territories, 180 shelters housed 298,000 homeless people. Aleppo shelters housed 30,000. Despite official requests, no international rescuers had reached rebel-held Jinderis by 10 February. Many hospitals overflowed with casualties, including trauma cases. Medical supplies were scarce before the earthquake. Many hospitals were overcrowded. International humanitarian aid entered northwestern Syria on 9 February.

Figure-7: Destruction in Aleppo, Syria, and Search-Rescue Operation

Source: Author's Collection

Earthquake relief has come from several nations. 105 nations and 16 international organizations offered humanitarian relief to earthquake victims. Over eleven countries donated money and search and rescue dogs to find victims under the debris.

Disaster Management Challenges in Turkiye-Syria Earthquake

Delayed Activation of the Rapid Response Team

Turkiye's earthquakes showed major reaction failures, resulting in massive deaths.[8] The first two and a half days saw few professional rescue crews or equipment. Several residents tried to contact rescue teams in the hours after the disaster but failed. During the earthquake, few people were able to escape buildings and wait for emergency response teams to rescue relatives who were still alive beneath the rubble.[9]

Lack of Flexibility in Planning

Turkiye's present presidential governance model operates with a high degree of centralization, a characteristic often seen as advantageous for enhancing efficiency in decision-making and emergency response. However, in the wake of the recent earthquake, local

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[8] Turkey-Syria Earthquake 2023, BBC News, World, Europe.

[9] https://time.com/6255634/earthquake-turkey-syria-erdogan-rescue/

organizations and authorities struggled to react promptly, exacerbating the damage and suffering.[10] This has raised significant concerns about the appropriateness of such a centralized model, as it may not provide the necessary flexibility and agility required in the face of unforeseen challenges.

Absence of a Contingency Plan

The aftermath of the recent earthquake in Turkiye has brought to light a significant shortcoming in the disaster management system – the lack of comprehensive contingency plans.[11] This deficiency has had far-reaching consequences, and its implications are multifaceted. Firstly, the failure to allocate a substantial role to the military in disaster response is a critical oversight. Secondly, the absence of encouragement and facilitation of civil society participation is another crucial aspect of this failure.[12] Furthermore, having clear and well-practiced contingency plans is not only essential for immediate response but also for long-term resilience. The earthquake showed a lack of preparation on the part of the disaster management authority. They did not involve the military or civil society. Such preparations could have mitigated earthquake damage if they had been prepared properly.

Deficit in Coordination

Another major challenge after the Turkish earthquakes was coordination. Despite anticipated earthquake activity, the authority failed to coordinate, leaving various ground organizations confused about who would lead. Many survivors reported that the state failed to coordinate, causing fatal delays.

Inadequate Use of Resources

Turkiye's military and intelligence complex has advanced technology, including drones and surveillance equipment, ready for earthquakes. However, when the earthquake crisis struck, these valuable resources did not see their full potential realized due to suboptimal utilization.[13] This underutilization during the critical hours of the crisis has raised questions about the effectiveness of the response and the need for improved coordination and deployment strategies in future disaster scenarios.

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[10] https://www.forbes.com/sites/guneyyildiz/2023/02/21/three-things-that-went-wrong-in-turkeys-earthquake-response/

[11] https://time.com/6255634/earthquake-turkey-syria-erdogan-rescue/

[12] https://foreignpolicy.com/2023/02/24/turkey-earthquake-erdogan-military-tsk-diaster-response-reform-coup/

[13] https://www.middleeasteye.net/news/turkey-earthquake-inside-military-response

Limited Access to Social Media

People used social media to share their locations in the moments following the earthquake with the hopes that help would arrive soon. Rescue and relief activities were hampered by GSM operators' inability to provide dependable internet and communication.

Unprecedented challenges

Following the earthquake, the first day presented difficulties, including blocked highways and individuals fleeing in their vehicles. Winter conditions exacerbated the situation. Resources were deployed without a full assessment.[14] Responding to numerous cities proved tougher than recent earthquake responses. Local authorities, emergency personnel, and their families also became victims of the earthquake.

Infrastructure Mismanagement

Turkey has experienced earthquakes for decades due to its location between two tectonic plates, but this disaster is the deadliest since 1999. Turkiye implemented an earthquake fee and tightened construction regulations for earthquake readiness after the earthquake. According to experts, many newer and older structures were not up to code.

Earthquake Vulnerability in Bangladesh

Bangladesh is prone to earthquakes. Earthquakes are more common in the north and east. The Indian and Eurasian plates are near Bangladesh. Two-thirds of the country is under significant and moderate earthquake faults.[15] These fault zones caused some of the worst earthquakes in history. The 1993 zoning map of the earthquake shows that 26% of the land is high-risk, 38% intermediate, and 36% low-risk.[16]

Bangladesh has had many earthquakes. A massive earthquake submerged 150 square kilometers of Dhaka, then a small town, in 1762, killing 500 people. Seven more major earthquakes occurred between 1850 and 1950, ranging from 7.0 to 8.7 on the Richter scale. Bangladesh has evolved since the last major earthquake. Dhaka has over 15 million people. Several years ago, a 7.5M earthquake in Dhaka was predicted to affect over 120,000 people. Unfortunately, earthquakes frequently change seismic risk politics by showing buildings' acute vulnerability.[17]

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[14] https://www.middleeasteye.net/opinion/turkey-earthquake-recovery-years-world-must-help

[15] https://thefinancialexpress.com.bd/views/reviews/living-under-the-threat-of-earthquake

[16] Rahman, Mohammad Mahbubur and Harun-Or-Rashid, Mohammad, "Analysis of Social Vulnerability to Earthquake Hazards in Dhaka South City, Bangladesh Using a Modified PAR Model".

[17] https://m.theindependentbd.com/arcprint/details/31364/2016-01-24

Figure-8: Map of Bangladesh Earthquake Zones and Magnitude Scale
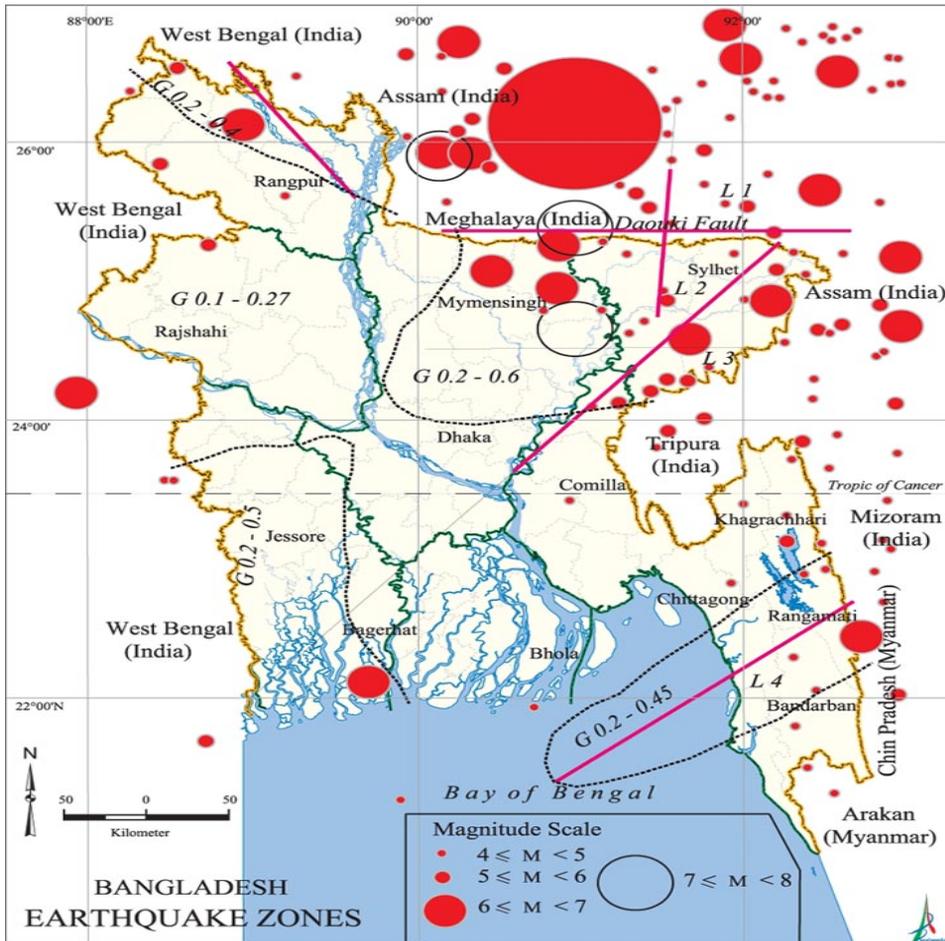
Source: Author's Collection

Dhaka is among 20 earthquake-prone cities.[18] The country's proximity to the active Himalayan front in the north and Burma's deformation front in the east makes it vulnerable to intense shaking from several sources of earthquakes which can generate tremors of magnitude 8 or higher.[19] Bangladesh is at high-risk due to nearby epicenters.

It also relies on seismic risk. More earthquakes mean more harm. Then there's the enormous population density. Urban planning is poor, shelter is scarce, and hospitals are underequipped. All these factors increase risk.

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[18] "Dhaka among 20 cities vulnerable to quakes", the daily star news.

[19] https://businesspostbd.com/opinion/the-looming-threat-of-earthquake-in-bangladesh-38257

Bangladesh has had over 100 moderate to major earthquakes since 1900 and 65 of which occurred after 1960. This shows a 30-year increase in earthquakes.[20] This earthquake activity indicates new tectonic activity or crack propagation from nearby seismic zones. Bangladeshi youth haven't experienced a major earthquake. Thus, the population has become complacent about earthquake risk.

Recently a shallow M4.3 earthquake struck Bangladesh, 23 kilometers (14.292 miles) southwest of Dhaka early in the morning (5:57 a.m.) of Friday, 5 May 2023. The earthquake's epicenter was only 10 kilometers deep. In general, shallow earthquakes have a bigger impact than deep earthquakes. Bangladesh and India are located within 300 km of the epicenter of this earthquake. The earthquake occurred 14 kilometers (8.699 miles) east-southeast of Dohar, the nearest significant place from the epicenter. Major cities near this earthquake are Dhaka, Chattogram and Kolkata.[21]

Figure-9: Seismic Zoning of Bangladesh and Risk
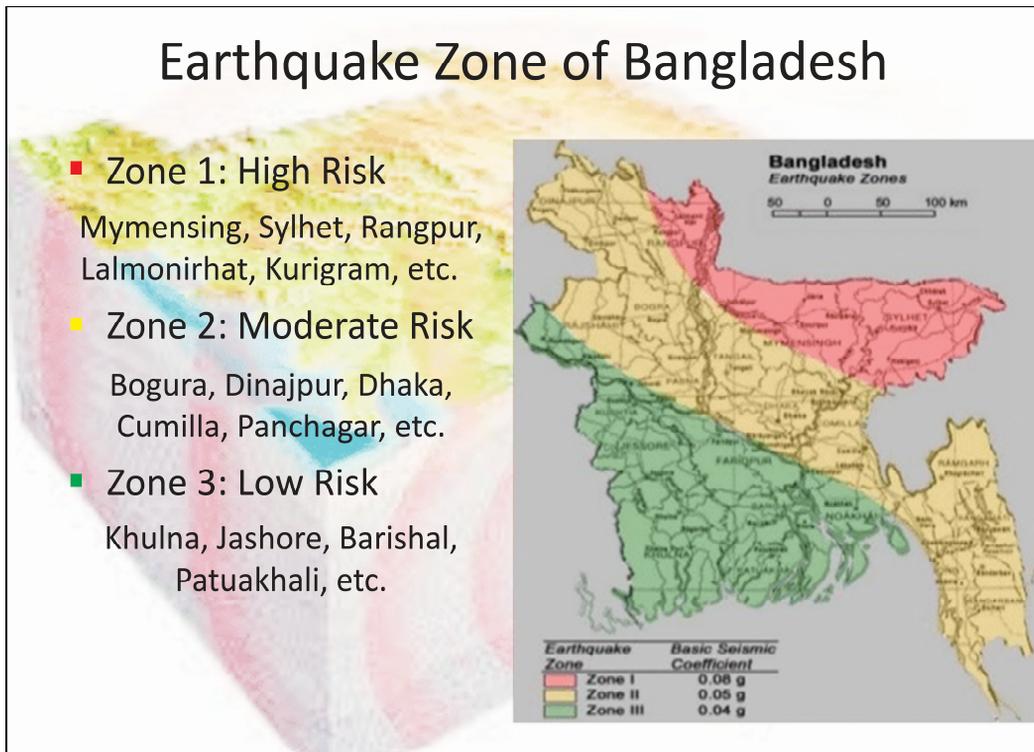
Source: Wikimedia, 2015

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[20] https://bangladeshpost.net/posts/bangladesh-earthquake-history-70632
[21] https://earthquakelist.org/news/2023/05/05/m4-3-earthquake-bangladesh-775914/

In Figure-9, three scenarios were created to assess infrastructure, buildings, transportation, and casualties. The earthquake magnitude determines the least, moderate, and worst possibilities. National Earthquake Contingency Plan evaluates Dhaka, Sylhet, and Chittagong risk scenarios.[22]

According to the "National Earthquake Contingency Plan," Disaster Management Bureau will lead first responder organizations for effective response management, coordination, and preparation in partnership with other stakeholder agencies. The Armed Force Division leads catastrophe response. AFD and FSCD will search and rescue casualties. Paramilitary, police, and community first responders will aid FSCD and AFD S professionals.

Lessons from the Turkiye-Syria Earthquake

Conducting Risk Assessments

The Turkey-Syria earthquake serves as a stark reminder of the need to fully appreciate the potential devastation that earthquakes can bring and take proactive measures to mitigate their impact. Seismic hazard maps play a critical role in this process by providing essential information for understanding earthquake risks and disaster response and recovery planning. A comprehensive risk assessment for earthquake preparedness involves a multidisciplinary approach that considers geological, structural, social, and economic factors. It aims to identify vulnerabilities, estimate potential impacts, and develop proactive strategies for minimizing the damage and ensuring an effective response in the event of an earthquake. A comprehensive risk assessment entails:

a.   Seismic Hazard Maps are essential for identifying high-risk areas prone to earthquakes.

b.   A thorough risk assessment involves evaluating the vulnerability of buildings, bridges, roads, and other critical infrastructure to earthquake damage.

c.   Assessing the resilience of healthcare facilities, emergency response centers, and essential services like water and power supply is crucial.

d.   Understanding the potential economic impact of an earthquake is essential for planning recovery efforts.

e.   Risk assessments should include predictions of potential casualties.

f.   Identifying secondary hazards, such as landslides, tsunamis, or fires triggered by an earthquake, is vital.

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[22] GoB, "National Earthquake Contingency Plan", Disaster Management Bureau and Ministry of Food and Disaster Management.

g.   Earthquakes often result in significant debris, which can hinder rescue and recovery efforts. Assessing the potential volume and location of debris is essential for planning cleanup and debris removal operations.

h.   Identifying open spaces and safe areas where affected populations can seek shelter is crucial. Additionally, planning evacuation routes and procedures are vital to ensure residents' safety.

j.   In the aftermath of a major earthquake, there is often a surge in injuries. Therefore, risk assessments must include plans for setting up temporary hospitals and ensuring the availability of medical supplies and personnel.

k.   Effective disaster response relies on efficient logistics. This involves planning how to distribute essential resources like food, water, clothing, and medical supplies to affected areas. Identifying distribution points and transportation routes is crucial.

l.   Engaging with local communities is essential to raise awareness about earthquake risks, evacuation procedures, and the importance of preparedness. Education campaigns can save lives.

m.   A comprehensive risk assessment should culminate in the development of detailed response and recovery plans.

n.   Risk assessments should not be static. They should be regularly updated to account for population, infrastructure, and geological knowledge changes.

Developing Emergency Response Plans

Developing an effective emergency response plan for earthquake preparedness involves several key steps:

a.   Understanding Emergency Response Plans.

b.   Brainstorming Risks, Hazards, and Threats.

c.   Evaluating Resources.

d.   Forming Disaster-Management Teams.

e.   Planning a Successful Search and Rescue.

f.   Making an Emergency Communications Plan.

g.   Distributing Disaster-Related Duties.

h.   Teaching Emergency Reactions.

j.   Testing and Improving the Emergency Response Plan.

k.   Reviewing and Update Lessons.

These steps provide a structured approach to developing and maintaining an emergency response plan for earthquakes, ensuring a coordinated and effective response to protect lives and property.

Preparedness

The Turkiye-Syria earthquake emphasized the critical importance of preparedness in disaster management. It exposed shortcomings in emergency plans, particularly in terms of military and civil society participation, which could have mitigated the damage. To address these weaknesses and improve preparedness, the following steps can be taken:

a.   Conduct regular drills and exercises that simulate earthquake scenarios to test the readiness and capabilities of SAR teams and emergency responders.

b.   Invest in ongoing training and skill development for SAR team members, focusing on the latest techniques and equipment operation.

c.   Maintain an up-to-date and functional search and rescue equipment and medical supplies inventory.

d.   Establish clear protocols and communication channels for cooperation among different agencies and organizations involved in disaster response.

e.   Develop comprehensive international support coordination plans to facilitate the effective deployment of foreign assistance teams during disasters.

f.   Promote public awareness and education on earthquake preparedness to ensure that communities are informed and can take immediate actions when necessary.

Improving preparedness based on the weaknesses will enhance the overall response and recovery efforts in the event of an earthquake or any other disaster, ultimately saving lives and minimizing damage.

Emergency Response Mechanisms

The Turkiye-Syria earthquake showed the importance of professional emergency response. Only the military could successfully respond to massive disasters in Turkiye, and absence during the most important first hours and days of the earthquake reaction showed that a key role had not been given. This shows that emergency response requires agency coordination and regular

training and drills to prepare responders for seismic events. Communication networks, rescue teams, and medical supplies are needed.

Effective Response

An effective response requires a multi-faceted approach that emphasizes collaboration, transparency, preparedness, and ongoing improvement. Governments, along with their partners and communities, must work together to prioritize the well-being of citizens during times of crisis. Achieving an effective response to crises like earthquakes involves:

a. **Transparency**: Share timely information openly.

b. **Coordination**: Coordinate efforts among agencies and organizations.

c. **Community Engagement**: Involve local communities in readiness.

d. **Early Warnings**: Invest in warning systems.

e. **Training**: Regularly train responders.

f. **Resource Management**: Allocate resources wisely.

g. **Global Collaboration**: Collaborate with international partners.

h. **Legal Framework**: Ensure supportive laws and policies.

j. **Continuous Improvement**: Learn from each crisis and improve.

k. **Technology**: Use tech for real-time data.

l. **Psychosocial Support**: Address mental health needs.

m. **Leadership and Accountability**: Ensure leaders are committed and accountable.

n. **Community Resilience**: Build long-term resilience programmes.

