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Chief Patron

Major General Md Enayet Ullah, BSP, ndu, psc

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Message from the Chief Patron

It gives me immense pleasure to see another coveted publication of the research journal of Defence Services Command & Staff College, *Mirpur Papers* Volume-25, Issue Number-29, which is on the shelf now. This journal bears the testimony of the intellectual capacity of the course participants of Armed Forces of different countries around the globe. This specific issue of *Mirpur Papers* is a new milestone in its long pathway since 1978, in a sense that, along with the write up of the course participants and faculty, this paper contains few articles written by renowned scholars and educators of tertiary institutions of the country.

Defence Services Command and Staff College, Mirpur is the premier military institution which is designed to develop the professional acumen and capacity of selected officers of the Armed Forces in order to prepare them for the assumption of increasing responsibilities. Besides gaining military knowledge, the course participants also undertake research works as part of their Masters of Science in Military Studies Programme under Bangladesh University of Professionals (BUP). Over the years, the best of these research works are accumulated within a single binding and thus *Mirpur Papers* have always drawn appreciation from learned readers from different domain.

DSCSC always emphasizes on conducting research on contemporary issues on national security and defence. This enables the mid-level officers to make an original contribution to a subject of national or international interest. I believe the readers will find the articles useful and intellectually stimulating.

Finally, I take this opportunity to congratulate and commend the Editorial Board, all contributors, reviewers and all others involved in the process of the publication of this journal.

Major General Md Enayet Ullah, BSP, ndu, psc
Commandant
Defence Service Command and Staff College

EDITORIAL

Every year the Defence Services Command and Staff College, Mirpur, Bangladesh publishes a professional research journal namely *MIRPUR PAPERS*. This journal is a fine blend of articles written by the course participants that present institutional, national, regional and international issues. The articles are basically the abridged versions of the original dissertation papers that the course participants submit as a part of the Masters Program under Bangladesh University of Professionals (BUP). The contributions of the faculty members are also significant as they supervised the research work throughout the course. In addition to the articles of the course participants, the faculty members, reputed scholars and educators at tertiary level also shared their valuable knowledge through their writings in this journal.

The first article is 'Linking development and Diplomacy in the context of Bangladesh in the 21st century.' The paper illustrates that Bangladesh has demonstrated remarkable economic development in recent years. During the second decade of the current century, scholars and policy-makers have been invoking terms like 'Bangladesh Surprise' and 'Bangladesh Development Surprise.' Scholars have also argued that not only Bangladesh's development can be termed as a 'surprise' but it is also 'exceptional' in nature. The traditional literature and analysis emphasize on Bangladesh's economic development and traces its rise in export and drawing of foreign direct investment (FDI) from a number of sources. However, this article argues that it is not only through economic diplomacy that Bangladesh has earned such a stride but this is a result of cogent political and economic calculations based on pursuing a pragmatic 'Development Diplomacy.' It also argues that traditional lenses of economic diplomacy cannot be enough to explain without connecting economic diplomacy with the broader perspectives of development needs of Bangladesh and reflect it in its foreign policy.

The second article is on 'Plastics/Mircoplastics in the Food Chain – A Threat to Human Health.' Any human-made object that does not naturally degrade within days or months can potentially become marine litter if it is not properly managed. Common litter items are made of paper, wood, textiles, metal, glass, ceramics, rubber and plastic discarded by humans. The most common items, constituting over 80 per cent of the litter stranded on beaches are cigarette butts, bags, remains of fishing gear, and food and beverage containers. There has recently been a noticeable increase in concern about the implications of pollution by small sized debris, especially the one made up of plastic. The term 'micro plastic' has been introduced to describe small plastic debris commonly less than 5 mm in diameter. The global production of petroleum-derived plastic has also increased dramatically, from 1.5 million tons in 1950 to more than 300 million tons in 2014. Some people have described this dramatic increase in the use of plastics as the 'Age of Plastics' or 'Our Plastic Age.' If the current trend where production increases by approximately 5 per cent a year continues, another 33 billion tons of plastic will have accumulated around the planet by 2050. However, more research is needed to determine impacts on population levels which can further affect endangered species, sensitive habitats and ecosystems. All of these have tangible and measurable socio-economic consequences for fisheries, shipping and tourism.

The third article is titled 'Challenges and Opportunities in Management of Trans boundary Water Resources: Focus on South Asia.' In this article the author investigates the origin and sources of trans-border rivers in the region and their management. The Ganges, Brahmaputra and Meghna rivers originate in the Himalayan and Vindhya ranges, flow through China, Bhutan, Nepal, India and Bangladesh and ultimately join the Bay of Bengal. Draining an area of 1.75 million square kilometers, these rivers impact the lives of more than half a billion people in the region. Such an enormous body of water and equal dependency on it require strategies that can create niches for sustainable management of these across countries and peoples. Yet, in South Asia, water resources management is an extremely political and emotive issue, and in many cases, divisive and contentious. In recent times the very dynamic politics has been evolving and emphasis is on greater economic integration and connectivity; thereby opening windows of opportunities for cooperation in water resources management. Against this backdrop, this paper summarizes the challenges and opportunities of trans boundary water management within South Asia, particularly within the Ganges, Brahmaputra and Meghna basins.

'Marine Protected Area in Bangladesh: Role of Stakeholders' is the fourth article. World Congress of National Park and other international conventions called for the conservation of natural resources through protected areas on land and at sea. Addressing such call, Bangladesh declared first ever Marine Protected Area (MPA) in Swatch of No Ground (a canyon area within the sea area of Bangladesh lie south of Mongla) in the Bay of Bengal to safeguard dolphins, sharks, whales, sea turtles and other oceanic species. The content analysis suggest that the Marine Protected Area is essential both for conservation of biodiversity and sustainable fishery. Therefore, for successful implementation of this Marine Protected Area, the author has discussed about fishermen's socio economic condition and stakeholders' perception about Marine Protected Area including effect of manmade hazards to this area. The need for formulating a viable strategy has also been highlighted.

The fifth article is on 'Social Research: A Comprehensive Understanding.' Research has become part of the professional entity for all the professionals and academicians working in different fields. There is no denying fact that one struggles to complete a research work smoothly because of the absence of easy yet effective approach/ methodology. The scholars/ researchers have defined research from different perspectives therefore social researchers find them into quagmire while consulting them for determining appropriate design and methods of conducting own research. A researcher also needs to have perfect idea/ understating about the research design and method that he/ she should follow for answering the research questions and fulfilling the purpose. This paper primarily clarifies the conceptual aspects about research including the logical sequence for conducting a social research, and discusses expected structure for writing the research proposal and report. The paper has also emphasized that a researcher must give due importance to collect data carefully so as to maintain the validity of the research.

The sixth article is on German interest in Persian Gulf; more specifically in Iran-Iraq region during WWII. The magnitude of the German operations in this theatre was less in comparison to other Theatre of Operations. To identify the reasons behind such phenomenon, the author made a dialectic review of the German strategic interest in this

theatre. He argued that, Germany had economic interest in this region that could be maintained through the collapse of the British influence in the region. To achieve its desired ends, Germany wanted to exploit the Arab nationalist movement through covert activities and information operations as the means, to create and maintain a chaotic situation in the region for the British. However, finally Germany could not be successful because of the unexpected development in the European theatre and quick development of the nationalist movement in Iraq.

The seventh article is on the performance on the first Bangladesh Rapidly Deployable Battalion (BANRDB) in United Nations Organization Stabilization Mission in the DR Congo, which was employed under the evolving concept of 'protection through projection'. In this article, the author first reviewed the new concept of 'protection through projection' as an emerging concept of UN peace support operation. Then he reviewed the performance of BANRDB which was employed under this concept. The article underscores, the challenges faced by BANRDB in DR Conge and also highlights some important takeaways from the experience of first BANRDB. The author also argued that, to effectively contribute in the future peace support operations, Bangladesh Army should prepare the RDB effectively taking the experience of first BANRDB into consideration.

The eighth article is titled 'Relevance of Gallipoli Campaign in Modern Era- An Operational Perspective' The Gallipoli Campaign was fought one hundred years ago. The chronicles of the campaign offer a number of enduring lessons for military personnel both at strategic and operation level. During First World War, Gallipoli Campaign was launched by Allied Force in modern day Turkey in 1915-16. With the stalled Western Front, the Allied Powers were debating going on the offensive in another region of the conflict, rather than continuing with attacks in Belgium and France. The campaign began with a failed naval attack by British and French ships on the Dardanelles Straits and continued with a major land invasion of the Gallipoli Peninsula, involving British and French troops as well as divisions of the Australian and New Zealand Army Corps (ANZAC). If successful, capture of the Straits would allow the Allies to link up with the Russians in the Black Sea, where they could work together to knock Turkey out of the war. The success would also allow the Allied Forces to weaken the Central Powers, allow Britain and France to support Russia and help to secure British strength in the Middle East. Unfortunate though, the Allied suffered an overwhelming defeat in the campaign for reasons many which are still being researched. Researchers have opined that at strategic and operational level the campaign offers enduring lessons that must be put into practice in foreseeable future as well. The formulation of appropriate war policy to satisfy the ends, ways and means matrix, dynamic leadership with flexibility/agility of commander's mind to adapt in ever changing fluid situation and knowing the enemy and operational environment holds true for the contemporary environment and will continue to hold true for future days to come.

The ninth article is 'Challenges of Contemporary Operational Environment: Measures to prepare the commanders to face the challenges.' Operational environment of 21st century is greatly influenced by unpredictable elements of failed and failing states, complex cultural and demographic issues, technological ascendency, cyberspace and social media.

Unfamiliar threats and their unpredictable ways of warfare, complex physical environments, and demographic issues coupled with diverse cultural-ethnic dimensions, the preeminence of technology and cyberspace are a few salient features of the contemporary operating environment (COE). To fight, win and survive in such evolving and fluid COE, militaries need to develop a deep understanding of the nature of changes and should continue to adapt to the changes for remaining relevant in such changes. As operations in the COE are considered as commander centric it is important to prepare military commanders to face the challenges of COE. To cope with the rapidly changing and evolving operational environment, military leaders of present day need to be educated on the political, strategic, historical, and cultural aspects of a more complex world, as well as need to develop a thorough understanding of the nature of the war they are likely to face in near future. Through training and practices commanders need to develop the required skills essential to operate successfully in the COE. Present and future day's challenges demand militaries to adapt and lead the changes rather than being surprised by the changes. It also demands a holistic insight in the way militaries look, perceive and approach to a military problem.

The tenth article is on the effective grooming of newly commissioned officers of recently introduced four years training system. After the initial training in military academy the classical and operant conditioning of the junior officers take place in the units. The author through his study found out that, due to the newly introduced training system junior officers are getting lesser exposure to the unit environment which is affecting their performance. He further argued that, to effectively groom the junior officers their presence in the unit must be ensured. Finally, the researcher suggested some ways to ensure presence of newly commissioned officers in the unit in order to facilitate their effective grooming.

The eleventh article is on capability enhancement of junior officers of Bangladesh Army through the implementation of mission command. In this article the author argued that, to operate effectively in asymmetric warfare environment greater degree of decentralization of command and flexibility is required which could be achieve through mission command. Through his research the author identified that, the junior officers of Bangladesh Army do not possess required attributes to operate effectively in asymmetric warfare environment. Thereafter he argued that, through the implementation of mission command in Bangladesh Army, leadership attributes and other capability of the junior officer would be enhanced. Finally the author put forward some suggestions to implement mission command in Bangladesh Army.

The twelfth article is on 'Sustained Military Knowledge Vis-A-Vis Present Training System.' The article proposes measures to improve the military knowledge (tactics, military history and geo-political awareness) of the MLO of Bangladesh Army, which is perceived to be a weak area. Initially the paper has specified the expected and existing level of military knowledge of the MLO. To understand the gravity of the problem, the researcher thereafter has identified the reasons and negative impacts of insufficient military knowledge of the MLO. In the process, the researcher proved the hypothesis: 'Lack of progressive training results inadequate military knowledge of the MLO of

Bangladesh Army.' The operational environment is becoming increasingly complex every day in the whole world including South-East Asia, where the trend of resorting to militarism is on the rise. Therefore, it is felt that the level of military knowledge of the MLO is not on the desired level which ultimately needs improvement.

'Transformation from Buyer's To Builder's Navy: A Strategic Choice for Bangladesh' is the thirteenth article. History of shipbuilding in Bengal dates back in the ancient times. Due to geographical advantage development of shipping and shipbuilding has been a natural recourse in Bangladesh. Hence, Bangladesh has a modest shipbuilding industry and a considerable fleet of 12,000 ships. This huge fleet has been constructed and is being maintained by about 300 indigenous local shipyards. Bangladesh Navy has developed her fleet with the help of foreign purchase. Procurement of warship from abroad is a costly affair and requires following a lengthy and exhaustive process. During war time this may be fatal for the security of the country to go for foreign procurement. The reemergence of shipbuilding has been a new ray of hope in strengthening our national economy and fulfilling our vision 2041. To achieve the desired outcome from this sector few issues like discipline in the sector, infrastructure, marketing, quality and skill, shortage of linkage industries, and a negative financial environment need to be addressed with grave importance. The analysis of this paper suggests that adopting appropriate marketing strategy, building smaller to medium size platform and capacity enhancement will be suitable strategy for Bangladesh to be transformed to a 'Builder's Navy'. Thereby, it can be deduced that transition from Buyer's Navy to Builder's Navy will be a strategic choice for BN. The suggested ways to transform Buyer's to Builder's Navy was properly validated through survey results, FGD and interviewing senior officers.

The fourteenth article is 'Simulator based Flight Training in BAF: Its effectiveness on operational Readiness.' The author argues that recent installation of Combat Trainer and Helicopter simulators in BAF provides scope for positive training to the aircrews in different phases of flying training. The training values even surpasses the real flying in specific circumstances like emergency handling training and adverse weather flying which is not possible through real flying. Simulator based flight training would be also much cost effective besides its effectiveness in operational readiness. The article endeavours to find out the maintenance challenges of such simulators including sensitivity to weather, sophisticated software, spare parts, and requirement of skilled manpower. More so, inadequate instructors, not having appropriate policy for integration and recognition in the training system possess the risk of underutilization. Even with these few challenges still simulators remain as an effective tool for aircrew training comparing its overall effectiveness from both operational as well as economic perspective.

The last and fifteenth article of this issue is 'Cyber Terrorism: An emerging threat to Indian National Security.' Recent invasion of cyber space by terrorists to target India's critical infrastructure have indicated that cyber terrorism is an emerging threat to the Indian national security. Within this milieu, this research seeks to find the necessity of integration of civilian – military organizations to counter the threat of cyber terrorism in Indian context. At the very outset, the concept and framework of cyber terrorism

including modus operandi of cyber terrorists were discussed and an insight on the most plausible targets for cyber terrorists in Indian context was provided. Thereafter, the United States' response construct to counter the cyber terrorism was analyzed in detail to draw out the relevant lessons as applicable in Indian context. Then, the necessity of integration of civilian – military organizations and how the integrated civilian – military organizations is going to be effective tool in countering the cyber terrorism were assessed. At the end, future road map and few recommendations are given to meet the emerging threat.

Contents

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LINKING DEVELOPMENT AND DIPLOMACY IN THE CONTEXT OF BANGLADESH IN THE 21ST CENTURY

Lailufar Yasmin
Mohammad Atique Rahman

Introduction

The task of diplomacy is to make its presence felt in the international realm and to ensure its survival as a sovereign state. It becomes difficult for smaller nations—small in terms of landmass, population, size of the economy, to mention a few—to make itself a significant member of the international community. Bangladesh, since its independence, has experienced of being identified in the international arena as not only as a 'small' nation but also as 'international basket case'. International headlines would cover Bangladesh as a spot of natural disasters and political instability only. However, the scenario has shifted dramatically in the last several years. The Prime Minister (PM) of Bangladesh, Sheikh Hasina, often widely discusses about the progress made by Bangladesh in terms of its economic and political stability. Speaking at World Economic Forum (WEF) held at Dalian, China in July, 2019, the PM has highlighted the crux of Bangladesh's foreign policy in the following manner:

> creation of an environment of peace-harmony-stability of all countries; focusing on entire aspects of sustainable development; engaging countries based on mutual trust and mutual respect for mutual benefit; focusing on wealth creation for all, development must be inclusive; and creating fair competition, not rivalries.[1]

This shows that Bangladesh is ready to take the mantle of responsibility in the new world order, where Asia's ascendency and the rise of the Indo-Pacific are the order of the day. The question that this article raises and answers—how Bangladesh has made it possible towards this end with a relatively small landmass yet a high population density? The answer, the article simply puts forward as a special emphasis on development diplomacy. In the foreign policy parlance, while the phrase 'economic diplomacy' is widely circulated and accepted, one rather frames Bangladesh's economic diplomacy not merely as such—as the era of economic diplomacy, one believe, has transcended to a new level for Bangladesh—prioritizing development goals and shape foreign policy goals accordingly. A keen attention to the discussion provided here would certify so. The tremendous emphasis given on identifying development objectives and reshaping foreign policy objectives have taken Bangladesh to this level—in 2019's Bangladesh, which is not shy to make its presence felt in forums like WEF. There's a number of area that forms the core of Bangladesh's development diplomacy such as—energy cooperation, regional connectivity and infrastructure development and promoting trade and investment. One would observe that these particular areas deserve attention not within the traditional framework on 'economic diplomacy' but careful underpinning of development goals and priorities and act accordingly. This article, therefore, is unique in reorienting the

understanding and applications of economic diplomacy in Bangladesh's context—when a country's priority is 'development', its economic diplomacy is reshaped according to the priorities and therefore, must be acknowledged as such. Here, emphasis is on the energy sector—one of the prioritized development goals for Bangladesh. By highlighting this area, it is shown how Bangladesh's development diplomacy functions. The article, however, does not disregard other two areas highlighted here—trade and investment and regional connectivity and infrastructure—but points out the relevance of those as well, although in a limited scale. The first section, after this introduction, deals with the progression towards development and diplomacy from Bangladesh's practice of diplomacy. It concludes by articulating how development diplomacy has emerged as the latest paradigm in Bangladesh's foreign policy.