Enforcing Building Codes

Enforcing earthquake-resistant construction codes and building codes should be applied to new construction. Design, sketching, and plan approval should be done carefully here. The building owner should approve the plan fairly. Construction engineers should follow building codes when building infrastructure. Stakeholders must regularly inspect buildings to identify defects and take corrective action. Based on conditions, vulnerable buildings should be identified and either removed or retrofitted. Building codes and enforcement are essential for earthquake resistance. The following actions can increase earthquake resistance, building safety, and impact:

    a.   Updating seismic building codes. Building codes should consider soil and seismic dangers.

    b.   Existing buildings' seismic susceptibility.

    c.   Planning retrofits.

    d.   It may involve enough resources, training, and inspections.

    e.   Innovating earthquake-resistant building design and construction.

    f.   Penalizing noncompliance.

Retrofitting Old Buildings

Retrofitting involves updating older systems with new technologies. Retrofitting adds new features. Retrofitting enhances the earthquake resistance of existing structures. Retrofitting entailed demolishing structural concrete slabs and staircases, repairing the surface of pre-stressed concrete girders, and constructing new girders. Seismic-damaged properties need retrofitting. Earthquake-resistant retrofitting protects your home. Retrofitting stabilizes and earthquake-proofs buildings. Building owners need education.

Land Use Planning to Manage High-Risk Areas

Incorporating land-use planning into disaster risk management is essential for saving lives and reducing disaster impacts. This collaborative effort involving government authorities, planners, engineers, and communities necessitates a proactive approach to mitigate risks, reduce damage, and foster sustainable development in disaster-prone areas. Despite its complexity and long-term nature, addressing land-use issues is crucial. Timely commitment, quick action, and the involvement of all stakeholders are vital, supported by incentives like tax breaks or grants. Establishing robust monitoring and evaluation systems and conducting public awareness campaigns further solidify effective land-use planning, ultimately enhancing disaster risk management and minimizing disaster impacts.

Early Warning System

Early warning systems reduce earthquake deaths and damage. Bangladesh may make investments in seismic monitoring systems that identify earthquakes and send out prompt warnings, as well as in training and education initiatives that instruct people on how to react to alerts and stay safe during earthquakes. Warnings to affected areas require good communication infrastructure. International collaboration on regional early warning systems and data exchange improves earthquake preparedness.

Public Awareness and Education

To increase public awareness and to educate them a variety of communication platforms, including traditional media (TV, radio, newspapers), digital media (websites, social media), and community-based communication (local meetings, events) may be utilized. Informative and engaging materials such as pamphlets, brochures, videos, and interactive websites may be developed to disseminate earthquake preparedness information. Training may be imparted to community leaders, teachers, and local volunteers on earthquake response and first aid. Building owners to be encouraged to retrofit existing structures to make them earthquake-resistant. Continuously evaluate the effectiveness of awareness and education programmes. Incorporating earthquake preparedness into the fabric of society requires a sustained effort, commitment from both government and non-governmental stakeholders, and ongoing community engagement. It's essential to make earthquake preparedness a priority and ensure that the knowledge and resources provided are accessible and understandable to all segments of the population.

Global Collaboration

International collaboration and solidarity during crisis were also underlined by the Turkiye-Syria earthquake. Countries supported Turkiye and Syria despite information censorship, showing the usefulness of international disaster relief. International cooperation can raise awareness of the tragedy and motivate others to help beyond immediate aid. International collaboration can give the resources and skills to respond to a tragedy of this magnitude and coordinate relief efforts, minimizing duplication and waste.

Preparations for Seismic Zone Residents

Seismic zone residents can take critical steps to enhance their earthquake preparedness. Retrofitting buildings, especially reinforcing brittle concrete and brick structures, can significantly reduce earthquake fatalities. Additionally, securing heavy, unanchored furniture items like bookshelves and cabinets is crucial to prevent them from becoming dangerous projectiles during tremors. It's also essential to be self-sufficient for up to 72 hours, with emergency kits containing water, food, and first aid supplies. Creating a household earthquake emergency plan that outlines where to go, whom to contact, and how to assist injured or trapped individuals is vital. For large businesses with substantial assets, considering earthquake insurance is wise. Staying informed about earthquake activity and local risks, and promptly following earthquake warnings and evacuation orders, further strengthens preparedness.

Conclusion

The Turkiye-Syria earthquake underscores the vital lessons of natural disasters, revealing areas where disaster management needs improvement. Despite progress since the 1999 earthquake in Turkiye, shortcomings in planning, coordination, and resource utilization persist. The presence of advanced resources highlights the importance of professional emergency response but also emphasizes the need for better agency coordination and ongoing training.

Bangladesh, prone to earthquakes and tsunamis, must prioritize risk assessments, response plans, and proactive measures. The key lesson is the necessity of comprehensive disaster preparedness and response. Evaluating the current disaster plan, training, and preparedness is essential. Ensuring the readiness of search and rescue teams, adherence to building codes, retrofitting vulnerable structures, and assessing public awareness are vital steps. By learning from the past and evaluating the present, government can better protect communities and ensure resilience in the face of nature's unpredictability.

Recommendations

a.   The Ministry of Disaster Management and Relief (MoDMR) may regularly update disaster preparedness and response plans based on lessons learned from real-world events.

b.   The Armed Forces Division (AFD) in coordination with the Ministry of Disaster Management and Relief (MoDMR) may arrange large-scale drills and exercises with the participation of all stakeholders to evaluate the present status of readiness and enhance the overall response and recovery efforts in the event of an earthquake or any other disaster.

c.   The Armed Forces Division should prepare several highly capable Search and Rescue (SAR) and Medical Teams, enabling them to respond effectively to diverse disaster scenarios globally while gaining valuable experience.

d.   The Public Works Department (PWD), Rajdhani Unnayan Kartripakkha (RAJUK), and City Corporations may strictly enforce building codes to ensure that new constructions are earthquake-resistant and prioritize retrofitting of existing vulnerable structures in high-risk areas.

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ARTICULATION OF DEFEAT MECHANISM: VOIDS IN THE EXISTING LITERATURES AND WAYS FORWARD

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Abstract

Defeat Mechanism is considered as the cornerstone of any campaign plan or operational order. There are two stages in development of Defeat Mechanism: conceptualization and articulation. In order to ensure systematic conceptualization, it is good to have a procedural construct to facilitate sequential and progressive thinking. But, existing literatures on Defeat Mechanism offer no such construct. Analysis of existing literatures also revealed that those mostly focus on listing different methods of defeating enemy without giving any hint on the factors to be considered to select the appropriate ones for the situation in question. This article proposed a procedural construct to facilitate the process of conceptualization of Defeat Mechanism. It has also proposed few factors; in-depth analysis of those will assist in selecting appropriate methods. A well-conceived Defeat Mechanism will be implementable only if it is articulated in an appropriate way so that the under commands can understand how the enemy will be gradually defeated and what is his/her role in the process. Existing literatures offer no specific model/guidance which the commanders can use as a reference while articulating own Defeat Mechanism. The article suggested four ways for articulation of Defeat Mechanism. These will assist the commanders at both operational and tactical levels to develop diagrammatic representation of their Defeat Mechanism.

Keywords: Conceptualization, articulation, existing literatures, procedural construct, Defeat Mechanism, operational and tactical levels.

Introduction

War had been an integral part of human civilization and remained as the ultimate instrument to establish supremacy, gain access to natural resources or to enforce a political/religious ideology. War as an option to resolve an issue is apparently unwanted in human society but not avoided. Many emperors went for war just to establish credibility to own people which resulted death of thousands of innocent soldiers. The same is happening even today but may be in a different form. Looking at the peace loving nature of human being, sometimes it appears that world will not face any more war. But, ongoing events around the globe clearly manifest that people will create issues and reasons to wage war as it benefits numerous patrons even at the cost of many innocent lives. War is a tool that nation uses to achieve its objectives; therefore, it has always been considered to have a measure of rational utility (Gabriel, 2021). As such, whether people want it or not, war will continue to remain as an instrument to create and resolve issues.

Leadership engages the nations in conventional war with the aim of winning which is only possible through defeating the opponent. The crux of war planning, therefore, lies in identification of appropriate Defeat Mechanism which is an abstract notion intended to illustrate the particular combination of forces and effects that renders an enemy force incapable of fighting (Douglas, 2000). Defeat Mechanisms are strategies for achieving victory over an opponent (Heeringa, 2000). As such, it is very important for any military commander to have an in-depth understanding of the concept. In Bangladesh (BD) Army, Defeat Mechanism is considered as the most vital part of the Concept of Operations (C of O) of any plan/order. But, the existing publications of BD Army have very insignificant discussion on the issue. As such, commanders often find it difficult to develop and articulate appropriate Defeat Mechanism. Foreign literatures offer different versions of discussions on Defeat Mechanism. But, those contents also have voids which demand attention.

There are two aspects related to Defeat Mechanism; conceptualization and articulation. Both are equally important. Commanders need to conceptualize appropriate Defeat Mechanism in light of existing operational environment. Thereafter, it has to be articulated in a way so that the under command components get a clear idea on their expected role. Existing literatures lack adequate discussion on these two aspects and focus mostly on the methods which are the precursors for conceptualization of Defeat Mechanism. Knowledge on methods is not the only requirement for conceptualization of Defeat Mechanism; commanders also need to be aware of a procedural construct and factors affecting selection of appropriate methods. Articulation of Defeat Mechanism is an art, but it is facilitated if the literatures offer a procedural construct. In light of the above discussions, the paper will initially present highlights of existing literatures on Defeat Mechanism. Thereafter, an endeavour will be taken to identify the voids in the existing literatures. Finally, the paper will provide a holistic view on articulation of Defeat Mechanism which will include a procedural construct that may be followed by the commanders and staff to conceptualize Defeat Mechanism. Articulation of Defeat Mechanism may vary to some extent at different levels. However, discussions in this paper is developed keeping this aspect into consideration and efforts are taken to address the issue from the perspective of both operational and tactical levels.

Existing Literatures on Defeat Mechanism

Due to very obvious reasons discussion on Defeat Mechanism endured as one of the focus areas of intellectual discourses within military community. Though, few basics of warfare remained unchanged since ancient era, its intricacies and dimensions have undergone intensive changes (Lawrence, 2017). In the battlefield, the commanders need to deal with both 'capabilities' and 'will' of the opposing forces. Since 'capability' and 'will' reinforce each other, the commanders need to attack both aspects of the opposing forces (Tooke, 2000). There are a lot of scholarly articles on the ways to attack 'capabilities' and 'will' of the enemy; however, most of them refer to the countries with expeditionary forces who are trained to fight offensive operations outside their country. As such, caution is required while consulting those literatures.

Methods of Defeat Mechanism

There are many scholarly articles which elaborately discuss various methods to defeat enemy. New methods/terminologies were added to the list to keep conformity with introduction of new weapons and equipment. Changes in the concept of warfare also raised requirements to rethink on the concept of defeat. For example; terminologies applicable to trench warfare may not be appropriate for the concept of Decision Centric Warfare, Systems Warfare, Hybrid Warfare etc. Accordingly, as of now, the list delineating the methods to defeat enemy has become quite long. The methods are diverse in nature and cover options for defeating all three components of fighting power: physical, morale and conceptual. Summary of the methods are shown in Figure 1 and short description of few widely adopted methods are given in subsequent paragraphs:

a. **Destruction**. It is application of lethal combat power on an enemy capability to make it incapable of performing desired role (Jack, 2012). Significant numbers of critical capabilities need to be destroyed to force the enemy to conceive defeat. Effective application of this method demands superiority in firepower and Intelligence, Surveillance and Reconnaissance (ISR) capability.

b. **Disintegration**. Disruption of enemy's command and control system to cause a rapid collapse of its 'capabilities' or 'will' to fight is the aim of disintegration (Wass de Czege, 1984). It is difficult to achieve; however, continued isolation, destruction, and dislocation may result disintegration (Jack, 2012).

c. **Dislocation**. It aims to achieve noteworthy positional advantage to render enemy's dispositions less valued or even irrelevant (Leonhard, 1991). It is a product of manoeuvre, and offers positional and temporal advantage.

d. **Disruption**. A direct attack on the enemy's Center of Gravity (CG) is referred as disruption (Strategic Assessment Centre, 1995). Apparently, it may appear as a simple and effective method; however, enemy will take all necessary measures to protect its CG and therefore, it might turn into a direct fight against the "surface".

e. **Isolation**. Focus of isolation is to deny enemy's or adversary's access to capabilities which offers freedom of action, positional advantage etc. Defeating a force that is devoid of critical support or reinforcement should be a relatively easy option.

f. **Attrition**. Enemy can be defeated through attrition of its forces and assets. Percentage of attrition should be sufficient to result combat ineffectiveness of enemy forces as a whole (Heering, 2000).

g.   **Cyber Shock**.   It aims to inflict shock through manipulation of enemy's information process to deny the enemy to see opposition or reality as it exists (Schneider, 1995). It can create a blackout effect paralyzing enemy's decision making cycle.

h.   **Preemption**. It is acting before enemy to deny them the opportunity to execute their preferred Course of Action (Gabriel, 2021). Superiority in ISR capability is required to have reliable and updated picture regarding enemy's mobilization scheme, logistics preparation, training and movement.

Facets Addressed in Regards to a Particular Method of Defeat Mechanism

Analysis of available literatures indicates that discussions on a particular method of Defeat Mechanism mostly address four facets as shown in Figure 2. The Figure also shows few examples in regards to each facet. Discussions on each method of Defeat Mechanism available in different literatures are impressively comprehensive. The proponents and supporters of different methods have deliberately discussed respective methods (Figure 1) covering the facets shown in Figure 2.
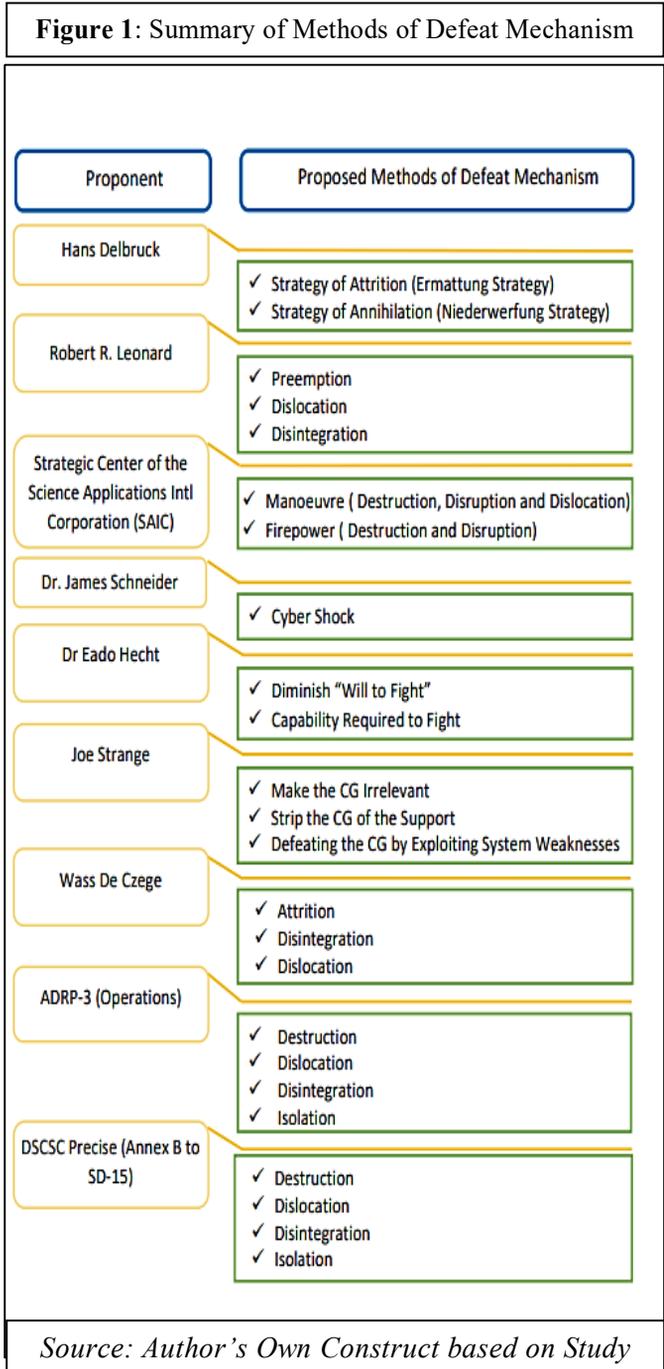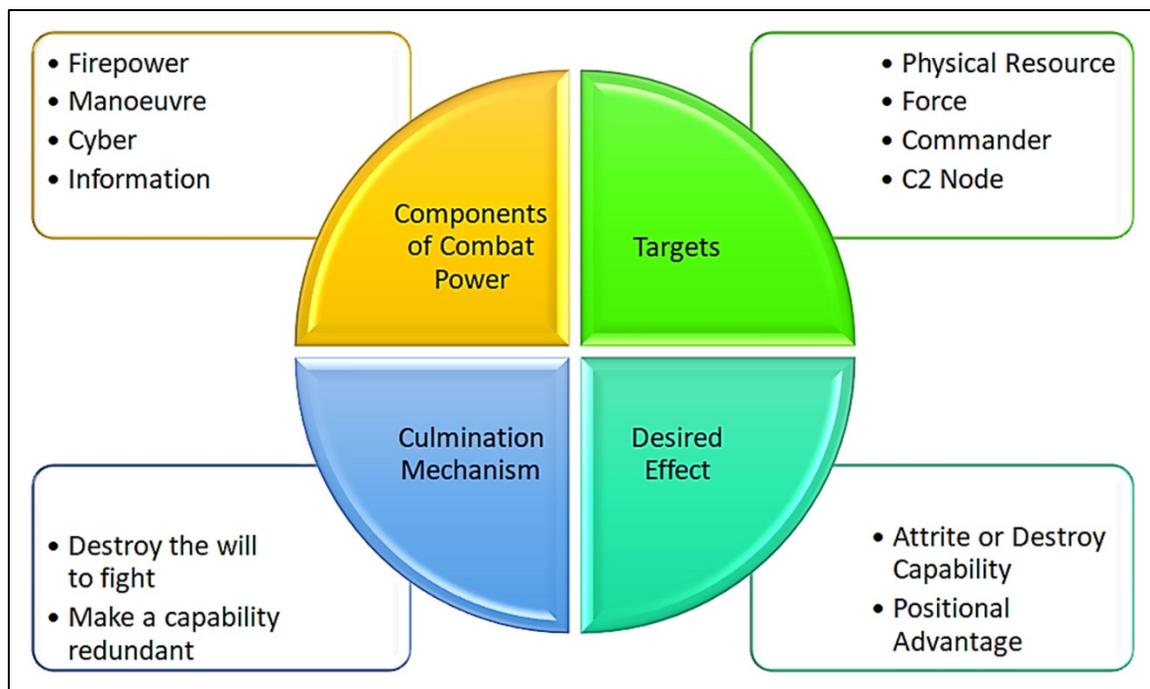
Figure 1: Summary of Methods of Defeat Mechanism

Source: Author's Own Construct based on Study

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Figure 2: Facets Addressed in Discussions on any Particular Method of Defeat Mechanism

Source: Author's Own Construct

Voids in Existing Literatures

Being the cornerstone of the planning process of any campaign/major operations, Defeat Mechanism received a lot of attention from military scholars. However, detailed analysis of the contents of existing literatures revealed few voids which are discussed in the subsequent paragraphs.

Procedural Construct for Conceptualization. Procedural construct helps in systematic and sequential thinking while completing any process. However, with the experience and repeated practice, the procedural construct gets embedded in the cognitive domain and the procedure becomes a part of the thinking process. But, that does not negate the importance of having a procedural construct for developing any concept. Existing literatures do not offer any procedural construct to guide the thought process for visualization or conceptualization of Defeat Mechanism. Commanders and staffs find themselves into a quagmire as soon as they are tasked to propose/articulate Defeat Mechanism since it becomes difficult to even identify the "starting point" to initiate the process.

Factors Affecting Selection of Methods. Existing literatures discuss different methods elaborately but ignore the significance of factors that may influence the adoption of appropriate

methods. Accordingly, the literatures do not contain any discussion on the factors that could be taken into cognizance to select methods of Defeat Mechanism appropriate for a particular force. It is important to have a deliberate understanding on the factors that influence selection of methods since same Defeat Mechanism will not fit to all situations. Therefore, few factors need to be identified that may guide the thought process of the commanders and staffs while going through the process of selecting appropriate methods for defeating enemy.

Connectivity with Different Levels of Warfare. Different methods of Defeat Mechanism are discussed without explaining their difference in applicability to different levels of war. For example, ways and means for 'isolation' will not be same for strategic and tactical levels. Same is true for all methods of Defeat Mechanism. Articulation of Defeat Mechanism will also vary between different levels. Campaign Plan is developed through identification of enemy's CG followed by its neutralization through achieving different Decisive Conditions (DC). As such, at strategic and operational levels the Defeat Mechanism may be articulated explaining how the CG will be neutralized through DCs. But, at division level, the Operational Order is based on the 'tasks' given in Supporting Campaign Plan which were derived from desired 'effects' at different DCs. So, divisional Operational Order rarely mentions about DC and CG. Therefore, at division level the Defeat Mechanism may directly focus towards the forces poised against its Area of Operations. So, there should be differences in articulation of Defeat Mechanism between different levels of warfare. Existing literatures do not clearly address this issue.

Connectivity with Campaign Planning Tools. Discussions on methods of Defeat Mechanism in existing literatures are done in isolation without mentioning their connectivity/relevance with campaign planning tools. During campaign planning, desired 'effects' for each DC are identified. Discussion on methods of Defeat Mechanism needs to highlight appropriateness/applicability of these methods for achieving different 'effects'. This would help the commanders and staff in identifying appropriate methods to achieve the desired 'effects' to defeat the enemy.

Measure of Effectiveness (MOE) and Measure of Performance (MOP). Progress in achieving desired "effects" needs to be monitored to bring required modifications/changes in the Defeat Mechanism, if necessary. In order to do so, it is important to develop appropriate MOEs and MOPs to monitor progress in achieving desired "effects" through application of different methods of Defeat Mechanism. But, existing literatures on Defeat Mechanism do not include discussion on MOE and MOP for different methods of Defeat Mechanism. MOE and MOP will vary for different methods; as such, a comprehensive list for each method needs to be developed. However, preparation of such a list demands a separate research. Therefore, in the subsequent part of this article an endeavour will be taken to give examples of only few MOEs and MOPs leaving the preparation of a comprehensive list as a scope for future research.

Inadequate Contents in Publications of BD Army.   In addition to above voids, literatures of BD Army even lack required content on this issue. General Service Training Pamphlets (GSTP) of BD Army do not contain deliberate discussion on Defeat Mechanism. Though, discussions on few methods of Defeat Mechanism are included in the precis of Defence Services Command and Staff College (Figure 1), it lacks contextual richness. It only highlights the theoretical explanation of a few methods in general which are not tailored to Bangladesh perspective. Deliberate discussions covering the facets shown in Figure 2 are also not included in any GSTP of BD Army. Therefore, officers find themselves in a very difficult situation during any operational assignment or course when articulation of Defeat Mechanism becomes a necessity.

Conceptualization and Articulation of Defeat Mechanism: Ways Forward

At this stage, an endeavour will be taken to enrich the literatures on Defeat Mechanism in order to remove the voids discussed in the preceding paragraphs. The discussions are focused more on diagrammatic representation to facilitate quick assimilation instead of textual elaboration.

## Procedural Construct for Conceptualization of Defeat Mechanism

Conceptualization of Defeat Mechanism may follow a procedural construct. Figure 3 and Figure 4 show two suggested constructs which may be followed while developing Defeat Mechanism. Figure 3 may be followed while developing Defeat Mechanism for Campaign Plan and Supporting Campaign Plan. Figure 4 is intended to be followed at Division/Brigade level while developing Defeat Mechanism for their respective Operational Order. The process has five steps and it begins with identification and analysis of appropriate factors affecting selection of methods of Defeat Mechanism; relevant factors are discussed in the next paragraph. This analysis will assist in selecting the methods (Step 2) appropriate for the forces in question. These two steps are common for both the constructs (Figure 3 and Figure 4). In Step 3, for Campaign Plan, the selected methods will be connected to DCs for achieving desired effects or to vulnerabilities of CG. However, in case of division/brigade level operational order appropriate places have to be identified where these methods will be executed/adopted to defeat the enemy. Next step (Step 4) deals with identification of desired effects at those DCs/places and selection of appropriate MOPs/MOEs. Finally, appropriate resources are to be assigned to achieve the effects identified in Step 4. The procedure is not intended to create a separate entity, rather it will progress as an integral part of the campaign planning/Course of Action (COA) development process; may be in the cognitive domain. The steps are also named accordingly. It is expected that the thought process of commanders and staff will automatically be guided following these steps after having gone through the whole process number of times. In order to complete this procedural construct, two facets are required which are not adequately discussed in the existing literatures: factors affecting determination of methods (Step 1) and relevant MOEs/MOPs (Step 4). These two facets are elaborated in the following paragraphs:

Figure 3: Procedural Construct: Development of Defeat Mechanism with CG and DC
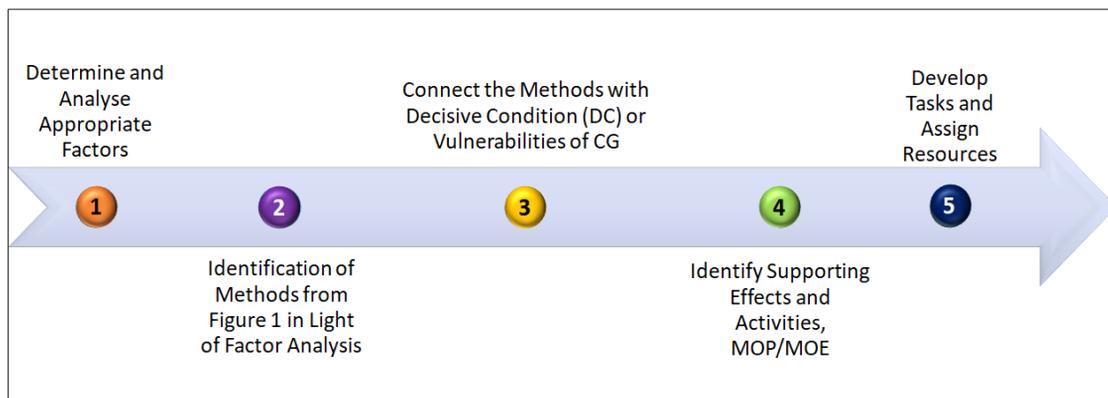
Source: Author's Own Construct

Figure 4: Procedural Construct: Development of Defeat Mechanism without CG and DC
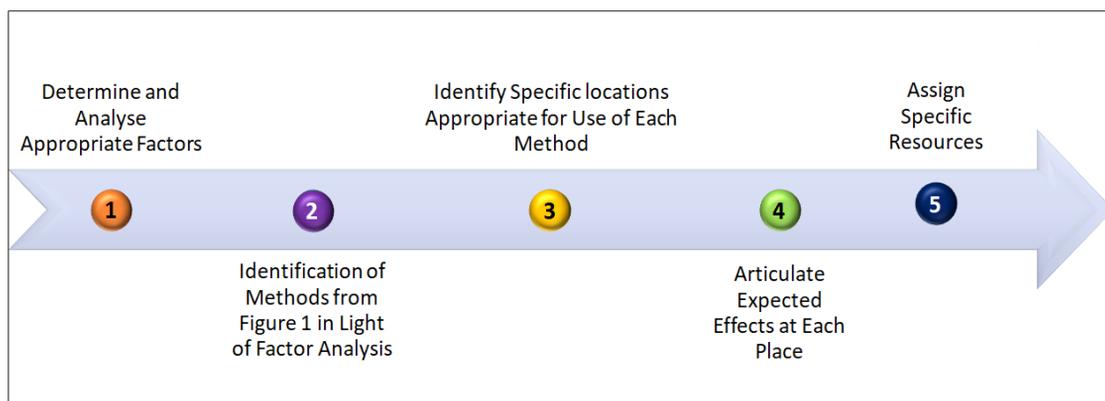
Source: Author's Own Construct

a.   **Factors Affecting Selection of Appropriate Methods of Defeat Mechanism**. War is premeditated reciprocal violence between rival groups fought simultaneously on two planes: psychological and physical where rival "wills" and "capabilities" are confronted respectively (Hecht, 2014). These two dimensions are connected since decline in "*will*" reduces effectiveness of "*capabilities*" and when "*capabilities*" are low it tends to reduce the "*will*" to fight (Hecht, 2014). Relative importance of these two dimensions varies between forces. It is very difficult to identify the dominant one for a particular force since it will depend on many tangible and intangible factors. As such, during war the opposing forces have to be targeted in both the planes so that the cumulative effect results its defeat. Therefore, commanders need to choose appropriate methods to target both "will" and "capabilities" of the threat forces and it is important to know the relevant factors affecting selection of methods of Defeat Mechanism. Figure

5 shows a list of four factors including a few examples of possible implications. The list is not exhaustive and may be further expanded. The factors are not listed as per priority; however, those may have varying significance in different strategic environments. It remains in the domain of the commanders to decide their relative significance in the existing strategic environment and allot appropriate weightage to each factor. Analysis of these factors may guide the commanders whether or not the use of a particular method of Defeat Mechanism is appropriate in the existing operational environment.

Figure 5: Examples of Few Factors Including Relevant Implications

Factors	Examples of Implications
End State Including Timeline	• Expected state of adversay at the end of the campaign will guide to select approrpaite methods
Adversary Capability	• Isolation, Dislocation or Cyber Shock are difficult to apply if the adversary has air superiority
Own Capability	• Disintegration and Mental Isolation need better Electronic Warfare (EW) capability • Preemption may assist in reducing capability gap
Terrain	• Dislocation demands large scale manoeuvre • Jungle and hilly terrain facilitate Disintegration

Source: Author's Own Construct

b.   **MOE and MOP**.   Each method needs to encompass appropriate MOE and MOP. Commanders may determine both MOE and MOP following the guidelines explained in Table 1 to monitor the success rate of the envisaged methods of Defeat Mechanism. Few specific examples for different methods are also given in Table 2.

Table 1: Guidelines for Developing MOP and MOE

Criteria	MOP	MOE
Connection to Task and Purpose	Connected to Task	Connected to Purpose
Nature	Quantitative (primarily)	Qualitative (primarily)
Focus	Internal (given task)	External (effect of actions)
Primary Question	✓ Are the things being done right? ✓ Are the tasks being accomplished maintaining desired standard?	✓ Are the right things being done? ✓ Are the actions getting the forces to reach to the desired end state?
Generalized Examples	✓ Number of soldiers killed/injured ✓ Number of major platforms destroyed ✓ Percentage of logistics installations destroyed	✓ State of morale of the enemy forces ✓ Increase/decrease in the support from local population ✓ State of trust between members of coalition

Sources: Jack (2012), Schneider (1995) and Strategic Assessment Centre (1995)

Table 2: Specific Examples of MOE/MOP for Few Well-Discussed Methods

| Method	MOP	MOE
Destruction	✓ Number of major platforms destroyed ✓ Quantity of combat supplies destroyed ✓ Number of defence industries made inoperative	✓ Effect on enemy's morale ✓ Can the enemy continue pre-planned Course of Action? ✓ Could the war be made costly for enemy?
Disintegration	✓ Number of C2 nodes destroyed ✓ Number of commanders got disconnected with higher or lower echelon ✓ Increase of time in decision-making due to "Information Overload" or "Information Starvation"	✓ "Information Overload" or "Information Starvation"; to what extent those could be created? ✓ Could the decision-making process at different headquarters be delayed or disrupted? ✓ Do the commanders have real-time information?
Isolation and Dislocation	✓ Number of formations got isolated/dislocated ✓ How long the formations will remain isolated or dislocated?	✓ What is the effect on enemy's morale? ✓ What is the effect on enemy's Course of Action?

Source: Author's Own Construct

Options for Articulation of Defeat Mechanism

The disruptive impacts of new technologies make the cognitive challenges of war harder to address (Peter, 2009). Victory will be the result of careful orchestration of several types of explicitly articulated Defeat Mechanism tailored to the mission and circumstances (Hecht, 2014). Encompassing the information discussed in preceding paragraphs, commanders can conceptualize Defeat Mechanism following the procedural construct discussed in Figure 3 and 4. Besides conceptualization of the Defeat Mechanism, it is equally important to articulate it in a way which clearly explains how the enemy will be denied to achieve the end state. Often, this is done only by mentioning a few methods leaving aside the important issue; that is, how those methods are gradually weakening the CG or denying the enemy from achieving his DCs. This remains as a significant drawback in the C of O at operational level and demands due attention. Accordingly, an endeavour is taken in the subsequent paragraphs to highlight different options to articulate/express Defeat Mechanism at different levels.

Options for Operational Level (Campaign and Supporting Campaign Plan).   In order to remove the voids mentioned in Paragraph 11-12 (connection to CG and DC), two options are developed to articulate Defeat Mechanism at operational level:

a.   **CG Focused**.   Though the existing practice of developing campaign schematic focuses on CG, the discussion on Defeat Mechanism in C of O gets disconnected and focuses only on the methods. The articulation of Defeat Mechanism should clearly explain how the enemy's CG is being affected in the process of achieving own DCs through employment of different methods. Diagrammatic framework of the suggested option to articulate Defeat Mechanism is shown as Figure 6 which illustrates selected methods for each DC and corresponding activities to gradually weaken the CG. Commanders and staff have to be very particular in determining the corresponding activities. Analysis of own capabilities, done in Step 1 of the process, will mostly assist in determining appropriate activities. Once the methods and corresponding activities are selected then MOEs/MOPs are to be determined and resources have to be assigned for each activity.

Figure 6: Articulation of Defeat Mechanism Focusing on Neutralization of CG
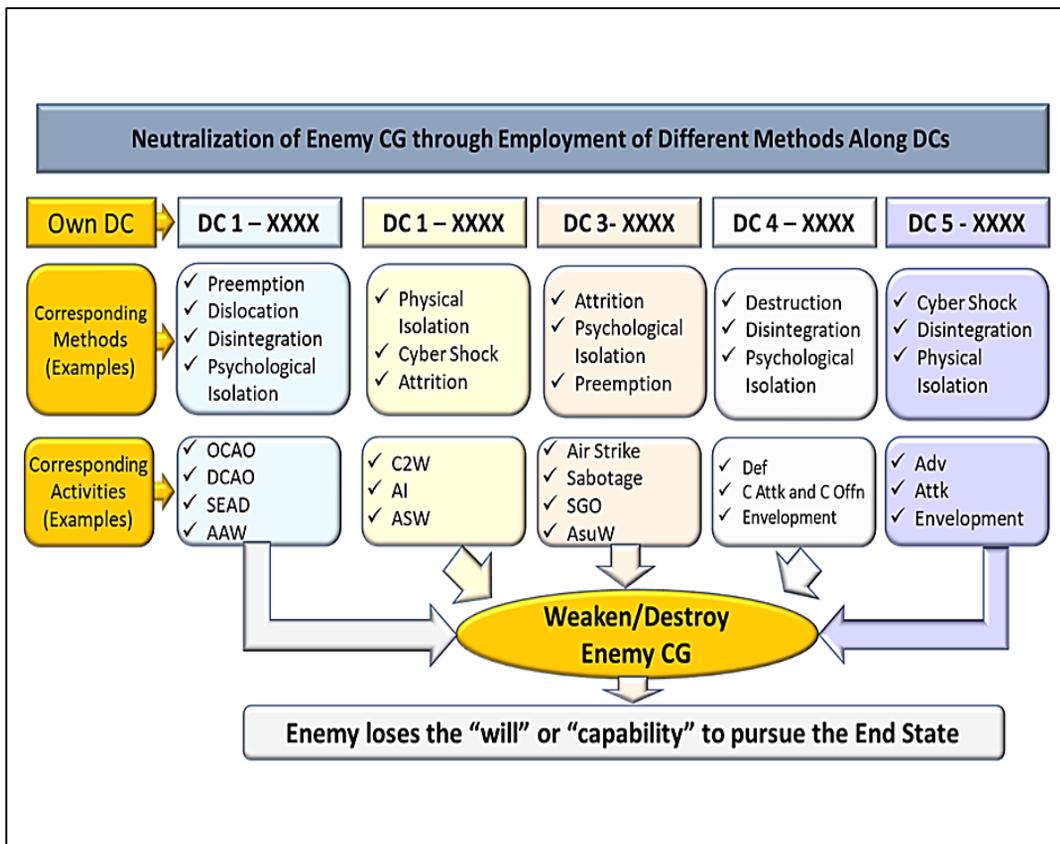
Source: Author's Own Construct

b.   **DC Focused**.   One of the options to defeat the adversary is through denying his achievement of DCs. Identification of own DCs should also take this factor into consideration. In the C of O, the commander may explain how the enemy will be prevented from achieving his DCs which will ultimately result in own victory. Diagrammatic framework of the suggested option for articulation of Defeat Mechanism is given in Figure 7. The Figure shows the principal methods and Battlefield Operating Systems (BOS) employed at each DC to prevent the adversary's achievement of DCs to ensure his defeat. It is very important to have deliberate knowledge on capabilities and limitations of different BOSs in order to assign those to execute different methods of Defeat Mechanism. Inappropriate assignment of BOSs will result in redundancy and ineffectiveness. BOSs are to be given specific tasks to deny enemy's achievement of DCs. The tasks are to be articulated in a way so that everybody can understand their role. Development of MOEs/MOPs has to be done following the guidance discussed earlier.