Section: I: Trends and Patterns of the Development Diplomacy of Bangladesh

Within 47 years of independence, in 2018 Bangladesh has elevated from the list of Least Developed Countries (LDCs) to a developing country. The country has made tremendous progress in all three indicators i.e. economic risk, human development and per capita income. This is possible when there has been sustained economic growth, socio-economic development especially at the rural levels, empowerment of the women, spread of export oriented industries, foreign direct investments and infrastructural developments. Bangladesh has proved to be consistent in achieving these throughout its development policies and actions. However, the current development miracle of Bangladesh contrasts with the socio-economic conditions in its early stages. There is an old Chinese saying that "we can always get a better understanding of the present by reviewing the past."[2] The independence of Bangladesh was a unique phenomenon as it emerged out of the national liberation movement. The economy and infrastructure were completely devastated by the Pakistani military during the nine-month war. The United Nations estimated that the cost of reconstruction of war damaged infrastructure was about over 938 million USD.[3] The economy remained under-developed and the human development indicators were all not so much promising at the beginning. The birth of a new nation created widespread sympathies worldwide, however, it also led to doubts about its viability and stability.[4] However, Bangladesh proved these early predictions wrong in many instances. The country struggled to evolve from the shadow of abject poverty in the beginning. Jeffrey Sachs remarked about the Bangladesh's development success in the following words:

> Bangladesh was born in a war for independence against Pakistan in 1971. That year, it experienced massive famine and disarray, leading an official in Henry Kissinger's department to famously label it 'a bottomless basket case.' Bangladesh today is far from a basket case [He provides illustrative statistics of human development progress]...Bangladesh shows us that even in circumstances that seem the most hopeless there are ways forward if the right strategies are applied, and if the right combination of investments is made.[5]

Taking Professor Sachs comment on Bangladesh as point of departure of this section, the government of Bangladesh in its early stages had adopted rights strategies and policies to

develop the war ravaged country. As a newborn country Bangladesh desperately needed friends around the world to gain recognition, moral and material supports for its striving for achieving development. Therefore, one can see that there has been close link between the adoption of foreign policy and domestic development dynamics in Bangladesh. It is right to mention that the foreign policy of any nation-state is a combination of complex and dynamic national and international interests that the country strives to achieve in an un-predictable environment.[6] The case for Bangladesh foreign policy after the independence was rather more challenging than ever. For a new nation emerged out of the prolong struggle, Bangladesh had to maneuver its domestic factors including political and social values, economic compulsions and national security interests in the formulation of its foreign policy. Also Bangladesh had to strive for building image as a developing and peace loving nation at the world arena. Bangladesh having large population, small territory represents a mixture of small state characters. Therefore, the question may arise how Bangladesh can adopt best strategy as a developing country to preserve its sovereignty, deter external threats and creates external environment conducive for its long struggle for economic development and self-sufficiency. Like all states, the primary instruments are foreign policy and diplomacy.[7] The main purpose is not to the pursuit of power but the preservation of the limited power it possesses.[8] To achieve this, Bangladesh actively persuaded active multilateral diplomacy, official visits to the foreign capitals, repeatedly declaring war free world and peaceful settlement of the international disputes. According to Talukder Maniruzzaman, such initiatives have been successful in protecting the security of a small states.[9] Bangladesh has always been advocating for peaceful settlement of dispute and refrain from use of force. The Constitution of the People's Republic of Bangladesh in its part-II (Fundamental Principles of States) stipulates that Bangladesh "shall base its international relations on the principles of respect for national sovereignty and equality, non-interference in the internal affairs of other countries, peaceful settlement of international disputes, and respect for international law and the principles enunciated in the United Nations Charter, and on the basis of those principles shall."[10] Bangladesh also adopted a policy for the renunciation of the use of force in international relations and for general and complete disarmament.

After the independence, the foremost concern for Bangladesh is to preserve its sovereignty and territorial integrity and accelerate the socio-economic development. After the independence of Bangladesh in 1971, the Father of the Nation Bangabandhu Sheikh Mujibur Rahman envisioned that Bangladesh would be the Switzerland of the East.[11] To realize this policy, Bangladesh has adopted a foreign policy principle i.e. ''Friendship to all, malice toward none."[12] Bangladesh became part of the Non-Aligned Movement (NAM) and avoided to take sides with major powers in the early 70s which was heightened by the cold war rivalries between super powers and their allies. In order to overcome the economic, infrastructural and human resources ravages done during the 24 years of Pakistan's occupation, Bangladesh pursued economic diplomacy to attract foreign investment, increase trade and open up new destinations for labor migration. Within a year of its independence, Bangladesh had been recognized by 97 countries, and

had become a member of several international bodies -WHO, UNESCO, World Bank, IMF etc.[13] Since liberation Bangladesh has been pursuing an independent non-aligned foreign policy and showed its eagerness to develop amicable relationships with all. Soon after the independence the formidable task for the country was to ameliorate the image of Bangladesh to the world community.

Bangladesh had to adopt economic diplomacy which one can also refer to the development diplomacy in the beginning to improve the relations with the rest of the world. Development aid characterizes it as activities consisting of transmission, by society or government of one state, to society of another state, of certain resources, material or immaterial; on terms more favorable than those available on the international market and enabling acceleration of the other state's development.[14]

Development diplomacy as a part of public diplomacy thus aims to secure financial aids in the form of donations, loan, debt and relief, material aid in the form of consumer goods, investment and food and the technical aid in the form of training, counselling, and technology transfer. Bangladesh initiated massive development diplomatic activities namely establish direct communication with the external world, sending special envoys, participating international and regional conventions/forums, repeatedly vowed to support Non-Aligned Movement, and oppressed people around the world. Bangladesh having high population density lacks land and natural resources which makes economic development a major domestic foreign policy imperative. Therefore, the need for large scale economic assistance is a major component of the country's grand strategy and a driver of the foreign policy.[15] Bangladesh aims to promote conflict free world system where each nation can thrive and develop themselves. Bangladesh advocates for the oppressed people under occupations all over the world and supports to the national struggle for the self-determination. Bangladesh actively engaged with development diplomacy, advocates for economic, business and trade cooperation at the international and regional levels. The first objective was to secure recognition and establish good relations with the other countries to achieve major objectives of the development diplomacy i.e. aid, investment and market for the skilled labor migration from Bangladesh. In this backdrop building relationship with the Muslim world as a part of the development diplomacy was conducive to ensure continues assistance from the rich Muslim countries including countries from the Middle East. Middle East has been a source of economic assistance and an important outlet for migrant workers from Bangladesh.[16] As an instrument of foreign policy, aid is a useless tool unless there is a strong community of interest between the aid giving and aid recipient countries.[17] Thus as Bangladesh desperately needed Middle Eastern petrodollars as much as the Arab states wanted support from the second largest Muslim nation.

Taking this as a referral point of discussion, one can argue that political and economic interests prevailed between Bangladesh and Middle East aid flows. The international situation in the early 1973 was an opportunity for Bangladesh to develop relations with the Middle East. The Arab-Israel crisis followed by an unprecedented price hike of oil in

1973 boomed economies of the Middle Eastern countries to the greater extent.[18] The oil rich countries emerged as a major source of foreign aid while the rest of the world was facing recession due to oil price. Middle East soon emerged as the source of foreign aid to the least developed and fellow Muslim countries. Bangladesh looked toward the Middle East as possible donors to meet its massive economic and financial needs.[19] Therefore, aid continued to remain the overwhelming development diplomacy consideration for Bangladesh. The financial assistance has been in the form of both grants and loan.

Bangladesh also in supports of fostering regional connectivity and economic integration in South Asia. The country aims to establish it as a regional hub of transit and trade in Asia mainly between South Asia and South East Asia, East Asia and China.[20] Both at the regional and sub-regional levels Bangladesh became forefront to establish South Asian Association for Regional Cooperation (SAARC). In the recent past Bangladesh facilitated the formation of sub-regional organization i.e. the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). This organization has member countries from South and South East Asia including Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan and Nepal. BIMSTEC has permanent headquarters in Dhaka, the capital of Bangladesh. Geographically, Bangladesh is considered as the land-bridge between South and South East Asia. The potential of Bangladesh as the key partner of regional connectivity is very high.[21] As for example, there are several proposed several trade and transport corridors to build in this region. Namely these are: BBIN (Bhutan, Bangladesh, India and Nepal) corridor and BCIM-EC (Bangladesh, China, India and Myanmar) Economic Corridor. These corridors are important forums of furthering relevant regional cooperation initiatives. Bangladesh is also a member of Track II Kunming Initiative of four countries, namely, Myanmar, Bangladesh, China and India.[22]

To conclude this section, it can be said that after the independence, development assumed a major place in Bangladesh foreign policy, influencing its principles and values. Since then, politicians and diplomats have used many instruments, incentives, inputs, and opportunities obtained abroad to further national development. Bangladesh is a good example of linking development diplomacy and development which is a matter of great importance especially after the independence in 1971. In the subsequent sections, the primary emphasis is given on the discussion of Bangladesh's energy diplomacy.

Energy Diplomacy of Bangladesh

Bangladesh had faced acute energy crisis in the beginning. In 1971, after the independence of Bangladesh only 3% of the population had access to electricity.[23] The country needed rapid development in the energy sector which required investments, technical cooperation and infrastructural development. Within 47 years, the scenario of power and energy sector has been changed in positive manner.