Figure 7: Articulation of Defeat Mechanism Basing on Denial of Enemy's Achievement of DC
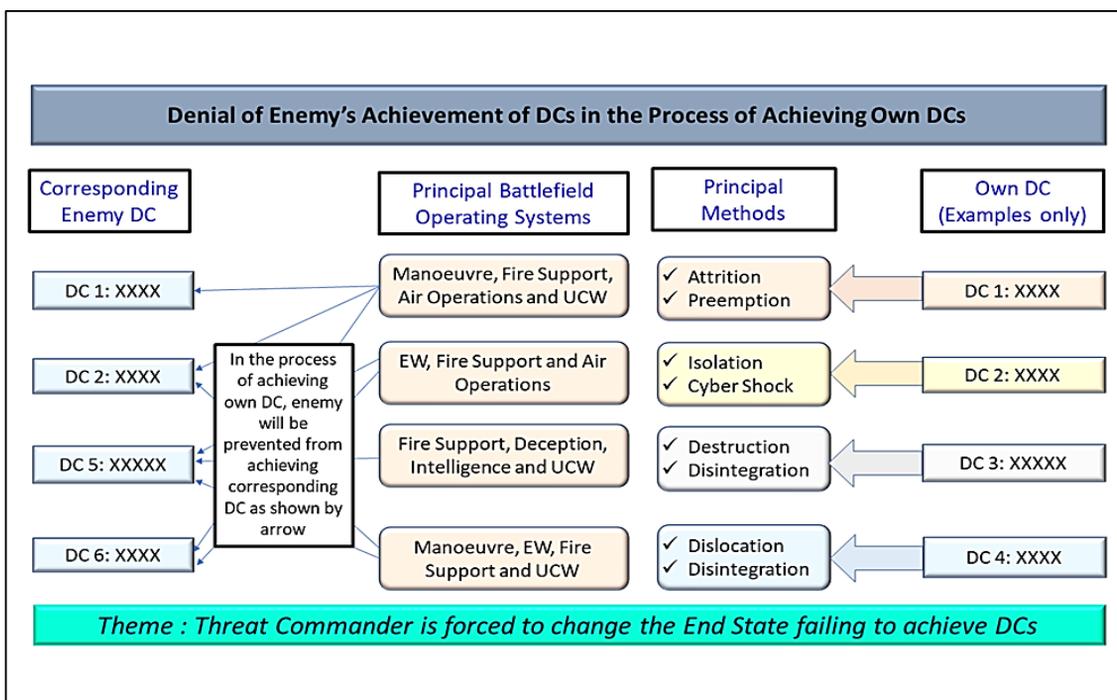
Source: Author's Own Construct

Tactical Level (When CG and DC is not the Focus of Planning). Figure 4 may be followed at lower levels to develop Defeat Mechanism. In these levels, in addition to determination of appropriate methods, it becomes important to identify the locations and desired effects in regards to each method. These have to be followed by allocation of appropriate resources based on their capabilities and limitations. Appropriate methods are to be determined through analysis of the factors mentioned in previous paragraph. Detailed analysis of the terrain will assist in identifying suitable locations for different methods.

Table 3: Articulation of Defeat Mechanism without Referring to CG and DC

Ser	Method	Location/Area	Effects including Date	Resources
1.	Isolation	MIRZAPUR	Forward elements are isolated from follow up and logistics supply (D+3 to D+5)	Air, Artillery, UWF, SGO, Natural and Artificial Obstacles

Source: Author's Own Construct

Applicable for both Levels (Based on Components of Fighting Power). Defeat Mechanism may also be articulated through narrating how the components of fighting power will be affected/weakened through employment of appropriate methods. Diagrammatic framework of such discussion is given in Figure 8. In this option, commanders may describe how different components of fighting power will be weakened through employment of various means in specific ways (methods). In this model, deliberate discussion on the "ends" of each component is required. Specific MOEs/MOPs are to be developed to assess the progress in achieving "ends" in regards to each component. MOEs/MOPs are to be easily explainable so that the junior leaders can also conceive the ways to defeat enemy. It will be difficult for commanders at all levels to internalize own role if the desired "ends" are not clear. Deliberate knowledge on capabilities and limitations of available means are required to assign those to execute the "ways". Effort against all three components of enemy's fighting power may not be same. Commanders have to decide on their relative significance in the campaign and allot "means" accordingly.

Figure 8: Articulation of Defeat Mechanism Focusing on Components of Fighting Power
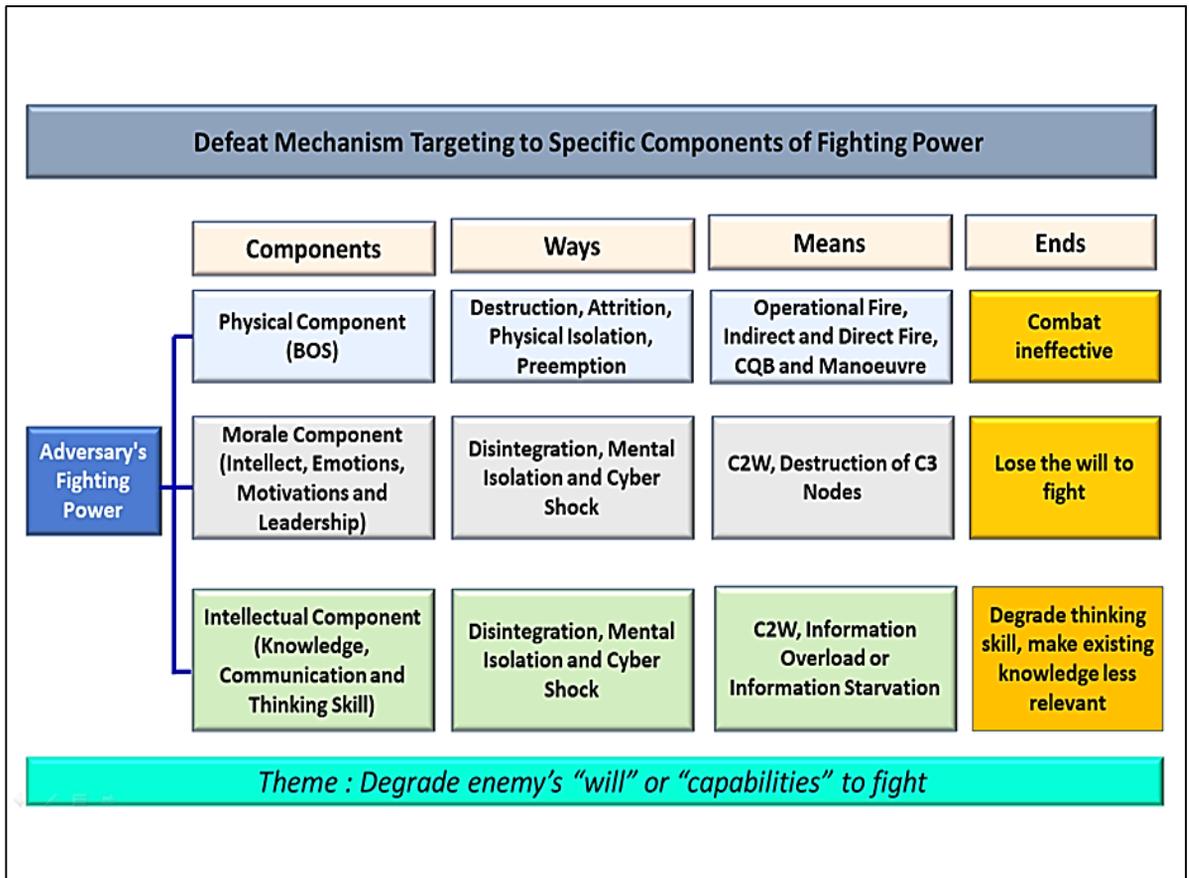
Source: Author's Own Construct

Conclusions

Defeat Mechanism is considered as the cornerstone of any Campaign Plan or Operational Order. As such, the planners need to be provided with adequate literatures to comprehend different aspects involved in its development. The issue always remained in the focus of military intellectual community which generated a lot of ideas and concepts. Scholars have so far proposed a long list of methods to defeat the enemy, few well-known concepts are: Destruction, Disintegration, Dislocation, Disruption, Isolation, Attrition, Cyber Shock, Preemption etc. However, the list of methods is one of the tools required to develop Defeat Mechanism. Conceptualization and articulation of Defeat Mechanism demand few more aspects: a procedural construct to guide the thought process, factors affecting selection of appropriate methods from the list, ways to connect the methods with campaign planning tools, development of MOEs/MOPs for different methods etc. Analysis of existing literatures revealed that these aspects are not adequately addressed.

Most of the discussions on Defeat Mechanism focus only on explaining the methods and thus fail to present a holistic view on the selection and articulation of Defeat Mechanism. Discussions on Defeat Mechanism should be presented as a system or model that explains how the methods are to be selected, what procedure should be followed to ensure its sequential and logical conceptualization, and how to articulate it for easy assimilation. This paper presented two procedural constructs which the commanders may nurture in their cognitive domain. It also suggested a few factors that should be considered while selecting methods of Defeat Mechanism. Deliberate analysis of these factors will assist the commanders and staff to select methods appropriate for the existing battlefield environment. The paper also suggested few guidelines to develop MOEs/MOPs; however, the discussion is not deliberate and leaves scope for further research. The paper presented four ways for articulation of Defeat Mechanism, out of which two options are developed linking the Defeat Mechanism directly with CG and DP. These two options are appropriate for articulation of Defeat Mechanism for Campaign and Supporting Campaign Plan.

Development and articulation of Defeat Mechanism are both 'science' and 'art'. This paper highlighted the 'science' involved in articulation of Defeat Mechanism leaving the 'art' dimension at the discretion of the commanders. It is expected that the article will help in reducing the existing difficulties in articulation of Defeat Mechanism to some extent.

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THE EVOLVING SKIES: A GLIMPSE INTO THE CHANGING LANDSCAPE OF AIR DEFENCE AND THE PREPAREDNESS OF AIR DEFENCE SOLDIERS OF BANGLADESH ARMY

Lieutenant Colonel Tanveer Ahmed, psc, G+, Artillery

"The training methodology should not turn into a 'Sword of Damocles'; rather Commanders and Commanding Officers should create a positive and fear-free learning environment in the training arena inclusive of rewards and punishment".

—General S M Shafiuddin Ahmed, SBP (BAR), OSP, ndu, psc, PhD

Abstract

The landscape of air defence is constantly evolving due to advancements in technology and changes in the nature of potential threats. Some of the key changes that have occurred in recent years include the development of hypersonic weapons, the increasing use of Unmanned Aerial Vehicles (UAVs), and the growing threat of cyber-attacks. To stay prepared for these evolving threats, air defence soldiers must undergo continuous training and education to keep up with the latest technological advancements and tactics. This includes training in areas such as electronic warfare, cyber defense, and the use of advanced sensors and radar systems. Additionally, air defence soldiers must also be trained in situational awareness and decision-making skills, as they will often be required to make split-second decisions in highly critical situations. They must also be prepared to work closely with other branches of the military and with civilian agencies to coordinate responses to potential threats. Overall, the preparedness of air defence soldiers depends on their ability to adapt to changing circumstances and to stay up-to-date with the latest technologies and tactics. This requires a commitment to ongoing training and education, as well as a willingness to work collaboratively with other members of the military and with civilian agencies. This paper attempts to study on the evolution of Air Defence worldwide as well as in the neighbouring countries of Bangladesh. The writer further took the effort to suggest effective measures to prepare the soldiers of Air Defence of Bangladesh Army to combat the future air threats.

Keywords: Air Defence, hypersonic weapons, Unmanned Aerial Vehicles, Air Defence soldiers, air threats.

Introduction

The world today is more connected and accessible than ever due to the technological and communication advancement. While this has brought many benefits, this has created new challenges and threats too. One such threat is from the air, where modern technology has made it possible for attackers to strike from the sky with precision and devastating force. Modern air threats

can come in various forms, including manned and unmanned aircraft, missiles and other weapons systems. Some of the most significant modern air threats include Stealth Aircraft, Cruise Missiles, Ballistic Missiles, Surface to Surface and Surface to Air Missiles (SSM/SAM), Unmanned Aerial Vehicles (UAV) or drones etcetera. These threats can be deployed by state actors or non-state actors, such as terrorist organizations.

Our neighbouring countries are evolving rapidly in the context of air and missile power. They are also acquiring various versions of Unmanned Combat Aerial Vehicles (UCAV). Air defence (AD) is the system or measures taken to protect against attacks from enemy aircraft or missiles. The significance of AD is to protect national airspace, Key Point Installations (KPI), Vulnerable Areas or Points (VA/VP), military installations and civilian populations from aerial threats, including bombers, fighter jets, and ballistic missiles. Effective defence against modern air threats require a combination of advanced radar and sensor systems, effective AD systems and the ability to quickly detect and respond to incoming threats. It also requires ongoing research and development to stay ahead of evolving threats.

A robust AD system can deter potential adversaries from launching aerial attacks and can provide early warning of incoming threats. A failure to maintain a strong AD system can leave our KPIs of national importance and military installations vulnerable to attack and put the safety of civilians and military personnel at risk. But a robust modern AD system is not always enough if the operators are not well trained and technologically sound. The preparedness of AD soldiers is therefore essential in ensuring that nations are able to protect themselves from modern aerial threats. However, the present training system of Bangladesh Army focuses on general military training for the soldiers but for the air defenders special emphasis to be given on techno-based training as well as orientation with modern sophisticated equipment and peripheral advancement worldwide in AD domain. The men behind the machine must be well trained to hunt down any aerial threat in time. In this write up, an endeavour has been taken to explore the AD capabilities of our neighbouring countries to compare with various aspects of preparedness that our AD soldiers required in order to meet modern air threats.

Modern Air Threats and Changing Landscape of AD

Modern Air Threats. The advent of modern technology has brought about a new range of threats to the AD system of military forces worldwide. The traditional methods of AD systems are being challenged by the emergence of advanced UAVs, stealth technology, cyberattacks and electronic warfare. These threats have rendered military defences powerless, especially Ground Based AD (GBAD) System, and as such, there is a need for a comprehensive approach to tackle these challenges.

Figure-1: The Main Objective of AD

Source: http://www.fas.org/spp/starwars/docops/amd/Chapter-3.htm.
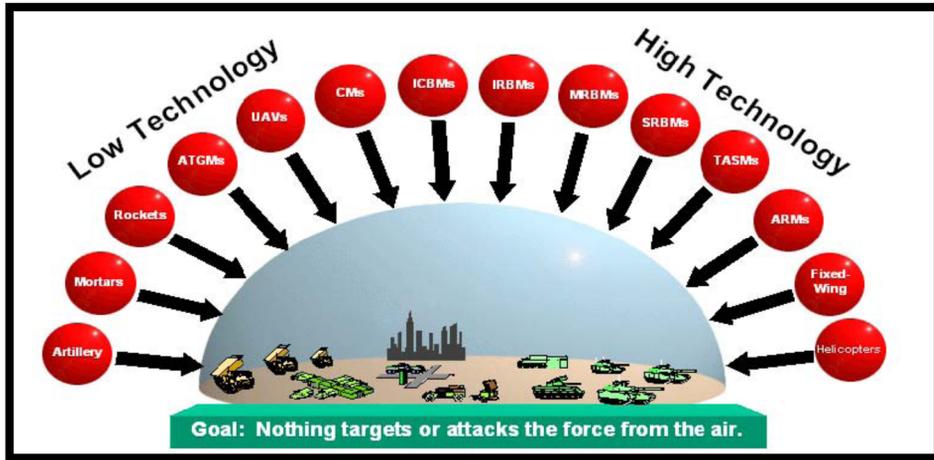
Some of the most significant modern air threats are discussed below:

Stealth Technology. Stealth technology has rendered military AD ineffective. The F-22 Raptor, one of the world's most powerful fighter jets, shows how stealth technology has transformed warfare. The F-22 hides using stealth, sensors and weaponry. F-22's standoff capability is unquestionable. Missile defence relies on stealth technology. Many modern missiles are constructed with stealth qualities that allow them to elude detection by adversary radars and other sensors. Due to their stealthiest, an opposing missile defence system may not be able to intercept incoming missiles.

Photo-1: F-22 Raptor

Source: Collected from Internet

New Generation Aircrafts. Latest-generation multi-role aircrafts will largely destroy military potential, economic, political, administrative centers and small to medium-sized ground targets (surface). Manned aircraft's offensive activities will dominate the AD system's strategic impact. They will attack simultaneously or sequentially.

Photo-2: New Generation Aircrafts

Source: Collected from Internet

UAV. One of the most significant emerging menaces to AD systems is drone. UAVs are small, cheap and easy to operate remotely. They can carry out reconnaissance missions without being detected by radar, making them difficult to track and interdict. Moreover, they can be equipped with explosives or other weapons that can cause significant damage.

Cruise Missiles. These are small, unmanned aircraft that can fly at low altitudes and high speeds, making them difficult to detect and intercept. They can be armed with conventional or nuclear warheads and can be launched from land, sea, or air.

Ballistic Missiles. These are missiles that travel through the atmosphere and are typically launched from land-based systems. They can be armed with conventional or nuclear warheads and can travel at high speeds, making them difficult to intercept.

Cyber-attacks. Military activities worldwide are threatened by cyberattacks on AD systems. These assaults can degrade the system's threat detection and mitigation, leaving it open to hostile attacks. Cyberattacks might impair AD system communications and cause false alerts. Operators may be confused between a real threat and a cyberattack-generated false alarm.

Development in Neighbouring Countries

Aircrafts. Keeping pace with the evolving worldwide air power, our neighbouring countries are also enriching their inventories. They have recently transformed into a competent force with a fleet of reasonably modern aircrafts combining technology from both Eastern and Western sources. Our neighbouring countries possess a good number of combat aircrafts which are numerically almost double than that of Bangladesh Air Force (BAF).

Figure-2 (a): Modern Aircrafts of Neighbouring Countries

DASSAULT RAFALE		JAGUAR		SU 30		MiG-29	
Origin: France		Origin: France		Origin: Russia		Origin: Russia	
Air to Surface Missile	Point of Weapon Release	Air to Surface Missile	Point of Weapon Release	Air to Surface Missile	Point of Weapon Release	Air to Air Missile	Point of Weapon Release
Hammer	60 km	RKT	1.5 – 20 km	KAB 1500	50 km	R-27	10 km
AM 39	70 km	AS 37	60 km	Kh-31P	100 km	R-73	Not known

Figure-2 (b): Modern Aircrafts of Neighbouring Countries

Su 30 SME		JF 17		Chengdu J7		MiG-29	
Origin: Russia		Origin: Pakistan		Origin: China		Origin: Russia	
Air to Surface Missile	Point of Weapon Release	Air to Surface Missile	Point of Weapon Release	Air to Air Missile	Point of Weapon Release	Air to Air Missile	Point of Weapon Release
Not known	Not known	Ra'ad II	Not known	PL-3	11.3 km	R-27	10 km
		HD-1A	Not known	PL-5	16 km	R-73	Not known

Source: Author's Construct

Missiles. Our neighbouring countries have a varied range of Surface to Air Missiles (SAM) and Surface to Surface Missiles (SSM). Possessing Airborne Warning and Control System (AWACS) and AEROSTAT, some of them are capable of covering huge area under positive radar guidance. They can gather electronic signatures with the help of AWACS, Gulfstream IV SRA-4 and Unmanned Aerial Vehicles (UAVs).