As a part of development diplomacy Bangladesh government sought energy diplomacy. Energy diplomacy is a set of policy and actions that the state use in international arena to ensure energy security and avoid possible risks emanating out of conflicts, inter-state rivalry, financial crisis and arbitrary state actions.[24] In the context of Bangladesh, the country positioned itself as both energy exporting and importing country from the very beginning of the independence. As an energy importer countries the main objective of the energy diplomacy of Bangladesh was to get access to the cheap and continuous energy inflow, secure the energy supply, and maintain the variety of energy resources, efficiency, and stability of international energy market. On the other hand as a potential energy exporter country Bangladesh maneuvers the energy diplomacy to seek international assistance on the development and more efficient utilization of the reserves, investing on new reserves, maximization of revenues from the energy exports. The governments, policy makers, development planners have been actively engaged to take policy actions to ensure energy development in Bangladesh. The country has reserves of natural gas, oil and coal. These resources were required to explore, extract and distribute. Also the efficient use of energy resources come to the forefront among the policy makers. Briefly the energy security is the important pillar of national security in Bangladesh which denotes a balance between the energy demand and energy supply for different zones of the country under different timeframe (hourly, daily, monthly, seasonally, yearly, five yearly-long term). To ensure this Bangladesh had to interact and integrate with the international energy regime. The international energy regime is highly uncertain although it is guided by the rules and the mechanisms of international energy trade and transfer. This regime also aims to maintain the equilibrium in the rivalry between various interests of governments and international energy organizations. The 1973 OPEC oil crisis and resultant hike of oil price in the international energy market created uncertainty for Bangladesh. Bangladesh needed energy from the external sources and also need to develop its own energy resources. The recent volatile situation in the Middle East also a setback for the future of world energy regime. On the other hand the depletion of fossil fuel from the world is just a matter of time. It is estimated that the reserves of coal, oil and natural gas will be exhausted by 107, 35 and 37 years, respectively.[25]

In 1973, Bangladesh tried to formulate Production Sharing Contract (PSC) with the international companies to encourage exploration and development of natural gas and oil. Under PSC Bangladesh calls for international bid to invite MNCs for submission of the proposal. The standard selection criteria for the MNCs were (i) financial capability, (ii) technical capacity, (iii) experience, and (iv) work programme. In 1989 Bangladesh government established separate organization called Bangladesh Petroliam Exploration Company (BAPEX) under Petro Bangla which has here given specialize duty to explore gas and oil reserve in Bangladesh. The government has set out energy development plans including opening up the sector for joint development with other countries at the regional and international levels. The whole territory of Bangladesh both offshore and onshore was divided in 23 blocks. These 23 blocks were opened to bid for the MNCs under PSC since 1990.

The power and energy sector is one of the success cases of the present government. This has happened because of undertaking targeted initiatives over the last one decade with a view to come out from the crisis of electricity in the country. The sector is moving

towards attaining long term goals for ensuring energy sustainability: 27,400 MW (in 2030), and 51,000 MW (in 2041) (PSMP, 2016).[26] According to Bangladesh Power Development Board (BPDB), the power sector witnessed significant progress in power generation in the fiscal year 2017-18. During this fiscal year 2,817 MW new capacity added which raised the total generation capacity to 15,953 MW and annual increment of generation capacity was 17.69%.Despite increasing electricity demand, average load shedding came down at a tolerable limit. Electricity Demand growing day by day. In order to mitigate the demand-supply gap, an aggressive plan is prepared by the Government for new generation addition. As part of the plan, 55 power generation projects of capacity 13,985 MW are now under construction. The plan envisages around 14,956 MW new generation addition by 2021.[27]

Given the discussion as a backdrop of this section, in the following an attempt has been made to revisit the current energy diplomacy of Bangladesh at the bilateral and regional levels to ensure non-renewable and renewable energy supply for the development of the country.

Diplomacy for non-renewable Energy Cooperation

Bangladesh sought energy diplomacy at the bilateral and regional levels to ensure access to the non-renewable energy resources and power supplies. At bilateral level, the country has long diplomatic relations with China. The Bangladesh-China relations reflect the old Chinese proverb which entails that "only friendships built on sincerity can last long."[28] At present both governments of China and Bangladesh have agreed to extend their cooperation on energy, social, cultural and maritime sector. In 2016 the President of China Xi Jinping visited Bangladesh. The Prime Minister of Bangladesh Sheikh Hasina and Chinese President Xi Jinping agreed on to extend cooperation in several sectors. A total of 27 deals were signed during the visit. Bangladesh has been considered as important partner in China's One Belt One Road (OBOR) initiative and the BCIM Economic Corridor. China has agreed to invest 1320 megawatt thermal power plant in Patuakhali's Payra and a 1320 MW coal-fired power plant in Chittagong's Banshkhali.[29] The two sides agreed to strengthen their cooperation under the framework of Asia Infrastructure Investment Bank (AIIB) and welcome the Bank's financing support to the Power Distribution System Upgrade and Expansion Project in Bangladesh. Asian Infrastructure Investment Bank investment on the Power Grid Network Strengthening Project in Bangladesh will benefit tens of millions of rural residents.[30]

The relations between India and Bangladesh has been deepened over the last couple of years. Both the countries have widened up the windows of opportunity for mutual cooperation. India's big companies like the Reliance, the Adani groups and the NTPC are interested to invest in Bangladesh energy sector as a part of the regional goals of investing 9 billion USD including India's seven states in the North-East, Nepal and Bhutan.[31] An agreement was signed in 2017 Bangladesh-India Friendship Power Company Limited and EXIM Bank of India for debt financing of the construction of

1,320 mw Maitree Power Project in Rampal in Sundarban, Bangladesh. The estimated value of the deal is $1.6 billion.[32] Also Reliance Power signed an agreement worth $1billion with Bangladesh's power, energy and mineral resources ministry for the first phase (750 MW) of the 3000 MW power project at a place called Meghnaghat in Bangladesh.[33]

At the multilateral level Bangladesh has been always advocating for regional and sub-regional cooperation on energy and power sectors. Bangladesh plans to import 3,500 MW of electricity from SAARC countries by 2030 under its power sector master plan.[34] The seven member states of BIMSTEC have the potential of generating around 260,000 megawatt of hydropower, including 150,000MW by India, 40,000MW by Myanmar, 30,000MW by Bhutan and Nepal each, 500MW by Bangladesh and Thailand each and 1,000MW by Sri Lanka.[35] This initiative will provide energy security in the region as it will enable the member states to share their surplus electricity with each other. The deal is almost similar to SAARC Framework Agreement for Energy Cooperation signed in Kathmandu on November 27, 2014 to set up a South Asian regional grid for cross-border trade of electricity.[36]

Diplomacy for Renewable Energy Cooperation

Keeping the reality that the traditional source of energy depletes in future Bangladesh gives importance to the development of renewable energy. The country adopts Five Year Plan, Power System Master Plan and policy documents including National Energy Policy, Industrial Policy 2010 which underscored renewable energy i.e. the use of solar, wind energy, bio-energy, hydropower, geothermal and ocean energy in efforts to ensure energy security. Bangladesh also supports regional cooperation among India and Nepal to seek hydropower electricity. Bangladesh has shown interest in investing in hydropower projects in Nepal and purchase power from the country.[37]

Bangladesh also shows its interest to develop trilateral cooperation among Bhutan, Bangladesh and India that will enable Bangladesh to invest in the Bhutanese power sector to re-import the electricity. Bangladesh shows its interest to invest in the 1,125MW Dorjilung hydropower project in the Lhuentse district to get hydropower from Bhutan.[38]

In 2017 Bangladesh has topped a global list of countries that have installed the highest number of Solar Home Systems (SHS). With four million of the systems set up so far, the country is also at the forefront of nations using clean stoves and biogas plants, and promoting the cause of renewable energy that constitutes a fifth of the world's final power consumption. As of 2016, more than 6 million SHS and kits were in operation worldwide, with 25 million people benefiting from them. Bangladesh, the largest SHS market worldwide, now has more than 4 million units installed.[39]
Bangladesh stepped up further to negotiate with the nuclear power to generate energy from nuclear plants. Bangladesh has signed a five-year framework agreement with the Russian Federation. The agreement paves the way for cooperation in the peaceful use of nuclear energy to meet the growing power needs of the country. By doing this

Bangladesh has entered the prestigious club of peaceful use of nuclear power with the other 32 countries.[40] On October 21, 2009, the Bangladesh government signed a protocol with Russia's Rosatom on cooperation in peaceful use of nuclear energy. The framework agreement details future cooperation between the two countries, and includes:[41]

- Design, construction and operation of nuclear power and research reactors;
- nuclear fuel supply, taking back of the spent nuclear fuel, and nuclear waste management;
- assistance in setting up of a national regulatory authority in Bangladesh;
- personnel training and capacity building for operation and maintenance of plants;
- Research, education and training of personnel in the Russian Federation in the use of nuclear energy, development of innovative reactor technologies in accordance with IAEA safety requirements, non-proliferation of nuclear weapons and environmental protection.
- Exploration and mining of uranium and thorium deposits.

There has been prediction by the International Financial Institutions (IFIs) that Bangladesh has the potential to be a middle-income country. The impressive progress in the energy sector would help to the country to moving up to that end along with growing importance of Bangladesh diplomacy to ensure increasing trade, investment, connectivity and infrastructural developments. The next two sections briefly highlight Bangladesh's trade and investment diplomacy and the issues of regional connectivity and infrastructure development.

Trade and Investment Areas

Bangladesh emerged as an independent country with very little financial asset. The nature of economic policy followed towards the then East Pakistan—two economy policy—was one of the roots of the rise of Bengali nationalism that ultimately spearheaded Bangladesh's independence movement. A UN report estimated the cost of reconstruction of the war-ravaged country was $938 million. However, despite such a vulnerable state of the economy, Bangladesh's economy slowly started to recover from the destructions of the previous year in 1972. The decade of 1970s stood as a period of Bangladesh's search for partners in economic 'survival'—as the Indo-Soviet axis proved insufficient, Bangladesh turned to Middle East and to the United States for foreign aid.

The decade of 1990s shows a change in Bangladesh's trade and investment sectors due to two primary reasons—gaining political stability in the domestic arena and the end of the Cold War ushering an era of geo-economics in light of which the democratically elected

government pursued development diplomacy more vigorously than before. Instead of looking for more foreign aid, Bangladesh aimed to look for development partners in international politics and diversify its trade. One glaring example would be the trade relations between Bangladesh and the United States (US). The US turned into the biggest source of foreign assistance for Bangladesh in 1973 while now Bangladesh stands as the "51st largest goods trading partner with $8.2 billion in total (two way) goods trade during 2018…Goods exports totaled $2.1 billion; goods imports totaled $6.1 billion". The qualitative shift in bilateral relations between the two countries show how Bangladesh has been able to turn around in achieving economic stability in the past 48 years. The ideas in vogue in international development discourse calls it a 'Bangladesh surprise', 'Bangladesh development surprise' or 'Bangladesh conundrum', which essentially denotes a range of successes for Bangladesh—"the fastest improvements in basic living condition ever seen in history"—in the areas of "[T]he total fertility rate has fallen from 3.4 to 2.3 (slightly above the "replacement level"), infant and maternal mortality rates have fallen by at least half since 1990, and life expectancy has risen by 10 years to 69 (four years more than in India in 2012)".[42] Bangladeshi scholars, however, critically analyzed the concept of 'Bangladesh surprise' and argued that Bangladesh's advancement in recent times is a result of cautious and cogent calculations and decisions—instead being merely a 'surprise.'[43] This was certainly 'exceptional', "because it was achieved despite low budgetary allocations, poor governance, lower living standards and, in some cases, in a very short period of time."[44] Bangladesh's economic miracle did not escape the eyes of international observers. First comes the prediction of Goldman Sachs that puts Bangladesh in the list of 'Next 11'—the emerging market economies following the BRIC—Brazil, Russia, India and China—countries.[45] Since then, Bangladesh's growth in the development sector has awed the international community. Bangladesh has consistently been in the list of fastest growing economies of the world since 2016. The Asian Development Bank Outlook (ADBO) has announced in June, 2019 that Bangladesh has turned out to be the fastest growing economy among the 45 countries of the Asia-Pacific region with a growth rate of 7.9% in 2018-19 financial year.[46] The ADBO predicts that the growth rate is expected to continue and reach to 9% in the FY2019 and FY2020.

Bangladesh started to cultivate alternative sources of investment and trade from the 1990s. A concrete result of this was seen in adopting a 'Look East' policy in 2002 when the then Prime Minister visited a number of Southeast and East Asian countries to explore the possibilities of trade and investment. However, not until the current decade, this policy fully materialized, which coincided with its enhanced geopolitical significance. Bangladesh has received its largest overseas development aid (ODA) from Japan and largest investment deals from China—both in 2016. Japanese investment in Bangladesh is gradually rising, according to Japan-Bangladesh Chamber of Commerce and Industry (JBCCI), despite the Holey Artisan incident on July 1, 2016, in which a number of Japanese nationals were killed. In a survey conducted by Japan External Trade Organization (JETRO) in 2017, 70% of Japanese investors have shown their interests to invest in Bangladesh in the next year while 60% showed interest to invest in two-three

years' time.[47] Under China's belt and road initiatives (BRI), China is investing $39.02 billion since 2016. While there are some obstacles in the path of smoothening foreign direct investment (FDI) in the country, the latest report shows that Bangladesh has received its highest ever FDI in 2018—$3.61 billion—which was a 67.94% increase than the previous year. The last year's data shows that Chia has emerged as the largest investor providing $1.03 billion, which dethroned the usual spot of the US, which invested $174 million only in 2018.[48]

Bangladesh Investment Development Authority argues (BIDA), with data, that its establishment in 2017 has 'played a big role' as the average annual proposal for investments was Tk193 billion FDI in Bangladesh between 2009 and 2016 which risen to Tk 945 billion per year since the creation of BIDA.[49] Additionally, it has been highlighted by the BIDA Chief that

> Factors such as sound economic growth, a young talented workforce, and the infrastructural development necessary to attract investments are visible in Bangladesh. So foreign investors have poured funds here, giving FDI a sharp rise, despite global slowdown.[50]

In the past 48 years, from the status of being an 'international basket case', Bangladesh is gradually emerging as an international destination for investment. It is a remarkable achievement for a geographically 'small' country, with very little natural resources but not unlikely—a proper planning and harnessing of potentials have brought Bangladesh this far which is a key example of how far development diplomacy can take a country.

Regional Connectivity and Infrastructure Diplomacy

For Bangladesh, the issue of connectivity has three dimensions—bilateral, sub-regional and regional. At the bilateral level, the issue of connectivity for Bangladesh starts with India with two dimensions—for India, Bangladesh can provide a direct route from Kolkata to its northeastern territories, which would cut the existing distance via the 'chicken neck' corridor of 1,600 km of road to merely a 400km road. For Bangladesh, gaining road access for business and transporting goods with Nepal and Bhutan through Indian Territory is of burning question. While there are questions of investment in the roads and transports sector is one of the financial challenges, political goodwill and trust is another obstacle to materialize this deal which would benefit both the countries immensely. Keeping multiple considerations in mind, the idea of sub regionalism is mooted among four South Asian countries and BBIN—Bangladesh, Bhutan, India, Nepal—was formed. However, the sub regional initiative did not proceed with as much vigor as was anticipated. The idea of regional connectivity is where BCIM corridor—Bangladesh, China, India, Myanmar—comes to play and fraught with both opportunities and challenges for Bangladesh and tied with Bangladesh's infrastructure diplomacy.

Infrastructure diplomacy involves the international provisioning of capital goods by state representatives or state-owned enterprises from one country (the source) to another (the host).[51] Infrastructure diplomacy is an important component of the Bangladesh diplomacy. Since the independence Bangladesh actively persuades financing in form of loan, grants, technical assistance, capital goods for construction, operation and maintenance of various infrastructures. The purpose is to facilitate the economic growth, employments, social progress, providing basic cares to the people, attract investments, industrialization. Infrastructure diplomacy thus helps to build roads, railways, bridge, industries, power generations, port facilities which act as catalyst for shrinking space, time and enlarging markets. To look at the present situation of Bangladesh infrastructure diplomacy one can say that the visionary leadership of the current government has placed Bangladesh as the focal point of development and connectivity hub to most of the countries in the region. Bangladesh has gained 119,000 sq. km of maritime boundary which gives the country opportunity to engage in blue economy. The vast maritime resources including gas and oil are yet to be explored and utilized. That requires huge amount of infrastructural development. Bangladesh has developed public-private partnerships with other countries to implement mega infrastructural projects. Among them the Padma Multipurpose Bridge, Rooppur Nuclear Power Plant, Karnaphuli Tunnel, Dhaka Metro Rail Project, Matarbari Power Plant, Payra Power Plant, Payra Deep Sea Port are notable.[52] These infrastructures will not only help the domestic economic growth but also contribute to the global economy through connectivity. As for example Bangladesh has been active partner of the Chinese One Belt One Road (OBOR) with other 68 countries now.

Conclusion

Jonathan Garber identified Bangladesh as a new 'Asian Tiger' in 2017—identifying how Bangladesh's economy has been performing much like the Asian Tigers of late 1990s. While other countries belonging to the same income group with Bangladesh has not been able to perform from economic point of view, Bangladesh outgrew those. Not only that, Bangladesh is often identified as a 'role model' for South Asian countries in terms of achieving social and economic development faster than others in the region. Bangladesh's achievements in social indicators are also noteworthy and once again, in most cases, it has outpaced most South Asian nations. This article shows that this tremendous achievements are not only a result of pursuing traditional economic diplomacy—rather cogent calculations driven by development goals through pursuing 'development diplomacy'. It is clear in the statement of Bangladesh's PM—"During the last term of my government (2014-18), we engaged and deepened our ties with India-China-Japan-US-Europe-Russia seamlessly." And this is why and how development diplomacy has emerged as Bangladesh's tool to prosper and earn economic growth.

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PLASTICS/MIRCOPLASTICS IN THE FOOD CHAIN: A THREAT TO HUMAN HEALTH?

Rear Admiral Md. Khurshed Alam (retd) M Phil, ndc, psc

Introduction

Any human-made object that does not naturally degrade within days or months can potentially become marine litter if it is not properly managed. Common litter items are made of paper, wood, textiles, metal, glass, ceramics, rubber and plastic discarded by humans. Marine litter (or debris) is waste created by humans and defined as "any anthropogenic, manufactured, or processed solid material (regardless of size) discarded, disposed of, or abandoned in the environment, including all materials discarded into the sea, on the shore, or brought indirectly to the sea by rivers, sewage, storm water, waves, or winds."[1] Litter can be transported over long distances and into all marine habitats – from the surf zone all the way to remote mid-oceanic gyres and the deep sea floor. Like other pollutants, marine litter affects habitats, ecological function and the health of organisms of the ecosystems where it accumulates. The most common items, constituting over 80 per cent of the litter stranded on beaches[2] are cigarette butts, bags, remains of fishing gear, and food and beverage containers.

Most types of plastic are not biodegradable.[3] In fact, they are extremely durable. This means the majority of polymers manufactured today will persist for decades and probably for centuries, if not millennia. So-called degradable plastics may persist for a long time because their degradation depends on physical factors, such as exposure to light, oxygen and temperature.[4] For the large majority of plastic items, even if they disintegrate by breaking down into smaller and smaller plastic debris under the influence of weathering, the polymer itself may not necessarily fully degrade into natural chemical compounds or chemical elements under marine conditions.[5] Floating objects can be readily transported by wind, waves and surface currents and become widely dispersed across the ocean. Plastics that are denser than sea water will sink to the sea floor and accumulate or be redistributed, along with other sedimentary particles, through bottom sedimentary processes.