Figure-3 : SSMs of Neighbouring Countries

PRITHVI

Origin: India

Weapon	Range (km)
SSM	150 km (Prithvi I)
	250-350 km (Prithvi II)
	350-750 km (Prithvi III)

AGNI

Origin: India

Name	Type	Range (km)
Agni - I	MRBM	700-1200 km
Agni - II	MRBM	2000-3500 km
Agni - III	IRBM	3000-5000 km
Agni - IV	IRBM	3500-4000 km
Agni - V	ICBM	7000-8000 km
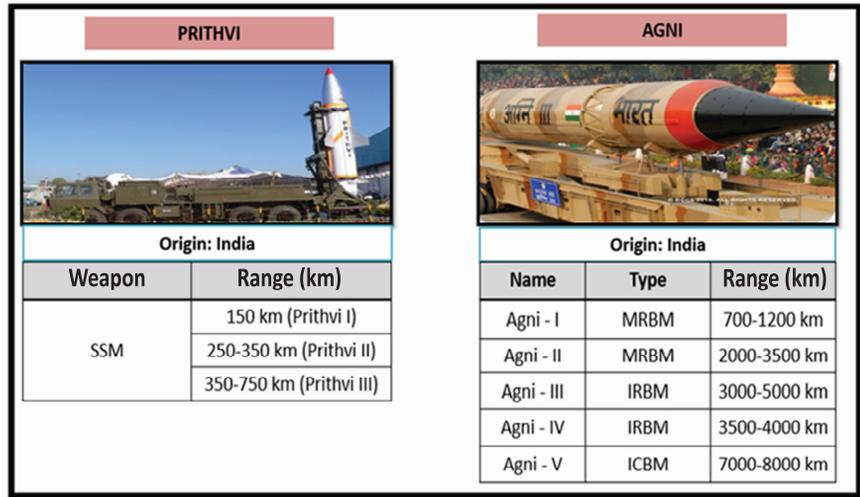
Source: Author's Construct

Figure-4 : SSMs of Neighbouring Countries

SY 400

Origin: China

Weapon	Range (km)
TBM	400 km

HWASONG

Origin: North Korea

Name	Type	Range (km)
HWASONG-5	TBM	300 km
HWASONG-6	TBM	700 km
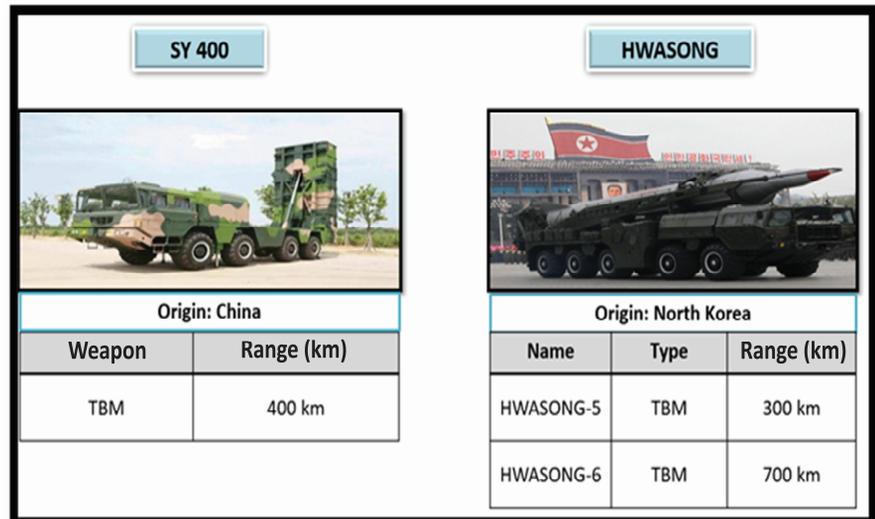
Source: Author's Construct

Figure-5: SAMs of Neighbouring Countries

AKASH	BARAK 8	S-400	PRITHVI
Origin: India	Origin: India and Israel	Origin: Russia	Origin: India

Weapon	Range	Weapon	Range	Weapon	Range	Weapon	Range
MSAM	45 km	LRSAM	0.5-100 km	LR-SAM	400 km	Anti Ballistic Missile	300-2000 km

Source: Author's Construct

Contemporary Issues on Modern Air Threat. Russia's inventory is very rich in the context of aerial attack weapons. Its best-known systems are S-300 and S-400 SAM batteries. These can detect and destroy airplanes and ballistic or cruise missiles at high altitudes and over 300 kilometers distant. Russia uses medium and low-altitude defence weapons including the Tor, Buk, Pantsir, S-300, and S-400 to protect key facilities (logistics depots, military bases, command centers, etcetera.). It protects ground forces from airborne support on wheels or tank treads. Analysts believe that Russia possesses 1,000 of these AD systems. Ukrainians often breach Russian "A2/AD" (Anti-Access/Area Denial) prohibited zones, despite their superior weapons.

Photo-3: S-400 Truimf

Source: https://economictimes.indiatimes.com/news/defence/india-intends-to-operate-s-400-missile-system-to-defend-against-threats-from-pak-china-pentagon/articleshow/91629812.cms?from=mdr

Photo-4: 1st Evidence S-400 Destroyed' In Ukraine War

Source: https://eurasiantimes.com/russias-s-400-air-defense-system-destroyed-in-ukraine/

On 8 March, 2023, the Security Service of Ukraine (SBU) released a video of an FPV drone dodging a missile and colliding with a Russian TOS-1A thermo-baric artillery weapon. Before the Russian flamethrower activates, a kamikaze drone destroyed TOS-1A.

Photo-5: Russian TOS-1 Bomb

Source: https://eurasiantimes.com/ukrainian-kamikaze-drone-dodges-demolishes-russias-terrifying/?amp

Photo-6: Ukrainian Drone 'Dodges & Demolishes' Russia's Terrifying TOS-1A Weapon System

Source: https://www.eurasiantimes.com/ukrainian-kamikaze-drone-dodges-demolishes-russias-terrifying

Changing Landscape of AD.　　The landscape of AD has been evolving rapidly in recent years due to advancements in technology, the emergence of new threats and changes in global security trends. The new trends of threats are mentioned already in the earlier segment of this write up. The shape shifting in recent conflict is also highlighted. As a result of these trends, AD systems are becoming more sophisticated and capable.

AD Guns System.　　Guns, notably machine guns, were initially employed to combat aerial threats. These weapons were not intended for use in AD. During World War II, AD weapons began to emerge. Numerous types of AD guns with varied ranges, calibers, and fire control systems were manufactured by other nations. The development of conventional gun system has reached a plateau; hence the focus of future research will be on fire control systems and ammunition. Unmanned and remotely controlled turret with integrated ammunition feed are the new trends. Not only that, multi-weapon platforms with guns and missiles on the same platform are evolved to provide multi-layered defence and improved killing capability.

Photo-7: KONGSBERG Remote Weapon System Protector 40

Source: https://www.kongsberg.com/kda/what-we-do/defence-and-security/remote-weapon-systems/

Figure-6: A Hybrid AD System ASELSAN includes 35mm Cannon, and 4 BOZDOĞAN or GÖKDOĞAN Air Defense Missiles

Source:https://www.armyrecognition.com/defensenewsapril2023globalsecurityarmyindustry/aselsanfromturkiyeunveilsnewhybridgun-missileairdefensesystems.html
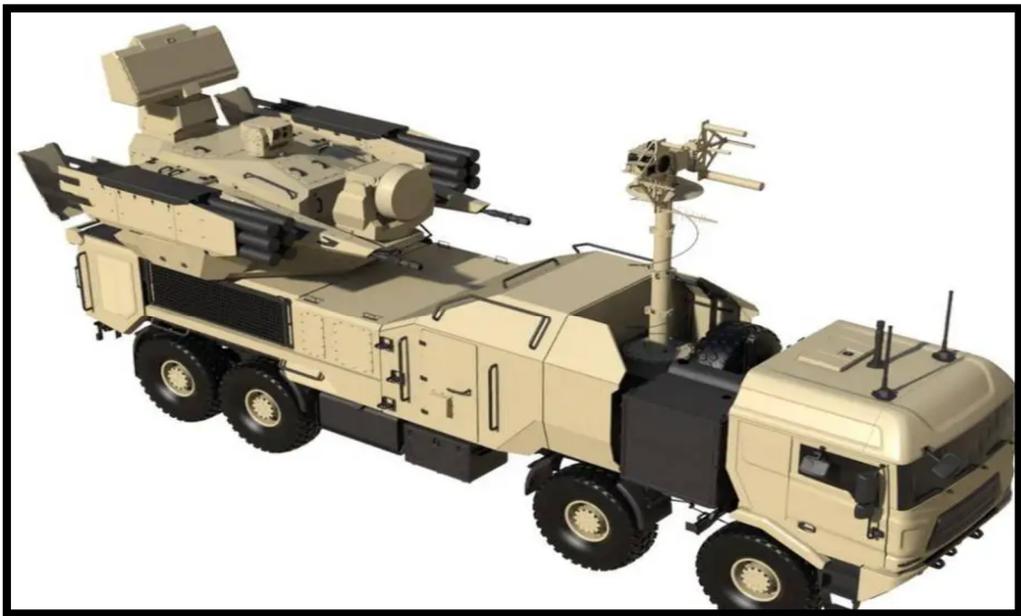
Directed Energy Weapons (DEW). DEW weapons use their energy to disable/destroy targets and have a high power requirement. DEW weapons are under development in many countries including India. They are the classic Precision Guided Missile (PGMs).

Photo-8: A Potential DEW under Development of UK

Source: https://www.army.mod.uk/news-and-events/news/2021/09/developing-deadly-direct-energy-weapon/

Advanced Hit Efficiency and Destruction (AHEAD) Ammunition. Rheinmetall manufactures these items. AHEAD's kill content is a cone of 100–150 tungsten alloy pellets. Each round's muzzle velocity and range to the target are input into the precision fuse, causing the shell to detonate at the ideal distance to produce a sub projectile cloud.

Figure-7: AHEAD Ammunition Mechanism

Source: http://www.rnmtek.co.kr/product/eng/weapon-system.html
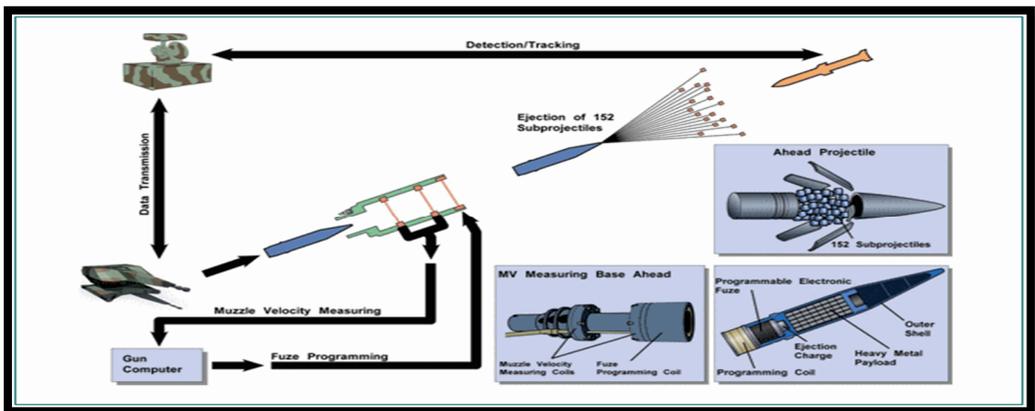
SAM Systems.   SAM systems were developed to overcome the shortcomings of the AD guns like limited range and accuracy. There are many configurations from static platforms to mobile platforms and man-portable AD systems (MANPADS). Guidance systems can be radar or many other systems like radio-controlled, infrared, laser and using millimeter radar. The current developments are providing hyper velocity, better warhead and active seeker for a guidance system.

Advanced Radar Systems.   The development of more sophisticated radar systems has been an important factor in the evolution of AD. Radar systems have progressed from basic detection systems to complex ones that can identify and track several targets at once as technology has advanced. The Active Electronically Scanned Array (AESA) radar is a prime example of a modern radar system. The system's ability to detect and track several targets at once is made possible by the AESA's use of a large number of tiny transmit-receive modules.

Photo-9: AN/TPQ-53 Phased Array Radar

Source: https://en.wikipedia.org/wiki/Activeelectronicallyscannedarray

Bangladesh Perspective

Now let us see how Bangladesh Army is progressing in the field of AD. The fast proliferation of AD Systems worldwide is modernizing Bangladesh Army, notably technologically. The National AD Plan 2003 assigns the majority of KPIs and VAs/VPs of national importance to the Bangladesh Army, except for Bangladesh Navy (BN) and BAF-owned aircraft, ships and bases. Our neighbouring countries' assault and fighter aircraft missiles can stand off 50 kilometers. Bangladesh defence policy has centered on developing credible deterrent. Thus, Bangladesh Army

GBAD System purchased various SHORAD and VSHORAD Missile Systems, state of the art Radar Control Gun Systems, smart ammunitions to boost its offensive capabilities. The army is planning and has standardized world-class Medium Range SAM (MSAM) systems to strengthen the inventories. However, only induction of modern and sophisticated weaponry will not be enough if the weapon system operators are not skilled enough to operate that system. After studying the trend of modern aerial threats as well as new-generation AD weapon systems in the earlier segment, we can envisage that AD soldiers must possess following attributes:

Technological Advancements. The rapid pace of technological innovation in military equipment and systems means that new threats emerge frequently. Modern AD systems are becoming more automated, digital and complex. Soldiers must be familiar with the latest technologies to operate and maintain these systems effectively.

Knowledge on Evolving Threats. With the proliferation of drones and other unconventional aerial threats, AD soldiers need to be equipped with the knowledge and skills to counter these new challenges.

Integration and Interoperability. Modern warfare is moving towards an integrated approach, where land, sea, air, cyber and space domains are intertwined. AD soldiers must be proficient in this integrated environment to be able to coordinate and communicate seamlessly with other services.

Cognitive Skills. Modern AD is not just about shooting down enemy aircraft. Soldiers need to make split-second decisions, analyze complex situations and manage stress in real-time scenarios. They should be trained to improve these cognitive skills.

Doctrine and Strategy Updates. As global military strategies evolve, armies need to adjust their doctrines. It is to be ensured that all soldiers are on the same page and understand new strategies and tactics.

So far, the present trend of aerial threats and evolving AD weapon system worldwide has been discussed alongside the highlights on expected preparedness of AD soldiers to employ modern day AD weaponry effectively. It is already mentioned in earlier segment of this paper that Bangladesh Army is in the process of modernization of AD inventory.

Preparedness of the AD Soldiers in Bangladesh Army

Present Training System for the Soldiers. The present training system of ADA units can be divided into two broad categories, i.e. operational training and institutional training. Institutional training is imparted through various Army training institutions where the focus is given to the professional efficiency of an individual. Operational training is imparted through formation training at the formation level.

Categories of Training

To be able to manage the diversity of concerns, training is divided in to four broad categories: Individual Training, Unit Training, Operational Group Training, and Collective Training. Each one focuses on developing particular aspects of men and outfits.

Individual Training. Individual training aims at enhancing knowledge and skills of an individual so that he/she can effectively contribute to the functioning of the sub-unit or unit he/she belongs to.

General Military Training (GMT). GMT usually include drills, physical fitness and skills, field crafts, skills at personal weapon, skills at close quarter battle, map reading, etcetera.

Trade Training (TT). TT prepares an individual to perform efficiently at his own trade.

Specialist and Utility Training. In addition to the TTs, there are also specialist and utility training. Such specializations may not be relevant to any particular trade but are required by a formation, unit or sub-unit.

Unit Training. Unit Training aims at training individuals to function and fight as part of the group they belong to.

Operational Group Training. The aim of Operational Group Training is to train as per grouping indicated in the respective Operational Plan of the Formations.

Collective Training. Collective Training is the culmination stage of the "train as you will fight" concept. This training is planned by AHQ at Army level and involves the operational support of the Sister Service.

Findings from the Present Training System

If we compare between the intended capabilities of AD soldiers and the salient aspects from present training system, we can find following vacuum or gaps that may act as a barrier to prepare our AD soldiers for future battlefield.

Focus on Individual Capacity. Present training system focuses on individual capacity building through general military training.

Progressive Career Planning. Present training system is based on progressive career planning of every individual soldier.

Lack of Specialized Training. To combat future air threat, units need to conduct and impart specialized mission-oriented lesson. Therefore, sub unit need to undergo training as a group. But in the present training system there is very less scope of imparting specialized training aiming at preparing the soldiers to operate and handle sophisticated electronic-based equipment.

Lack of Maintenance Training. Besides, operation skill of the weapon system, maintenance is a great part for the smooth functioning of such systems. After initial Foreign and Local Training of the systems, hardly any maintenance training is conducted in unit or in formation level.

Lack of Specialized Driving Cadre. Present AD missile systems are of 'self-propelled towed system equipment'. The system demands a high-skill driver to operate and maintain the various types of vehicles i.e. Transportation and Loading vehicles, Supply and Maintenance Vehicles, Power Supply vehicles etcetera. A dedicated training module needs time to prepare a set of skilled drivers for such vehicles.

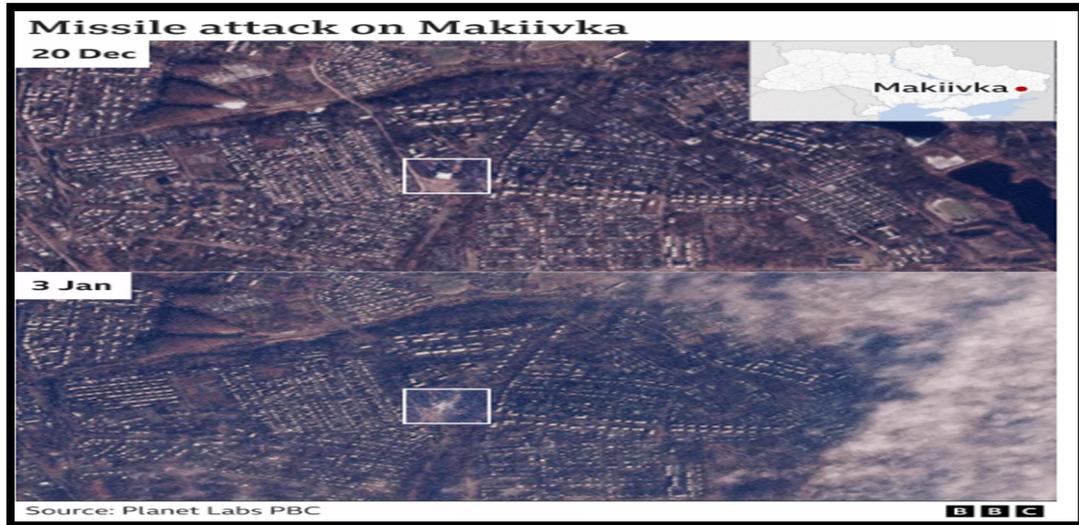### Challenges in Preparing AD Soldiers Concerning Modern Air Threats

Bangladesh Army is developing gradually as a modern army. Still there are number of challenges for preparing the AD soldiers in regard to the modern air threats as discussed below.

Technological Advancements. One of the major challenges in preparing AD soldiers concerning modern air threats is keeping up with the rapid advancements in technology. As technology has progressed, so have the capabilities of modern aircraft and weapons systems. Keeping up with technology advancements is crucial for AD soldiers when preparing for modern air threats in comparison to their uptake and educational background.