There has recently been a noticeable increase in concern about the implications of pollution by small sized debris, especially where made up of plastic. The term "micro plastic" has been introduced to describe small plastic debris commonly less than 5 mm in diameter. Micrometre-sized plastic beads are present in cosmetic products and synthetic cloth fibres or are derived from fragments broken down from larger plastic items. The concern about micro plastic pollution is due to its ubiquitous presence in the marine environment. The rapid rise in the use of oil and gas during the last half century has been accompanied by the development of a range of petroleum products, some of which, like petrochemicals, have other important applications beyond energy production. The global production of petroleum-derived plastic has also increased dramatically, from 1.5 million

tons in 1950 to more than 300 million tons in 2014 (Plastics Europe, 2015; Velis, 2014).[6] Some people have described this dramatic increase in the use of plastics as the "Age of Plastics" or "Our Plastic Age."[7] If the current trend where production increases by approximately 5 per cent a year continues, another 33 billion tons of plastic will have accumulated around the planet by 2050.[8] Plastic products and technologies provide huge benefits in every aspect of life, to the point where life without them is almost unthinkable. Many sectors of the economy use plastics, including food and water packaging, a myriad of consumer products like textiles and clothing, electrical and electronic devices, life-saving advanced medical equipment and reliable and durable construction materials.[9] Plastic is convenient as a manufacturing material due to its durability, flexibility, strength, low density, impermeability to a wide range of chemical substances, and high thermal and electrical resistance. But it is also one of the most pervasive and challenging types of litter in terms of its impacts and management once it reaches the marine environment, where it is persistent and widely dispersed in the open ocean. A growing human population, with expectations of a higher standard of living and generally rising consumption patterns, is concentrated in urban areas across the globe. Our current lifestyle entails increasing consumption of products intended for single use.

Plastic packaging is considered one of the main sources of waste. Marine plastic litter, like other waste or pollution problems, is really linked to market failure. In simple terms, the price of plastic products does not reflect the true cost of disposal. The cost of recycling and disposal are not borne by the producer or consumer, but by society.[10] This flaw in our system allows for the production and consumption of large amounts of plastic at a very low "symbolic" price. Waste management is done "out of sight" from the consumer, hindering awareness of the actual cost of a product throughout its life. Sustainable long-term solutions to stop increasing amounts of plastic waste from leaking into the environment require changes to our consumption and production patterns. This is a complex task. In order to succeed, campaigns targeting behaviour change need take into account differences in demographics (such as gender, age, income and social status). There are obviously benefits in terms of energy, climate and health from using plastics and therefore the goal should not be to completely move away from plastic, but to use it more efficiently and in an environmentally sustainable way. The forecasted impacts of marine litter demand the urgent development of alternative, efficient solutions. Short-term solutions should be implemented to reduce the immediate negative effects, while the necessary long-term changes in consumption and production are incentivised through policy, economic and education/awareness mechanisms.

> There has been widespread publicity about pollution of the marine environment by plastic debris and its impact on organisms. Images of the brightly coloured plastic stomach contents of dead seabirds and countless whales, dolphins and turtles caught in floating debris or wearing discarded plastic rubbish are routine. But this is not only about large marine creatures swallowing or getting entangled in rubbish; organisms at every trophic level, living both on the seabed and in the water column, are also affected.[11]

Plastic debris can have similar size characteristics to sediment and suspended particulate matter and can be ingested by filter feeding or sediment ingesting organisms. Even very small organisms at or near the bottom of the food chain, like filter feeding zooplankton, have been observed in the laboratory to take up micro plastics. Zooplankton usually excrete the particles within hours (which is comparable to natural food) but some zooplankton have been found to retain micro plastics for up to seven days.[12] The ingestion of polystyrene particles by zooplankton has been found to significantly decrease their nutritional intake (because they can eat up to 40 per cent less real food) and also their reproductive output.[13] Apart from providing zero energy, a diet of non-nutritional micro plastic beads also affects how these organisms deal with food shortages. Usually they instinctively decrease their metabolic rate to save energy when faced with starvation – however this does not occur when the diet contains micro plastic beads.[14]

There is much less information on the impact of the micro plastics that are increasingly being found in fish, but there is growing concern due to the potential impact on people who eat fish. The presence of marine litter in birds, turtles and mammals is well documented. A recent comprehensive review revealed marine litter in 100 per cent of marine turtles, 59 per cent of whales, 36 per cent of seals and 40 per cent of seabird species examined. Despite the large percentage of animals swallowing plastic debris, death as a result of plastic ingestion is probably too infrequent to affect the population structure. However, other effects may be more significant. These include partial blockage or damage to the digestive tract and reduction in foraging due to feelings of satiation, all of which can result in poor nutrition and a consequent decline in health.[15]

> The concentration of micro plastic at the ocean surface is thought to be lower than expected, suggesting that it is somehow being removed to deep sea areas.[16] Micro plastics can sink when they acquire ballast. Algal aggregates, which are common in surface waters, can also incorporate microplastics.[17]

Much of the marine litter entering the ocean is initially buoyant and floats on the surface; however the ocean floor may be its final resting place.[19] Large items, including discarded or lost fishing gear, quickly sink to the sea floor. These items can smother benthic organisms, crush vegetation and coral and turn sediments anoxic.[20] Examples include fishing line wrapped around coral colonies causing death, plastic bags directly smothering organisms or reducing light penetration, and large items dragged along the sea floor causing physical damage.[21] Floating litter provides an additional dispersal mechanism for natural floating materials such as kelp mats, pumice and wood. Although these rafts of rubbish, moved by the same wind and currents as natural material, do not provide new dispersal pathways, the persistence and wide distribution of large amounts of plastic in the oceans provides greater opportunity for dispersal.[22] It has been suggested that debris could play a part in the spread of invasive species.[23] Document numerous examples of potential invaders found on marine litter beyond their natural dispersal range. They conclude that changes to the temporal and spatial availability of rafts, caused by the growing quantity of marine litter, probably facilitate the establishment of species in new regions.

> Marine plastic debris and micro plastics have substantial negative effects on marine ecosystems. This in turn affects ecosystem services, the economic activities relying on those services for revenue generation, sustainable livelihoods and the well-being of communities and citizens. The full extent of the impact of plastic pollution on marine ecosystems is still unknown and therefore the economic and social costs are difficult to fully assess. Knowledge is however fundamental to the development of effective and efficient methods for reducing potential impacts.[24]

The economic activities directly affected by marine plastic debris and micro plastics include shipping, fishing, aquaculture, tourism and recreation.[25] The fact that these debris are easily dispersed in the marine environment makes it difficult to trace their specific origins and identify how they got there. In some cases, the industries affected by marine litter are also its source (e.g. plastic litter from tourism, fisheries, shipping, etc.) even though they have an interest in addressing the problem. Often the polluters do not bear the cost of polluting. It is however in the interests of many sectors of the economy to find strategies to reduce marine litter, as this can help to reduce the burdens on them.

The only global assessment to date aimed at monetary valuation of the natural costs associated with the use of plastic in the consumer goods industry rates the cost across all sectors to be approximately 75 billion dollars per year.[26] An independent analysis of this dataset revealed that the cost associated to impacts on marine ecosystems could be estimated to be at least 8 billion dollars per year. The food, beverage and retail sectors were responsible for two thirds of these costs. This estimate comprises the revenue loss to fisheries and aquaculture and the marine tourism industries, plus the cost of cleaning up plastic litter on beaches. This upstream approach allows the different sectors to realise their relative impact on the marine environment (risk) and to identify measures that could reduce their use of plastic (opportunities). There is a clear lack of connection between sectors of the economy producing plastic products and those affected by the inappropriate disposal of those products (principally fisheries, shipping and tourism). There are, however, complex interrelationships between the sectors involved. For example, the fishing industry provides resources for the food industry and the tourism industry depends on (or is a participant in) the food and beverage industries. The shipping industry provides services to the retail, food and beverage industries and is a participant in the tourism industry. These interdependencies, if properly highlighted and utilized, could be pivotal in creating true cross-sectoral engagement in providing solutions to the challenges posed by marine litter.

In the shipping sector, marine litter can damage vessels by fouling ship propulsion equipment or cooling systems to the point of causing breakdowns and delays. There are direct costs linked to repairs, rescue efforts, and loss of life or injury, but there are also indirect costs related to loss of productivity and disrupted supply chains, leading to revenue losses. In the fishing sector, costs connected to marine litter are due both to damage to vessels and gear and to catch reduction. Vessel damage results primarily from

litter sucked into inlet valves and rubbish snared around propellers. Catch reduction results from ghost fishing by discarded gear and mortality related to ingestion of marine litter. In the tourism sector, losses are related to the pollution of beaches and coasts which can discourage visitors. Alongside the economic costs, there are social costs. These include reduced opportunities for recreational activities, health risks to coastal visitors (cuts from sharp items on the beach or in the water), and loss of the physical and psychological benefits of access to coastal environments (such as a reduction in tension and stress due to experiencing nature and/or physical activity). As previously mentioned, there is evidence that harmful microorganisms and pathogens can colonize the surface of marine debris.[27]

Anthropogenic marine debris has been observed throughout the ocean, from beaches and shallow coral reefs to the deep sea. Plastic particles have been found in hundreds of species of marine organisms, including many species of fish and shellfish sold for human consumption. A recent study found plastic in one out of every four fish purchased from markets in the United States and Indonesia.[28] Globally, average per capita fish consumption is nearly 20 kg per year and seafood equates to nearly 17 per cent of the world's protein consumption.[29] There is a potential pathway for human exposure to plastic. Assessing the risks to human health from marine plastic is a complex process and there is still a lot of debate over the quantity of plastic being ingested from seafood and whether it has the potential to affect the health of consumers. Consumption of filter feeding invertebrates, such as mussels and oysters, appears the most likely route for human consumption of micro plastics, because people eat the whole organism including the gut. In contrast to micro plastics, it is thought that Nano-sized material (less than 100 nm) may be more readily absorbed through the digestive system into the body. At present it is technically difficult to detect nanoparticles in tissue or in the marine environment, so new detection methods are required to determine the extent and fate of these particles. In addition to the potential physical effects of ingesting plastic, there may also be associated chemical toxicity.

In the marine environment plastic can be both a source and sink for contaminants. As well as releasing chemicals, micro plastics have been shown to adsorb compounds like polycyclic aromatic hydrocarbons (PAHs) and metals from the surrounding sea water. The ingestion of marine debris carrying these concentrated toxins has potential to bio accumulate up the food chain and enter the human diet. However, although there is evidence of the harmful impacts of these chemicals on marine biota and human health (in men, women and children), there is uncertainty regarding their bioavailability once ingested. One of the major challenges to addressing the increasing amounts of litter accumulating in the marine environment is the fact that its sources are multiple and widespread. There are three main human activities leading to the leakage of plastic debris to the environment and eventually into the ocean:

> Inadequate management of waste and residues generated by practically any type of human activity, which can lead to their accidental release in the environment.

> Intentional littering is the conscious, inappropriate disposal of waste whether industrial, commercial or domestic. Unintentional littering includes regular, uncontained procedures related to any extractive, manufacturing, distribution or consumption process that contributes litter stocks to the marine realm.

Analysis of the human activities causing marine litter is key to organizing responses to prevent it, whether on land or at sea. Based on the items most often collected on beaches, it is commonly claimed that the majority (80 per cent) of marine litter is linked to land-based sources. The top ten most collected items are remnants of consumer products or their packaging released into the environment close to large urban or tourist areas.[30] Marine litter composition data from different sites worldwide show that sea-based sources are sometimes dominant over land-based sources, especially in locations further away from large population and tourist centres.[31] The composition of beach litter collected in remote locations may in fact represent an integration of the sources over larger areas and longer time periods. The shipping industry relies on a series of services delivered at the coastline for it to be able to operate. These include construction, maintenance and scrapping carried out in shipyards or along coastlines, docking, cargo loading and off-loading, passenger embarkation and disembarkation, resupplying, and residue and waste off-loading. Most activities are carried out in harbours and all may contribute marine litter through mismanaged waste, including wrecks and abandoned vessels, and through unintentional littering.

Finally, legal and illegal dumping at sea of other wastes generated through maintenance and other activities is also a source of marine plastic. Emissions from off-shore installations (oil and gas platforms) are also a potential source of marine litter. Coastal tourism has been recognized as a significant source of plastic waste, very often by direct, deliberate, or accidental littering of shorelines.[32] Unfortunately it is very difficult to quantify the input from this sector. Proxy indicators, such as earnings related to the sector in particular regions or number of tourist arrivals, can be used as a means of assessing its significance.[33]

The direct discharge of debris from sea-based activities into the marine environment is a significant pathway for both the coastal region and the open ocean. Maritime transport, recreational navigation, fishing and aquaculture are the main human activities at sea which may lead to the release of marine debris. The geographical distribution and intensity of these activities (e.g. along main shipping routes) provide good proxies to assess input from sea-based activities. Discarded plastic moving around the ocean – on the surface, in the water column and on the sea floor – sometimes comes to rest. The geographical distribution of marine plastic debris is strongly influenced by the entry points and the different transport pathways, which are in turn determined by the density of plastic debris coupled with prevailing currents, wind and waves.

Debris found in a location at any moment in time will be a mixture of locally-derived material plus particles that have been transported by current, wind or wave. More than

half of the plastic that gets into the marine environment is less dense than seawater, so until it acquires some ballast (often from the accumulation of organic particles or marine organisms), it floats. Once discarded, plastic can accumulate close to its point of entry into the ocean or it can move long distances, ending up in remote locations far away from its entry point. This, combined with the slow degradation rate of most plastic, means it can drift around the ocean for a long time, becoming a true trans boundary pollution problem.

Plastic debris and micro plastics are by far the main components of marine litter and are omnipresent in the world's oceans – from remote shorelines to the deep ocean, from the poles to the equator. The quantity of plastic observed in coastal waters off densely populated regions and in the mid-ocean gyres, despite high concentrations, represents only a fraction of the total amount in the marine environment. In addition, many types of plastic waste are denser than water and will sink to the sea floor. Surface accumulations in mid-ocean subtropical gyres are just the tip of the iceberg. While uncertainties remain, it is estimated that open ocean floating plastic accounts for less than 1 per cent of the total that has reached the oceans since it began to be produced.

Production of single-use, throw-away plastic products has increased exponentially since the 1950s. At the same time, plastics are designed to be durable and it is precisely this characteristic, combined with an unwillingness or inability to manage waste effectively, that has created a global issue. It is a complex social, economic and environmental problem which knows no boundaries. It threatens entire marine ecosystems, has enormous economic consequences and affects the livelihoods of millions of people.

The cause is human activity – on the land and in the seas. All sectors and individuals contribute to this pollution – from poorly controlled waste sites, illegal dumping and mishandled waste on land to floating ropes, nets, floats and other debris from fishing, merchant shipping, oil rigs, cruise ships and other sources. Larger "macro plastics" harm marine life when animals and fish become entangled or eat them. However, more research is needed to determine impacts on population levels which can further affect endangered species, sensitive habitats and ecosystems. All of these have tangible and measurable socioeconomic consequences for fisheries, shipping and tourism.

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Brief Biography

Rear Admiral M K Alam was born on 07 July 1953. He was commissioned on 01 June 1973 from Indian Naval Academy achieving Indian President's Gold Medal as the best all-round Midshipman. He is a graduate of Royal Naval Staff College, United Kingdom, and awarded with commendation for exceptionally meritorious works. He completed Telecommunications Course from Italy, Masters in Marine Science from National Oceanography Centre in United Kingdom. He attended National Defence College in India and received M Phil degree from Madras University in 2000. He also participated in Continental Self Technical Course held at Norway.

In his eventful naval career, Rear Admiral Khurshed commanded all types of ships. He also has a fine blend of working experience. He was the defence advisor to Malaysia, Chairman of Mongla Port authority, Associate Professor of Law at South West University, Dhaka. Rear Admiral Khurshed has various national and international to his credit. He is the author of the book titled, *Bangladesh Maritime Challenges in the 21st Century*. It is worth mentioning that the Rear Admiral was the prime mover in solving the maritime route with neighbours at the International Tribunal for the Law of the Sea and Permanent Court of Arbitration as well. The Rear Admiral is happily married and is blessed with two sons.

CHALLENGES AND OPPORTUNITIES IN MANAGEMENT OF TRANS BOUNDARY WATER RESOURCES: FOCUS ON SOUTH ASIA

Bushra Nishat

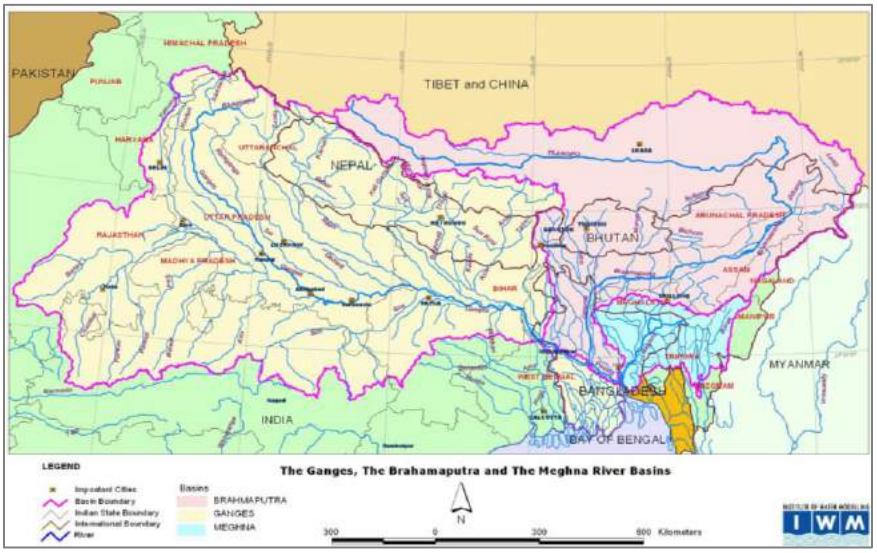
Introduction

The Ganges, Brahmaputra and Meghna rivers originate in the Himalayan and Vindhya ranges, flow through China, Bhutan, Nepal, India and Bangladesh and ultimately join the Bay of Bengal (shown in Figure 1). These rivers along with their tributaries drain an area of about 1.75 million square kilometres. The hydrologic and physiographic characteristics of the rivers affect the region with a variety of water related problems including floods in the monsoon, water scarcity in the dry season, sedimentation and erosion in the river and associated flood plains, drainage congestion in the low lying areas, salinity intrusion in the coastal regions and environmental and water quality issues. Meanwhile, high population growth, increased demand, unplanned development and climate change are predicted to exacerbate the situation.

These rivers have shaped not only the terrain but also the lives and livelihoods of the people and remain inseparable with the history and legends of the region. Today, around 650 million people, that is almost one tenth of the population of the world live on the banks of these rivers, the rivers have been the lifeline for generations gone and will remain so for generations to come. The region has a high population density and is home to the poorest population of the world. The region, however, has considerable development potential which can only be achieved through harnessing of the rivers to foster sustainable regional progress and improve the quality of life of the people of the basins.

Throughout the world, more than 200 river basins are shared by two or more countries, covering more than half of the total land surface of the world.[1] In trans boundary basins stress on water resources is caused not only by natural processes and increased demand between users but also by inadequate and inefficient water management and competition between riparian countries.