Lack of Practical Training. While classroom lectures and theoretical knowledge are essential, they are not enough to prepare soldiers for real-life situations. The lack of practical training is particularly problematic when it comes to dealing with modern air threats. Unfortunately, many soldiers do not take adequate interest in practical training. As a result, they may not be fully prepared for the challenges they will face in combat.

Inadequate Knowledge on Enemy Tactics. One of the most significant drawbacks of our soldiers is the lack of their knowledge on enemy capability and tactics. In recent times, there has been a significant shift in air warfare tactics as the adversaries are employing sophisticated means to evade detection and destruction. Adversaries have also developed electronic warfare capabilities that can disrupt communication and navigation systems used by air soldiers. One of the recent examples is Ukraine-Russia war where on 03 January 2023, 400 Russian soldiers were killed and another 300 were wounded in the attack on a college for conscripts in Makiivka, in the occupied Donetsk area by Ukraine missile attack (Figure-8). According to officials, the enemy was able to find its target due to widespread phone use and phone activation. This factor made it possible for the enemy to find and pinpoint the location of military personnel in order to launch a missile attack.

Figure-8: Detection of Russian Troop's Location due to Mobile Phone Use

Source:*https://www.scribbr.com/citation/generator/folders/3mf0gM6Ieaw6CuRRowlMBF/lists/6 2qyDukR5JWfvm4Pgnwvqv/*

Paucity of Qualified Manpower/Instructors. After induction of a new sophisticated weapon system, foreign and local training are imparted to a group of officers, JCOs and ORs. These trained personnel remain dispersed in various units and organizations. As a result, there is always paucity of qualified manpower or instructor at the required institution or organization.

Lack of Combined/Joint Exercise Mindset. AD is the responsibility of all three services including civil administration under the strong AD doctrine. The present system of training lacks the scope of integration between arms and services. The present modality of training basically focuses on the development of individual arms/services competence. The integrated effort to produce battle group/combat teams is not given adequate care. But still our communication means, Identifications of Friends or Foe (IFF) systems, Early Warning (EW) systems etcetera are not interoperable, which is very essential for AD.

Equipment Shyness. Modern AD equipment are being inducted in Bangladesh Army. But the soldiers are not yet very confident in handling those effectively. A few of them are of course very confident while the rest of the soldiers of the unit remain totally dependent on them.

Absence of Realism. Bangladesh Army is updating the standard and methodology of training basing on the present and future battlefield requirements, but there remain some grey areas in the entire system where realism is absent. During the conduct of various exercises, there is a lack of portraying the large scale air threat to provide a realistic battle scenario from AD point of view.

Ways Forward to Improve Soldiers' Training in Respect to Future Air Threat

AD soldiers are responsible for protecting the airspace from potential threats that can cause significant damage to the nation's security. To ensure optimal performance, it is essential that they are well-prepared and equipped with the necessary skills and tools required for their duties. This segment will examine three critical areas of preparedness measures that ensure optimal performance by AD soldiers:

    a.   Training and Skill Development.
    b.   Equipment Maintenance and Repair.
    c.   Communication and Coordination Strategy.

Training and Skill Development. Training and skill development are crucial components in the preparedness measures that ensure optimal performance by AD soldiers. AD soldiers must be trained and equipped with necessary skills to effectively identify, track and engage aerial threats. This requires rigorous training programmes that teach soldiers how to operate sophisticated radar systems, missile launchers and other advanced technologies. The training needs for ADA soldiers are:

    a.   Comprehensive training on AD systems.
    b.   Detection and identification of threats.
    c.   Ability to engage threats.
    d.   Effective control and reporting system.
    e.   Operation in various environment.
    f.   Simulation training.

To meet the above-mentioned training needs, the following training has to be conducted regularly for the AD soldiers:

Aircraft Recognition and Identification of Friend or Foe (IFF) Training. AD soldiers require specialized training in areas such as target identification and threat assessment. They must be able to differentiate between friendly and enemy aircraft quickly and accurately in order to make split-second decisions about whether or not to engage a target.

Recruiting Troops with Better Uptake. Recruiting AD soldiers with better uptake can ensure that the soldiers have the necessary intellectual capacity to handle the complex and ever-changing threats in modern warfare. AD soldiers must be able to analyze and respond to data quickly, make split-second decisions and effectively communicate with their team members.

Capacity Building. To strengthen, create, adapt and maintain capacity over time by the AD personnel, it is imperative to build capacity of the outfits. Following steps can be taken for the capacity building of the AD soldiers:

Remote Video Assistance. Prohibition of Remote Video Assistance allows a video connection with an Original Equipment Manufacturer (OEM) system engineer to facilitate the operational and maintenance work of the equipment.

Photo-10: Remote Video Assistance with OEM System Engineer
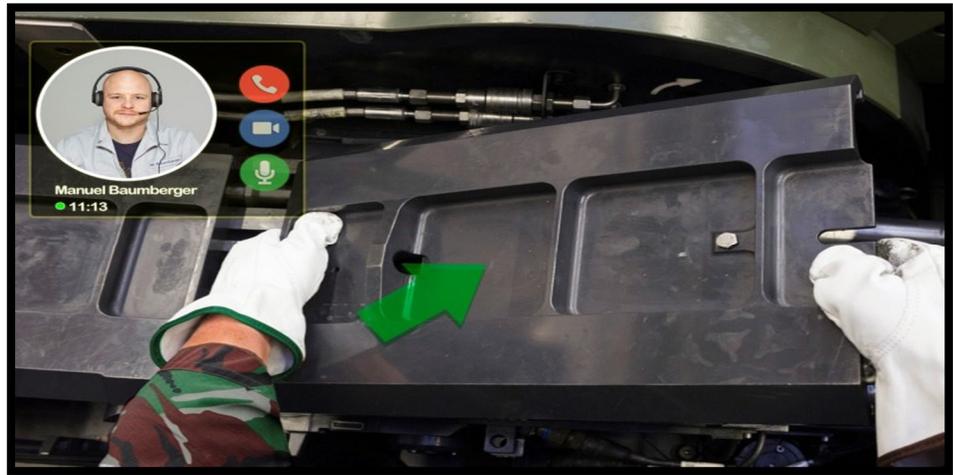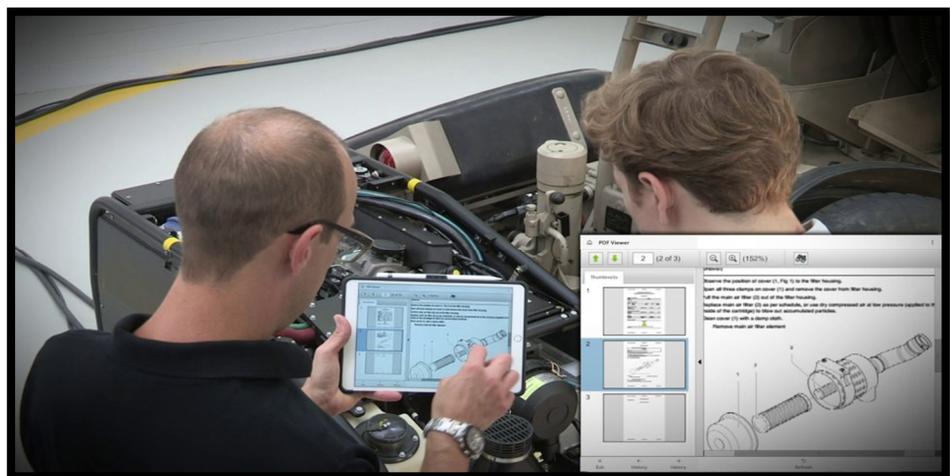

Source: OEM Rheinmetall Air Defence AG

Technical Publication Viewer. The technical publication viewer is an interactive digital manual for the equipment user. The viewer includes text, image, video, audio, visualization of on-equipment annotations.

Photo-11: Remote Video Assistance with OEM System Engineer

Source: OEM Rheinmetall Air Defence AG

Cutaway Model of Ammunitions and Vital Mechanisms. The figure of the cutaway model below shows the Advanced Hit Efficiency and Destruction (AHEAD) programming and muzzle velocity base function by the mean of a hardware model which is cut out.

Photo-12: Cutaway model of Muzzle Velocity Measuring Base of Oerlikon GDF 099 RCG
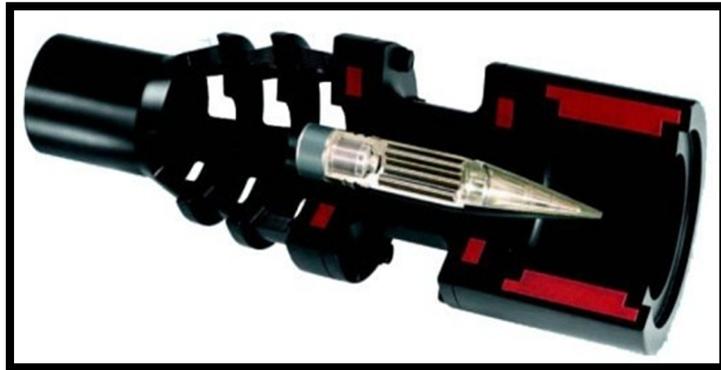
Source: OEM Rheinmetall Air Defence AG

The cutaway model in the figure below shows the complete AHEAD round and its components, which might be a useful training aid in order to demonstrate the AHEAD principle.

Photo-13: Cutaway Model of AHEAD Ammunition

Source: OEM Rheinmetall Air Defence AG

Fault Simulating Line Replaceable Units (LRU). LRUs have predefined faults on each item. They are used to simulate faults on the system which are investigated by the soldiers to have practice on fault finding and measures taking practice.

Photo-14: Fault Simulating LRU

Source: OEM Rheinmetall Air Defence AG

Digital Training Aid.   A set of digital training aid in the unit or in Artillery Central & School (AC&S) will certainly help our junior officers and soldiers to adapt with sophisticated weapon system during their basic course or trade training.

Figure-9: Digital Training Aid

Source: OEM Rheinmetall Air Defence AG

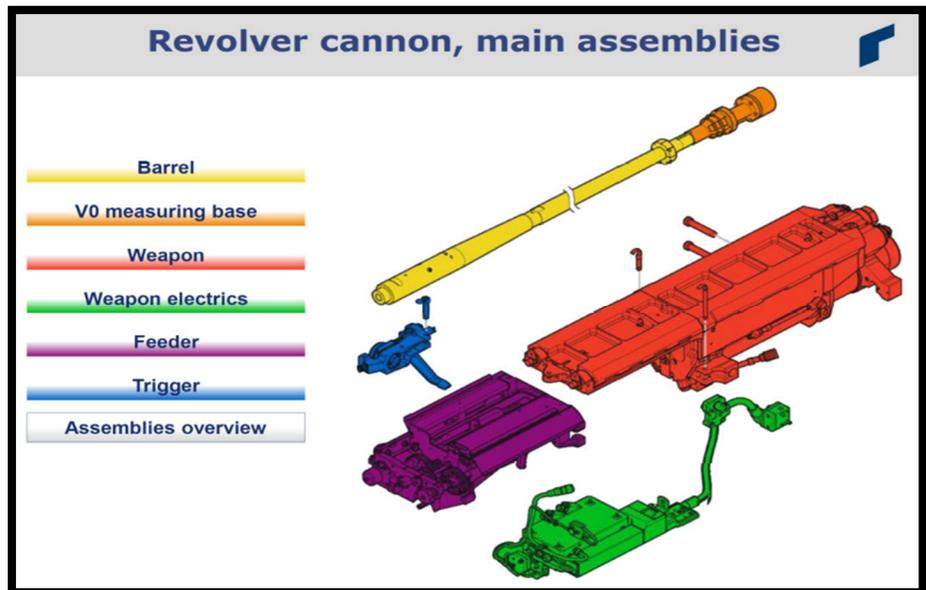**Foreign Training.** Foreign training for the weapons system should be arranged with the procurement of new equipment. Foreign assistance training is a key component of capacity development since all of our equipment in AD Arsenal are procured from allied nations.

Local Training. Comprehensive and standardized local training to be ensured by the equipment owning units for imparting training to maximum number of people. All personnel involved in operating a particular AD Systems will receive comprehensive local training including theoretical and practical aspects.

Refresher Training. Continued training on the AD System in terms of refresher training may continue and be conducted annually. It's important to provide continued training to AD soldiers to ensure that they maintain their proficiency with the weapon system.

Cyber Security Training. Cybersecurity training is essential for AD soldiers as the threat landscape evolves and the adversaries are increasingly leveraging cyberattacks to disrupt and degrade military capabilities. This training equips soldiers with the knowledge and skills to identify, prevent and respond to cyber threats, ensuring the integrity and resilience of critical AD systems and communications infrastructure. AD soldiers must receive comprehensive cybersecurity training including Electronic Counter Measure or Counter Counter Measure (ECM/ECCM) that covers fundamental concepts, such as threat identification, network security and encryption. Additionally, it should include hands-on exercises that simulate real-world scenarios, allowing soldiers to practice and hone their skills.

Equipment Maintenance and Repair. Equipment maintenance and repair are critical preparedness measures that ensure optimal performance by AD soldiers. To make our AD soldiers and related Electrical and Mechanical Engineer (EME) personnel efficient following steps can be taken in terms of Integrated Logistic System (ILS) agreement with the various OEM:

Technical Advisory on Site. A contract can be signed between OEM and Bangladesh Army to keep Field Service Representative (FSR) to provide technical advisory on site round the year. The service may include services like preventive maintenance, assessment, troubleshooting, corrective maintenance, repairs, safety-related testing.

User Help Desk. Under the ILS agreement we can opt for user desk help round the clock. In this system our AD operators can communicate with OEM representatives any time and discuss and take assistance on maintenance, troubleshooting or any operational support.

Spare Parts Sets and Buffer Stock. The electronic based modern AD equipment also surfaces with various electronic problem. Hence, to keep those continuously operational, a good stock of spare parts is of paramount importance. Since, these spares are very costly, Bangladesh Army can include a Rate Running Contract (RCC) to procure spare parts on the constant price for a specific duration.

Special Contract. Bangladesh Army include foreign and local training in the contract on the first consignment of any equipment. By the span of time, skilled personnel go for posting or retirement. Hence, proficiency reduces gradually. Therefore, Bangladesh Army should go for special contract on sophisticated weapon system to run refresher course by the OEM on operation and maintenance of the specific equipment.

Communication and Coordination Strategies. Effective communication and coordination strategies play a crucial role in ensuring optimal performance by AD soldiers. This is particularly true in AD operations where split-second decisions can make the difference between success and failure.

Joint/Tri-Service Exercise. AD is a joint service affair. But each service uses different language to conduct their operation and communication. Moreover, interoperability of various equipment is also a factor. Therefore, conduct of regular joint exercise will help to reduce the service level mis-coordination and gaps. Not only that, sharing of expertise and capability of inventory will pay a great dividend to plan a formidable AD Plan for the country.

Communication Exercise. One effective communication strategy is to establish clear lines of communication between different units involved in an operation. AD soldiers should be trained on how to communicate effectively in high-stress situations where quick thinking and decision-making are required.

Coordination. Coordination strategies are equally important as they enable different units to work together seamlessly towards achieving a common objective specially in case of joint operation. One key coordination strategy is joint planning which involves bringing together representatives from different services engaged in operations to develop a comprehensive plan that outlines each unit's role and responsibilities.

Passive AD (PAD) Measures. PAD will be a joint effort by national elements (not limited to civil defence organizations, power distribution, water supply company and volunteers only), AD outfits of Army, Navy and Air Force. Assets falling low in priority list and consequently void of any AD cover will have to rely on passive measures. During peace time, regular practice and standard drill to be established in coordination with the civil administration as well as with our soldiers to set specific responsibilities for war time.

Conclusions

It is evident that the preparedness of soldiers in AD is vital for countering modern air threats. The advancements in technology and evolving nature of the threats require a continuous evaluation and upgrading of training, equipment, strategic planning, and coordination with allies. Advanced training and education programmes are essential for soldiers to stay updated on the latest tactics and strategies required to combat advanced air threats. These programmes equip soldiers with the necessary skills to operate modern equipment effectively. Equipment and technology upgrades are critical for enhancing the capability of AD systems. Modern equipment such as radars, missiles, and other detection systems play a vital role in detecting incoming threats early enough to mount an effective response.

The training of ADA unit is equipment oriented. As such, it is a very complex process due to both technical and tactical requirements and needs more methodical approach. For the accomplishment of the mission and capabilities of an ADA unit, all the trades of ADA unit need to be trained with equal importance. Conduct of soldiers training in ADA unit is a difficult challenge for its commanders. It is due to the enormous tactical, administrative and technical requirements to be met with insufficient time, inadequate resources, terrain and climatic limitations, diversified non-training assignments and a host of other constraints. On the other hand, with the span of time our potential adversaries are developing faster in their defence mechanism to be precise in their AD system.

Strategic planning and coordination with allies is key to effective AD operations. Adapting to evolving air threats requires a flexible approach that allows for quick adaptation to new types of attacks. The ability of soldiers to adapt quickly can mean the difference between success or failure during an attack.

Recommendations

Basing on the findings of this write up, the following recommendations are made for the improvement of soldiers' training in ADA unit to combat future air threat:

Moderation of Training Syllabus. Training syllabus should be evaluated periodically by Army Training and Doctrine Command (ARTDOC) and Army Headquarters (AHQ) with the change and development of air power of neighbouring countries through visit in training institutions of those countries.

Conduct of Joint Training. To achieve an effective and integrated AD system, ADA formation should plan joint training and exercises with sister services in coordination with Armed Forces Division (AFD) each year ensuring participation of all trades in respective responsibilities.

Logistic and Maintenance Agreement with OEM. During the procurement of a new system adequate training material, spare parts and separate contract on maintenance and training to be done.

Judicious Posting Planning. Posting of qualified personnel on specific system to be ensured in respective units/institutions.

Allocation of Budget. AD is a costly affair. Hence, adequate budget allocation to be there for courses, procurement of modern equipment as well as related simulators and spare parts.

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INFORMATION WARFARE - AN INVISIBLE BATTLEFIELD: WAYS FORWARD FOR BANGLADESH ARMY

Major Mohammad Anamur Rahman Bhuiyan, SUP, psc, Signals

Abstract

The advent of the internet has resulted in a paradigm shift in Information Warfare (IW). It has become the epicenter of all battle planning in all levels of war tactics which neither has boundaries nor limits. Information has always been used as a tool to degrade the opposing forces while protecting one's own. The concept of IW involves information as the target and the tool to carry out the information operations. The forces with better access to information-means can confuse, deceive and demoralize the enemy. Nowadays, with rapidly proliferating technology, Bangladesh (BD) Army is increasingly becoming vulnerable in the information environment. In past few years, with the availability of internet, smart hand-held devices, and smart software, BD Army has been introduced with different dimensions of automation. Internet, smart devices and software have their own vulnerabilities as well as the data shared or stored over the internet has a high possibility of getting breached. Moreover, a lack of proper information security policy and strategy might make the existing situation at the vulnerable edge of tipping point. Hence, fortification of networks, servers, intranets and computer systems are must to safeguard information domain of BD Army from IW aggression. Recognizing the urgency, in a broader framework, Bangladesh Army must adopt a rational strategy to strengthen the information domain against the aggression of IW. Although IW threats may include multifaceted magnitudes, the paper will focus on the domain of Bangladesh Army, leaving aside the other two sister services.

Keywords: Information, internet, automation, vulnerabilities, Information Warfare, network fortification, capacity building.

Introduction

Information Warfare (IW) is not a new endeavour in the battlefield. In the Battle of Thermopylae in 480 BC, Persian ruler Xerxes used intimidation tactics to break the will of Greek city-states. In many battles Alexander the Great used cultural assimilation to subdue the opponents. These ancient strategists helped to lay the foundation for IW strategy in modern times.[1] Nowadays, the world is becoming more interconnected, and threats are converging increasingly at the nexus of military, diplomatic, economic, and social activities. Besides, with the sophisticated communications, satellites, and computing technology, IW is extending beyond the military operations and successful integration of information systems into a sophisticated conventional military. On the other hand it is becoming pivotal in numerous conflicts. Moreover, IW in the information age poses grave national security threat which encompasses several distinct but related concepts, such as the ability to create lethal precision weapons using information-enhanced systems, the political impact of military operations in a world linked by real-time visual media

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[1] Catherine A. Theohary, Information Warfare: Issues of Congress, (New York, USA 2018), p. 1.

reporting, and the new challenges and opportunities posed by widespread computer use for financial, political, and military purposes.[2] In recent years, many countries have exploited IW extensively. The conflicts of Nagorno-Karabakh and Russia-Ukraine in recent years are two classic examples of IW exploitation.

IW is the act of manipulating information trusted by a target without the target's awareness so that the target can make decisions in the interest of the one conducting IW. In the 21st century, similar to diplomacy, economic rivalry, or the use of military force, information has emerged as a fundamental element of national power. The potential targets of IW include population, economy, diplomacy, and the armed forces. The most susceptible target is the human mind, in particular those minds that make crucial national decisions. In the present-day scenario, there are several forms of IW, namely Command and Control Warfare (C2W), Intelligence Based Warfare (IBW), Electronic Warfare (EW), Psychological Warfare (Psy W), Economic Information Warfare (EIW), Hacker Warfare (HW) and Cyber Warfare (CW).[3] A planned strategy integrating the potency of these IW ventures is anticipated to secure victory while outwitting the potential adversary across the absolute gamut of the conflict. Bangladesh (BD) is striving rapidly since 1995 in computerization and automation in almost all spheres of national and social activities.[4] The effects of information disruption or manipulation, on which society and the armed forces, notably BD Army, are anticipated to rely in the future, need to be thoroughly analyzed. Therefore, to turn over the consequences of any conflict in own favor at any level of warfare, it is therefore imperative to incorporate the concept of IW in the overall operational plan of BD Army.

Nowadays, BD Army is becoming increasingly computerized and more exposed to the detrimental effects of IW. Thus, it is critical to recognize the risks associated with automation and digitization, and to implement adequate countermeasures before it is too late and complicated. Hence, this paper first unveils the concept of IW. Later, how BD Army is susceptible to become victim of IW aggression will be figured out. Finally, the paper proposes a rational strategy for BD Army to counter against the escalating effects of IW aggression.

Conceptualization of IW

Concept of IW

In recent years, the paradigm of IW has gained widespread acceptance within military requirements. Before formal war breaks out, an appropriate IW will be able to deliver a knockout punch to the adversary. IW is a concept involving the use of battle-space and management of information and communication technology in pursuit of a competitive advantage over an

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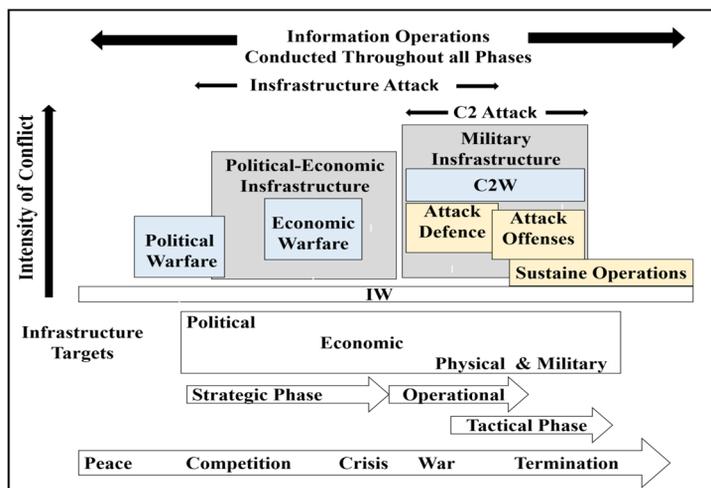2   Robert L. Pfaltzgraff, JR and Richard H.shultz, JR, War in the Information Age: New Challenges for U.S. Security, (Brasseys, London 1997), p. 10.
3   Martin C. Libicki, What is Information Warfare? (Washington DC,1995), pp 18-30.
4 Major General Md Shafeenul Islam, (retd), Information Warfare: The New Dimension, Individual Research Paper, Defence Services Command and Staff College, (Mirpur, 1999), p. 2.

opponent.[5] In modern era, with real time data transmission in all facets of warfare, computer networks will connect command centers with units down to the lowest level. In this regard, IW has enormous impacts on national power factors such as politics, military, economy, and information. The attacking and defending variants of IW can make an outreach through these elements of national power to assist in the accomplishment of strategic, operational, or tactical objectives. IW can be categorized as both defensive and offensive which are commonly known as Defensive IW (IW-D) and Offensive IW (IW-O). IW- D is a set of measures taken to protect an organization or nation's information systems from cyber attacks, disinformation campaigns, and other forms of IW. IW-O aims to raise the value of a target resource for the offence while lowering it for the defence.[6] Both IW-D and IW-O include any action to deny, exploit, corrupt or destroy the enemy's information and its functions; protecting own information against those actions and exploiting own military information functions.

Figure 1: IW Levels, Areas, and Phases of Conflict

Source: https://arielsheen.com/index.php/2020/05/12/notes-from-information-warfare-principles-and-operations, Accessed on 21 February 2023

Features of IW

   Information as a Weapon.   Information itself is a key component of the conflict, and it can be used as a weapon to achieve strategic objectives. In IW, the objective is to control or manipulate the flow of information, rather than just to destroy or capture physical assets.[7]

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5   Concept of IW, (Accessed from https://en.org/wiki/Information_warfare on 10 January 2023).
6   Captain George W. Jackson, Information Warfare and Its Impact on National Security, (New Rhode Island, 13 June 1997), pp 6-8.
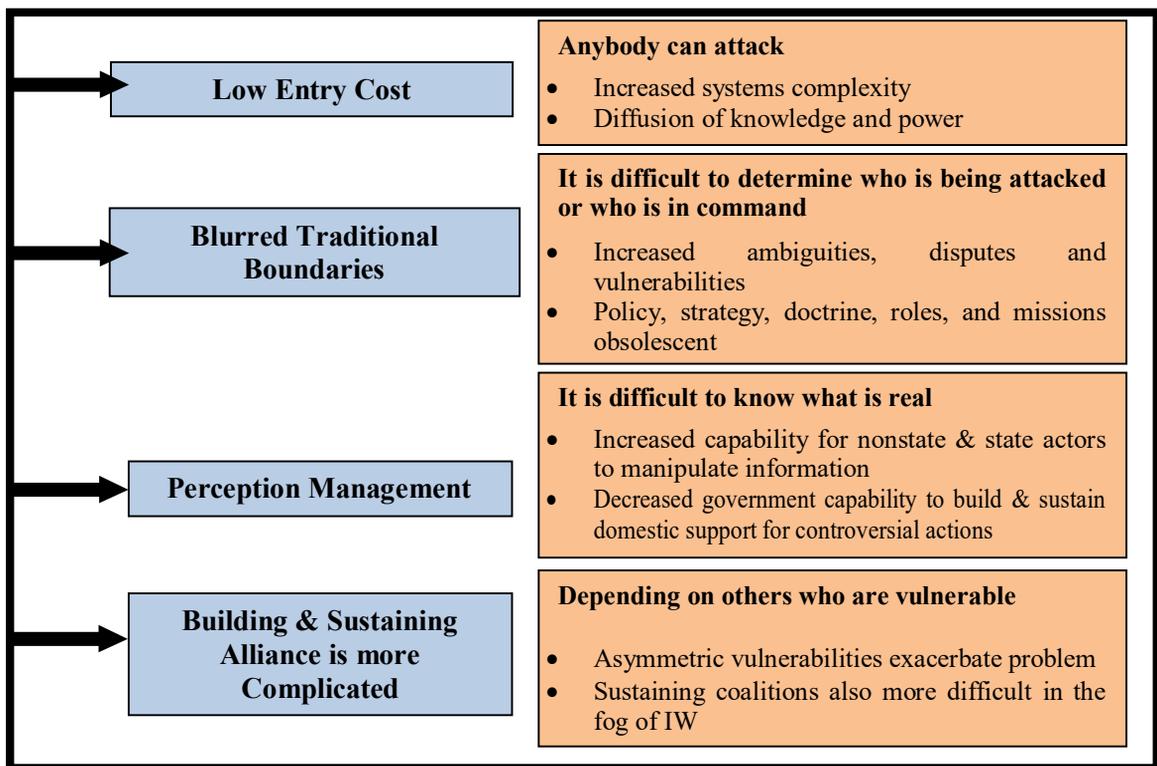7   Information as a Weapon, (Accessed from https://apps.dtic.mil/sti/pdfs/ADA360997 on 11 January 2023).

Non-Linearity.   IW does not follow a linear or predictable path, and it can involve multiple actors operating across multiple domains. The boundaries between the physical and virtual domains are often blurred, and attacks can come from a range of sources, including state actors, non-state actors, and individuals.[8]

Global Scope.   IW can have a global scope, as attacks can be launched from anywhere in the world and can target critical infrastructure or other key assets in any country. This requires coordination and collaboration among nations and international organizations to effectively address the threat.

Low Barrier to Entry. IW has a relatively low barrier to entry, as many of the tools and techniques used in attacks are widely available and can be used by individuals or small groups.[9] This makes it difficult to identify and deter attacks, and requires a focus on prevention and mitigation.

Figure 2: Consequences from IW Features

Low Entry Cost	**Anybody can attack** • Increased systems complexity • Diffusion of knowledge and power
Blurred Traditional Boundaries	**It is difficult to determine who is being attacked or who is in command** • Increased ambiguities, disputes and vulnerabilities • Policy, strategy, doctrine, roles, and missions obsolescent
Perception Management	**It is difficult to know what is real** • Increased capability for nonstate & state actors to manipulate information • Decreased government capability to build & sustain domestic support for controversial actions
Building & Sustaining Alliance is more Complicated	**Depending on others who are vulnerable** • Asymmetric vulnerabilities exacerbate problem • Sustaining coalitions also more difficult in the fog of IW

Source: Author's Construct based on Analysis

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[8] Non-Linear Information Warfare, (Accessed from https://fleawar.substack.com/p/non-linear-information-warfareon 11 January 2023).

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Forms of IW

IW does not exist as a distinct type of warfare, but it exists in a variety of forms, each of which claims to be a part of a broader concept.[10] However, it can be said to have two fundamental forms in general. The first form is exclusively fought on electronic media. This form of IW can be waged both by the military for strategic objectives and civilians for personal, group or corporate gains. The other form is purely military. It includes integrating IT to simplify C2 and intelligence operations, as well as to make conventional weapons smarter and smaller. Following table depicts the forms of IW and their corresponding attributes.

Table 1: Forms of IW

Serial	Forms of IW	Description
1.	C2W	It is a military concept that combines IW and physical destruction on the battlefield. The idea of decapitation occupied a high priority in the minds of military leadership.
2.	IBW	Reducing the opponent's knowledge and awareness by increasing and equipping own's one.
3.	EW	It is a set of actions taken to deny or prevent the use of the electromagnetic spectrum to hostile forces while retaining the ability to use it by oneself.
4.	Psy W	The use of propaganda during or before hostilities with the main objective of confounding or depressing the enemy's populace or troops to trap them off guard in the face of impending attacks or to persuade them to surrender.
5.	HW	HW exploits the weakness and vulnerability of a network and computer systems. To find ways to breach security defence.
6.	EIW	In possession and in control of very important information which can lead to obtaining power.
7.	CW	It typically involves a nation state perpetrating cyber attacks on another, but in some cases, the attacks are carried out by terrorist organizations or non-state actors seeking to further the goal of a hostile nation.

Source: Author's Construct based on Study

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[10] Lieutenant Colonel Kazi Anwar-Ul Islam, afwc, psc, Sigs, Dimension and Impact of Information Warfare: Policy Options for Bangladesh Army, National Defence College Journal, Mirpur, Dhaka 2002, p.87.

IW Environment

IW environment is mostly the aggregation of individual and organizational system that collects, processes, disseminates, or acts on information.[11] IW environment consists of three domains namely Information domain, Cognitive domain and Physical domain. The following table explores all these dimensions with examples.

Table 2: IW Environment

Serial	IW Environment	Examples
1.	Physical	a. The physical world and its contents, in particular those elements that enable and support the exchange of thoughts, information, and messages. b. Information system, and physical network. c. Communication system and network. d. Personal devices, handheld devices, and social media.
2.	Information	a. Collected, coded, processed, stored, disseminated, displayed, and protected information. b. Social media application software, information exchange, and search engine optimization. c. The code itself. d. Any automatic decision making.
3.	Cognitive	a. The impact of information on the human will. b. The contextualized information and human decision making. c. Intangibles, such as morale, values, world views, situation awareness, perceptions, and public opinions. d. Mental calculations in response to stimuli, such as liking something on a social media application.

Source: Author's Construct based on Study

Targets of IW

It is evident that some of the emerging attack methods that information technology enables may differ qualitatively from previous forms of attack. Some of these newer forms of attacks may seem to be products of science fiction. While others may result in significant destruction or human

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[11] Edward Waltz, *Information Warfare Principles and Operations*, (London, 1998), pp.129-131.

casualties, some may have no physical effect on the adversary.[12] One could conduct attacks from a distance, through radio waves or international communications networks, with no physical intrusion beyond enemy borders. The potential targets of IW are shown in Table 3.

Table 3: Potential Targets of IW

Serial	Targets of IW	Description
1.	Economy	The economic flow of a country is today much more vulnerable to IW aggression.
2.	People	IW targets public's sentiment to exploit and compel legislators to act in the adversaries' term.
3.	Political System	IW attacks have an impact on the national government leaders' action and policies, which in turn destabilize national political systems and government institutions.
4.	Military	IW engage military through C2W, EW and CW in which strategic objectives can be achieved without seizing opponent's territory in the conventional way.
5.	National Information Infrastructure (NII)	IW attempts to disrupt information exchanges, unauthorized data collection and usage, unauthorized access to information resources, data modification, illegal data copying, or outright database theft to take control of the target NII.

Source: Author's Construct based on Study

Impacts of IW on Different Levels of War

To the existing four dimensions of warfare - the land, sea, air and space, a fifth dimension of warfare has been added which is IW and that has neither boundary nor limits. Decision makers may now virtually be there at all times in the operational region because of IW's ability to detect, intercept, collect, evaluate, analyze, and distribute information globally in real-time. Thus, even before a formal war starts, IW can affect and influence all levels of warfare.

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12 Targets of Information Warfare, (Accessed from https://en. org/wiki/Information warfare on 16 January 2023).

IW at Strategic Level.   The use of IW could have a significant impact on the national security posture. These infrastructures are highly interdependent because of the inter-netted nature of the information components and because of their reliance on the National Information Infrastructure (NII). The NII, which consists of information, information systems, telecommunications, networks, and technology, in turn is dependent on other infrastructures such as electrical power and other forms of energy.[13]This inter-connectivity and inter-dependency certainly expose the system in a position for possible IW attack in which a country exploits cyberspace to disrupt strategic military activities and cause serious damage to NII of a target nation. Strategic IW examines areas where such vulnerabilities can be produced in support of achieving strategic objectives, to the extent where they can obstruct large-scale military operations as well as the operation of entire communities.

IW at Operational Level.   IW at operational level, can cause interference with threat data management systems and create damaging time delays in the threat's ability to make and implement decisions. By affecting the threat's ability to make the appropriate decisions in a timely and effective manner, a successful operational campaign will assist strategic objectives. Present information environment promises to be one where operational commander possesses information weapons to influence the strategic objectives. The three domains: the physical, the cybernetic, and the moral provide historical insights into how the operational level of war relates to the information environment.[14]Future information technologies can be projected across the three domains of warfare to see if these are required, and hence the operational level of war remains relevant. It appears that IW has the potential to dominate the physical and cybernetic spheres which will cause impacts on operational level.

IW at Tactical Level.   At the tactical level, one of the techniques of compelling the opponent to discontinue military activities is to induce erroneous awareness of the situation. As a consequent, by exploiting IW, one might prevent the enemy from detecting their objective and assessing their own situation, limiting their maneuverability, and exposing them to the threat.

IW in Recent Conflicts

IW has become a major component of recent conflicts in which the nations and non-state actors are leveraging information technology to advance their goal and influence public opinion. Some examples of IW in recent conflicts are discussed in subsequent paragraphs.

Nagorno-Karabakh War.   Nagorno-Karabakh conflict in 2020 was marked by an intense IW campaign waged by both Armenia and Azerbaijan. The two countries used

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[13] Manuel W. Wik, Revolution in Information Affairs Tactical and Strategic Implications of Information Warfare and Information Operations, (Sweden, 2004), p.18.

[14]Information Warfare at Operational Level, (Accessed from https://www.airuniversity.af.edu/Portals/10/ ASPJ/journals on 19 January 2023).

various tactics and platforms to shape international opinion and gain support for their respective positions. One of the key tactics used was the dissemination of false or misleading information through social media and traditional media outlets.[15] Both sides made use of state-sponsored propaganda and manipulated images and videos to present their actions in a favourable light and discredit the other side. This led to confusion and misinformation among the public, making it difficult for people to understand the situation and form an accurate picture of what was happening. Another aspect of the IW was the use of hacking and cyber attacks. Both sides targeted the websites and social media accounts of their opponents, as well as those of international organizations and media outlets, in order to disrupt their operations and spread false information. In addition to these tactics, the two sides also employed psychological operations, such as spreading rumors and fear, to create confusion and undermine the morale of their opponents.

Russia and Ukraine Conflict.   The ongoing conflict between Russia and Ukraine has been characterized by the use of IW tactics by both sides. These tactics are used to influence public opinion, manipulate the media, and spread false or misleading information. In the case of Russia, this has involved using state-controlled media outlets to disseminate propaganda that portrays the Russian government's actions in a positive light, while demonizing the Ukrainian government and military. In addition, Ukraine suffered the temporary loss of its national power grid in 2017 as a result of a coordinated cyberattack by Russia.[16] In response, the Ukrainian government has been working to counter Russian propaganda by promoting its own narrative of the conflict and defending their entire information infrastructure from cyberattacks. Ukrainian officials and media outlets have also been working to counteract the influence of Russian-backed media within Ukraine itself.

How BD Army is Susceptible to Become Victim of IW Aggression

Relevance of IW in BD

BD has embraced digital services across all sectors at an unprecedented rate. A very few countries in the world have witnessed such a massive digital orientation of their populace in a short period like BD. Moreover, BD has one of the fastest growing internet users in the world. According to BD Telecommunication Regulatory Commission (BTRC), till December 2021 almost 99 million people of BD are internet subscribers. Among them, 92 million are mobile internet

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[15]Media in Nagorno-Karabakh, (Accessed from https://www2.coleurope.eu/ media_and_ disinformation_in_the_nagorno-karabakh_conflict on 25 January 2023).

[16] Russian Information War Against Ukraine, (Accessed from https://en.org/ wiki/Russian_ information_war_against_Ukraine on 27 January 2023).

users.[17]As BD precedes towards digitization, military, political and economic sectors have become more vulnerable in the domain of IW losing billions of important pieces of information and confidential data raising doubts about the nation's stability. The theft of 81 million dollars from Bangladesh Bank accounts in February 2016 through the hacking of its SWIFT (Society for Worldwide Interbank Financial Telecommunication) coding system is an egregious illustration of the pervasive and rising risks that surround us.[18] In 2022, A hacker group called 'Hafnium' launched cyberattacks on more than 200 organizations in BD, including BTRC, BD Bank, commercial banks, and internet service providers. The statistics of 2022 on information security indicators between BD, USA, India and Russia is shown in Table-4.

Table 4: Comparison of Information Security Indicators of BD, 2022

Serial	Information Security Indicators	Bangladesh	USA	India	Russia
1.	Network Readiness Index	95	1	67	40
2.	National Cyber Security Index	34	42	50	27
3.	Global Cyber Security Index	53	1	10	5
4.	ICT Development Index	147	16	134	45
5.	Protection of Data	132	4	54	6
6.	Crisis Management Plan	102	2	23	3

Source: https://ncsi.ega.ee/country/bd, Accessed on 10 February 2023

Threat Perception of BD Army in the Realm of IW

Recently, BD Army has become increasingly automated and interlinked. However, advancement in IT and competitive pressure to improve efficiency and productivity of BD Army have created new vulnerabilities to information attacks.[19] Besides, cyberspace also goes far beyond geographical locations. Consequently, potential adversaries are widely spread for cyberattacks in the domain of IW starting from a mere hacker to a well-organized state-sponsored cyber-attacks targeting the military power. Presently, BD Army depends heavily on commercial information

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[17] Data and Statistics, (Accessed from https://btrc.gov.bd on 28 January 2023).

[18] The Bangladesh Bank Cyber Heist, (Accessed from https://businessinspection.com.bd/the-bangladesh-bank-cyber-heist on 1 February 2023)

[19] Md Mustafizur Rahman, Data and Communication Security for Bangladesh Army: Prevention of Phishing Attack, International Journal of Research Publication and Reviews Vol (2) Issue (9), (Puerto Rico, 2021), pp 572-578.

technology systems. Mostly, these are e commercial-off-the-shelf (COTS) hardware and software which do not match with the military specifications. In addition, BD Army uses software which endangers the cyber domain of BD Army. Furthermore, the prevalent network architecture of BD Army is quite complicated, consisting of a hybrid network platform that comprises both military and commercial networks. Currently, BAnet, office net, resident internet, microwave, optical fiber, mobile net, and broadband net from civil vendors are the platforms used by the BD Army. On the other hand, the indigenous space technology competences, the successful launch of the Satellite and Remote Sensing Satellite (IRS) of our neighbouring armies have prompted them to increase their space power. As a result, the perceived threat to BD Army could be in the domain of information and technology sectors in the form of information jamming, psy w, HW, CW, etcetera rather than direct military engagement.

Probable IW Threats against BD Army and Consequences

IW attackers may target an individual (any member of BD Army and their family member), or a group (soldiers, officers, junior officers), or an organic military entity (Formation, Brigade, Battalion, Company, and Institution). The Consequences of IW aggression is manifold. Undesirable, serious, and catastrophic are three indications that can be used to measure the impacts of IW attacks. 'Undesirable' refers to harm that can be restored by the Army or an individual. 'Serious' means that the damage will affect the image of the Army but it will have grave effect on the individual. 'Catastrophic' means that the damage will have grave security impact on both the individual and the Army.[20]

Table 5: Probable IW Threats against BD Army and Consequences

Probable IW Treats Against Bangladesh Army			
Victim	**Types**	**Objectives**	**Consequences**
Individual	Phishing Campaign	To illegally acquire and leverage sensitive information for monetary gain.	Undesirable
	Harassment and Cyber Stalking	To pose of revenge, anger or control.	Serious
	Defamation	To degrade one's reputation, honor, integrity and character.	Serious/ Catastrophic

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[20]   86 Independent Signal Brigade, A study on the Nature and Extent of Cyber Threat Bangladesh Army may Encounter and Suggest Remedial Measures, AHQ Project Study, (Dhaka, 3 September 2018)

Probable IW Treats Against Bangladesh Army			
Victim	**Types**	**Objectives**	**Consequences**
Organizational	Deef-fakes	To manipulate information for deceptive purposes that influences the psychological domain of the targeted people.	Serious/ Catastrophic
	Disinformation Campaign	Spreading false narratives to influence military decision-making.	Serious/ Catastrophic
	Cyber Espionage	Attempts to infiltrate military networks to gather classified information.	Catastrophic
	Zero-Day Exploits	Leveraging undisclosed vulnerabilities in software or hardware for malicious purposes.	Serious
	Distributed Denial of Services Attack	To shut down a machine or network making it inaccessible to its intended users.	Serious
	Jamming and Spoofing	Interfering with military communication and navigation systems through electromagnetic interference.	Serious/ Catastrophic
	Military Deception	To influence the military decision-making procedure in enemy's term.	Catastrophic

Source: Author's Construct based on Study

Potential Challenges for BD Army to Combat IW Threat

BD Army stands at the forefront of the nation's defence, however, it is not yet immune to the evolving challenges posed by IW. As the landscape of warfare shifts from traditional battlefields to the digital realm, BD Army faces several formidable challenges in its quest to combat IW threats effectively.

Cultural Shift.   BD Army, like many traditional armed forces, has primarily focused on conventional warfare methodologies. Embracing a cultural shift towards recognizing the significance of information-based strategies may necessitate altering ingrained mindsets and

hierarchical structures. User psyche towards accepting and adhering to new system or features is another hard challenge BD Army must face. For example, introduction of 'Active Directory' is going to introduce a new level of difficulties for the users who are more dependent on the use of pen drives or CD ROMs.[21] Persuading them to accept the new system is going to be a challenge.

Access Control. BD Army is expected to have access control built-in, notably physical access control. According to a study, the BD Army faces challenges to ignore this security precaution. Access control, both physical and digital, is crucial for preventing system breech and unauthorized access. Implementing a sustainable and full proof access control is going to be an added intricate challenge for BD Army in combating IW threat.

Cyber Infrastructure. The cyber infrastructure of the BD Army is built using hardware and software from external countries. As a result, there are severe security concerns relating to data breaches as manufacturers have more opportunity to embed security holes into their products.

Outsourcing. BD Army is operating one of the largest IT networks around the whole country. Connectivity among the distant location is dependent on BD Telephone Company Ltd (BTCL)[22] and various Nationwide Telecommunication Transmission Networks (NTTNs). This is open data tunnel and is always susceptible to any kind of infiltration. Extensive reliance on outsourcing for IT solution, BD Army continues to be susceptible to data leakage.

Integration of IW Infrastructure. Integration in the context of IW signifies the harmonious alignment of traditional military activities with the diverse array of IW tactics. Successful integration of IW entails the ability to coordinate, synchronize, and utilize both traditional and information-based strategies to achieve strategic objectives. Without developing a unified doctrine that outlines IW's role in BD Army operations could result in a significant consequence for the entire nation.

Information Sharing. Integrating IW involves sharing timely and accurate information across units and hierarchies. Establishing efficient communication channels while safeguarding sensitive data presents both logistical and security challenges. Effectively disseminating information in a timely and accurate manner among various outfits of the BD Army remains a potential challenge while taking into account the vulnerabilities posed by IW.

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[21] 86 Independent Signal Brigade, A study on the Nature and Extent of Cyber Threat Bangladesh Army may Encounter and Suggest Remedial Measures, AHQ Project Study, (Dhaka, 3 September 2018)

[22] Lieutenant Colonel Rakibul Karim Chowdhury, afwc, psc, Sigs, Integration of Non- Military and Commercial Facilities Towards Enhanced Communication for BD Army, National Defence College Journal, Mirpur, Dhaka 2017, p.7.

Strategy against IW Aggression

The rapid advances in information technologies are creating new problems and vulnerabilities for BD Army. Effective defensive and offensive measures against potential IW actors should be perceived and implemented at all levels of warfare. As such, BD Army has to strengthen its capability for information gathering, compilation, access, analysis, and communication that can produce useful intelligence in real-time or very close to real-time. However, the planning of IW by BD Army should be in coherence with the joint and national IW portfolio.

Developing of an IW Strategy

Thinking critically and creatively about potential information strategic applications for the national and military command authority is the first step in developing an IW strategy. This will require new methods of thinking about information domain for BD Army. What information are required? How BD Army would alter to collect, process, share, and use information? Consequently, implementation of operational changes must be done based on information and intelligence. To create an IW architecture that can serve as the foundation for IW implementation, the three services must collaborate with IT governing authorities and other government and non-government organizations. Additionally, conducting a thorough examination of information vulnerability should be a top priority. Following that, defensive and offensive measures should be put into place as soon as the vulnerabilities are recognized.

Formulation of IW Doctrine for BD Army

The adoption of IW doctrine by the BD Army highlights the diverse needs of all services and government organizations.[23] To confront the challenges of the anticipated future operational information environment, this doctrine should be developed in conjunction with civil counterparts. Hence, BD Army should take strategic, operational, and tactical level measures in reaction to IW threat. BD Army's Information Technology (IT) Directorate must create a robust IT infrastructure where security systems and measures, such as software encryption, firewalls, and hardening of computer and network systems against intrusion will be potentially embedded. Additionally, this will also necessitate framing of legal and regulatory measures. In order to retaliate as part of organized CW in the full information domain, an offensive IW capacity must be built.[24] The fundamental offensive and defensive behaviors can be mapped to the three levels of IW model.

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[23] Lieutenant Colonel Kazi Anwar-Ul Islam, afwc, psc, Sigs, Dimension and Imapct of Information Warfare: Policy Options for Bangladesh Army, National Defence College Journal, Mirpur, Dhaka 2002, p.102.
[24] What is the Role of Cyber Operations in Information Warfare, (Accessed from https://digitalcommons.usf.edu/cgi on 5 February 2023)

Table 6: Proposed IW Organization of BD Army

IW Model		Function (Against Opponent)	Activities at Military Domain	
Offensive	Perceptual	Manage perception and disrupt decision process	Psychological Operations and Deception	
	Information	Dominate information infrastructure and electromagnetic spectrum	Network Operation (Network Attack and Support)	EW Operation (EW Attack and Support)
	Physical	Operational attack (Individual, Organizational and Information System)	Physical Destruction	
Defensive	Perceptual	Protect perceptions and decision-making processes	Intelligence and Counterintelligence	
	Information	Dominate information infrastructure and electromagnetic spectrum	Information Security	EW (Electronic Protection and Support)
	Physical	Protection of operational structure	Operational Security	

Source: Author's Construct based of Study

Establishment of Organizational Structure of IW Outfit for BD Army

Information security is a command responsibility, and commanders at all levels are responsible for ensuring it. In order to respond to information security breaches, cyberattacks, and other potentially catastrophic situations in the BD Army that pose a threat to the entire information domain, an IW directorate or branch should be established in Army Headquarters (AHQ) and up to Battalion level following a top down approach.

Figure 3: Proposed IW Organization of BD Army
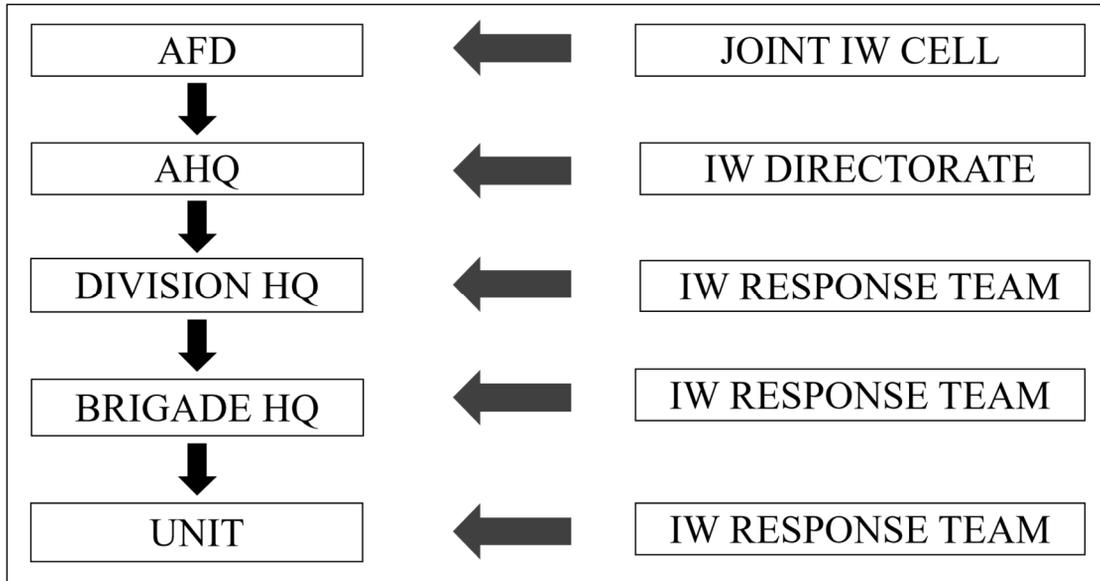
Source: Author's Construct based of Study

Strengthening the Spectrum Management Policy

The allocation of bands and frequencies for BD Army in the electromagnetic spectrum will continue to be under pressure due to the acquisition of high-tech weapons, air and ground communication, radio navigation, surveillance and control systems, and hiring of functional satellite channels for operational use. For guaranteed spectrum access and protection from the IW threat, BD Army will need to work more closely with the national agency responsible for spectrum allocation. Therefore, to counter IW threats, existing spectrum management policy must be strengthened to ensure more reliable and secure usage of essential frequencies for BD Army during operational situational.

Real Time Risk Assessment

Military, national and private sector information security are inextricably linked because of the nature of the IW threat.[25] Attacks against the military's critical information infrastructure could have a significant impact on the nation's information organizations, which would have concrete repercussions for national security. Therefore, in order to improve IW capabilities, the BD Army should adopt a real time risk management strategy encompassing both public and private information sectors. The risk assessment should determine the vulnerabilities of key elements of

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[25] Information Operations, Information Warfare, and Computer Network Attack (Accessed fromhttps://digital-commons.usnwc.edu/ on 7 February 2023)

military, national and private sectors information security. Without such an assessment, it will be extremely difficult for BD Army to establish a solid foundation for decision-making and counter IW aggression.

Jointness and Interoperability

Jointness ensures that various military branches and units share information and intelligence effectively. This shared awareness helps to identify and respond to IW threats more swiftly and comprehensively. Interoperability enables different branches to work together seamlessly. In the context of IW, this coordination allows for a synchronized response to cyberattacks, disinformation campaigns, and other IW threats. Moreover, interoperability prevents redundancy and maximizes resource utilization. When different units can work together, resources such as cybersecurity tools, expertise, and personnel can be allocated more efficiently. However, the BD Army falls short in terms of interoperability and jointness with different military outfits, including sister services. Thus, in order to increase the effectiveness of military operations against IW threats, BD Armed forces must develop an integrated and holistic mechanism.

Media Management

There are many delicate topics that, under the guise of security and secrecy, hinder the free flow of information and have a tendency to fuel speculation and misunderstanding about BD Army.[26] As a result, it is frequently discovered that BD Army personnel are not well informed or remain clueless about many critical problems related to media. Due to a lack of a well-organized media management unit, incomplete information regarding the BD Army frequently led to inaccurate conjecture and misunderstandings across the nation. A branch or cell should be established at AHQ to handle media-related issues. This kind of branch or cell will play a vital role in minimizing the impacts of IW aggression against BD Army.

Conclusion

Since ages, information is considered the key to success in any operation or war by great Generals and Strategists. Hence, information is used within the art of warfare, where it is collected through intelligence and cyber espionage, and assessed and manipulated via disinformation campaign, propaganda, fake news used to influence the targeted adversaries. Besides, information contributes to warfare by extending C2, shaping coalitions, revealing enemy capabilities and intentions from a distance, and enabling remote capabilities that can extend any military's operational reach. In the most general sense, the military objectives of IW are to present the adversary (the targeted decision maker) with the information in such a way that they make a

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[26] The Media-Military Relations and Options for BD Army, (Accessed from https://www. researchgate.net/publication/340793094 on 9 February 2023)

decision that complies with own objectives. The adversary must believe that the information they are using is trustworthy and that it does not allow any other decision except the one that own forces want them to make. The emerging paradigm of IW presents a significant dilemma for security planners worldwide. Any interruption, distortion, or delay might result in greater confusion and havoc than a physical attack since the state and society depend more and more on the swift, efficient, and unfettered flow of information. However, the nature of contemporary warfare necessitates to incorporate the concept of IW in both defensive and offensive capacities encompassing the use of computer attack on adversary's vulnerable information system, protection of own critical information, integration of advanced information technology into weapon platforms and manipulation of the media for propaganda purposes.

In light of automation and digital transformation BD Army is now more exposed than ever to numerous forms of IW, leading to a diverse range of perspectives on the information security vulnerabilities from different actors such as hardware and software developers, data brokers, digital service providers, hackers, and spammers, cyber criminals, and so on. However, BD Army has not yet developed any IW policy to guard its information vulnerabilities. Nevertheless, to maintain a safe information domain and to deter information threats and challenges emanating from the adversaries, BD Army must address the potential threats of IW. In this context, the realm of IW demands formulation of IW doctrine for BD Army, conceptualization of spectrum management policy, enhancement of real time risk assessment ability, fostering jointness and interoperability between various military outfits and sister services, building of media management capability, and so on. It is therefore, imperative for BD Army to undertake an initiative for a holistic conceptualization towards IW as a force multiplier to combat any potential adversary in the future warfare environment.

Recommendations

In light of the discussions and the findings of the study, few recommendations are enumerated below:

a.   IW Doctrine for BD Army should include national information domain so that the involvement of entire nation can be obtained in the crisis moment.

b.   An effort by Army Training and Doctrine Command (ARTDOC) should be taken to comprehend the concept of IW and synchronize the training modalities.

c.   To harmonize the capacity building for IW, IT Directorate should take an effort to reduce the reliance on third party software and hardware, and grow capability in building own customized products.

    d.   For successful implementation of the IW concept and to undertake feasibility studies on various scenarios, IT Directorate may convene a committee to establish a separate Research and Development (R&D) wing at AHQ.

    e. Military Training Directorate in conjunction with IT and Signal Directorate should plan for collective training and exercises at formation level incorporating IW tools.

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