Map 1: The Ganges, Brahmaputra and Meghna Basins



Source: Nishat and Rahman, 2009[2]

Trans boundary water management is in essence more complex than national and sub-national water management. Yet, in South Asia, water resources management is an extremely political and emotive issue, and in many cases, divisive and contentious. This paper summarizes the challenges and opportunities of trans boundary water management within South Asia, particularly within the Ganges, Brahmaputra and Meghna basins which is shown in Map 1.

Physical Setting of the Ganges, Brahmaputra and Meghna Basins

The Ganges, Brahmaputra and Meghna river basins constitute around 1.75 square kilometers with average annual runoff of around 1200 billion cubic metres (BCM). The Ganges basin is bounded on the north by the Himalayas, on the west by the Aravalli as well as the ridge separating it from Indus basin, on the south by the Vindhyas and Chota Nagpur Plateau and on the east by the Brahmaputra ridge. Geographically Ganges basin is situated between 73° 23´E to 89° 47´E longitudes and 23° 14´N to 31° 16´N latitudes. The Brahmaputra basin is situated between 82° 1´E to 97° 46´E longitudes and 22° 27´N to 31° 27´N latitudes. The Meghna basin is situated between 90° 28´E to 94° 19´E longitudes and 22° 50´N to 25° 39´N latitudes. Areas of the GBM basins in different countries are listed in Table 1.

Table 1: Different Countries in the Ganges, Brahmaputra and Meghna basins[3]

Country	Ganges Basin		Brahamaputra Basin		Meghna Basin	
	Area (sqkm)	%	Area (sqkm)	%	Area (sqkm)	%
Bangladesh	39,726	4.0	38,956	7.0	31,859	41.1
India	770,197	77.3	197,504	35.7	44,934	58.0
Nepal	149,417	15.0	1,324	0.2		
Bhutan			41,324	7.5		
China	36,941	3.7	273,539	49.5		
Myanmar					690	0.9
Total	996,281		552,646		77,483	

Source: Author's Self Construct

The flow regime in the rivers is determined to a large extent by catchment rainfall, snowmelt and abstractions. Characteristically almost 70 to 80 percent of the annual flows occurs in four months of monsoon season, between June and September with peak discharges emerging in August and September. Low flows coincide with the dry season between January and May.

Population explosion has created heavy pressure on land. More and more areas have been brought under agricultural production resulting in large scale deforestation. This trend in the last few decades has caused noticeable hydrologic and ecological changes in the river basins. A recent estimate shows that only between 8 and 10 percent of the area may be accounted for as forested. Each year around 1 percent of the land is transformed into wastelands due to unplanned urbanization and unsustainable agricultural and industrial practices.

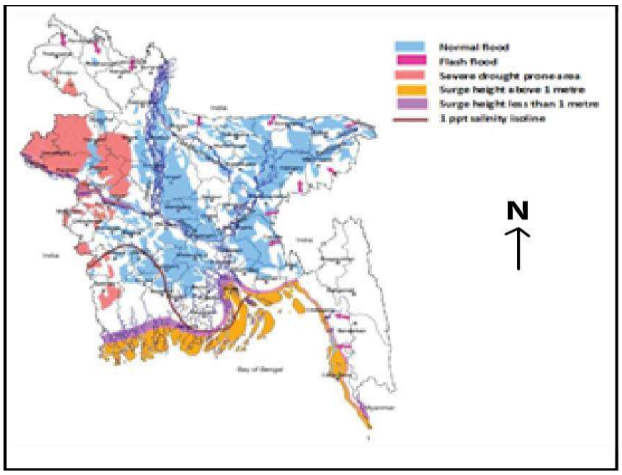
Hydrological context for Bangladesh

With more than 400 rivers having a combined flow of 1260 billion cubic metres (BCM), coupled with an average annual precipitation of 2700 mm, Bangladesh can appear to have an abundance of water resources. In fact Bangladesh is known for being a flood-prone country and each year more than 20 percent of the country is submerged (although flood-prone areas have reduced due to flood management interventions).[4]

But Bangladesh's water-related challenges are diverse and complex. Due to the temporal distribution of water resources, water problems fall within two extremes (shown in Figure 2). At one extreme is the monsoon period from June to September when heavy rainfall and high flows cause severe floods and inundation throughout the country. At the other extreme are the dry months between when the country becomes severely water stressed.[5] A recent assessment by Mekonnen and Hoekstra[6] identified Bangladesh as a country with significant areas already facing severe water scarcity during at least part of the year. This

temporal water scarcity stems mostly from low water availability, upstream water withdrawal, degraded water quality and high agricultural water demand during the dry season intensified by unsustainable management practices.

Map 2: Water-related challenges in Bangladesh



Source: MoEF, 2009[7]

Nearly 80 percent of Bangladesh lies within the floodplains of the Ganga, Brahmaputra and Meghna river basins, yet the country covers only 7 to 8 percent of the total basin area. As a result, a major portion (almost 92 percent) of the flow originates outside the borders of the country, and in the absence of adequate regional cooperation, flows reaching the border have reduced drastically. There has not been any significant decrease in flows in the Brahmaputra and the Meghna, but the discharge of the Ganges, which supplies water to the southwest region of the country, has reduced by about 1.4 BCM per year from 1976 to 2000. This decrease in flow can also be observed in many other trans boundary rivers, especially in the northwest and northeast regions of the country. This decrease is mostly caused by upstream diversions for agriculture, especially in the dry season.[8]

But not just Bangladesh, the lower riparian country, all the countries in South Asia are facing unprecedented challenges in managing their water resources. Across the region, investments in infrastructure development such as roads, embankments, dams, barrages, diversions, irrigation schemes and power facilities, while bringing some visible benefits at the local and national level, are also creating multiple burdens and risks to the river and millions of people who are defendant for their lives and livelihoods on the rivers, associated wetlands and aquatic resources.[9] Climate change has exacerbated the situation with receding glaciers in the Himalayas to increasing salinity in the Sundarban and increased climatic disasters. The scale of these challenges in water management in South Asia demands sustained collaborative efforts across multiple levels, involving

government institutions, civil society, donors, academia and communities to work closely on finding innovative, replicable solutions.

Legal Framework for Regional Collaboration

The countries in the Ganga-Brahmaputra–Meghna region have experienced some long standing water concerns resulting in mistrust among the countries. Agreements or treaties between riparian countries in the region are mostly bilateral and may or may not have a holistic approach to water resources management. Existing bilateral mechanisms among riparian countries include Joint Ministerial Commission on Water Resource (JMCWR), Joint Commission on Water Resource (JCWR) and Joint Standing Technical Committee (JSTC) between India and Nepal and the Indo-Bangladesh Joint Rivers Commission (JRC).

The sharing of the riparian river water has been a bone of contention between India and Nepal. The first joint project undertaken by the two countries was the Kosi River Agreement which was signed on April 23, 1954. It involved a canal system, flowing channels on both sides, a barrage across the river and a hydel power station. However, there was a nationwide opposition to this agreement in Nepal. The second joint venture between the two neighbouring countries was Trisuli Agreement, signed on November 20, 1958, which again faced rough weather as is evident from the fact that its final phase was completed as late as in 1971. The strong Nepalese sentiments opposing this venture again resulted in the time and cost escalation. The last bilateral Indo-Nepal agreement was the Gandak Agreement, signed on December 4, 1959, which again became a cause of public and press criticism in Nepal. The Treaty on Integrated Development of Mahakali River had been signed between the Government of India and Government of Nepal in February 1996. The Treaty basically aims at an integrated development of water resources in the Mahakali River and has been finalized on the basis of equal partnership. waters for irrigation. Although, the Treaty came into force in June 1997 (Mahakali Treaty) but the progress in its implementation has been somewhat slow.

A major dispute between Bangladesh and India has been on the sharing of the Ganges water during lean period. India has constructed a Barrage on the Ganges at Farrakka in West Bengal to divert water through the Bhagirati-Hoogly system to flush mainly the port of Calcutta. However, this diversion has caused enormous damage to the agriculture, ecology, water supply and economy of the areas in the downstream, particularly, the southern part of Bangladesh. On 12 December, 1996 Bangladesh and India signed the historic Ganges water sharing treaty. The 30-year Ganges Water Treaty concluded 35 years of discussions and negotiations between India and Bangladesh. The Treaty provides an opportunity for Bangladesh to invest in long-term sustainable projects to develop freshwater resources in the Ganges. Other issues between Bangladesh and India on water and rivers has been the sharing of water of the Teesta River, the proposed Indian river linking project and the proposed Tipaimukh Dam on the Barak.

Over the last couple of years a new area of cooperation between the countries have emerged. The first regional body, South Asian Association for Regional Cooperation (SAARC) was established in 1985. Although SAARC is alleged to be mostly dysfunctional, other sub-regional institutions have materialized.[10] While most of them are trade and connectivity oriented, the evolving institutional mechanisms and the growing political will offer opportunities to include critical water-energy-food issues. For example, the Bangladesh, Bhutan, India and Nepal (BBIN) initiative, which looks at land and inaland waterways connectivity and energy, could be an effective sub-regional institutional mechanism for better water and hydropower cooperation. Other sub-regional initiatives like the South Asia Sub regional Economic Cooperation (SASEC) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) are other potential avenues which could help strengthen and deepen regional cooperation on poverty alleviation and water resources issues.[11] The Convention on the Law of the Non-Navigational Uses of International Watercourses can serve as a model for resolution of disputes. All countries in the region could adopt and ratify the Convention for guidance and future conflict resolution.

Integrated water resources management (IWRM), a well-established and widely accepted concept, advocates the concept of the basin as the unit of planning and management so as to address cross-sectoral and multi-dimensional stakeholder interests. In order to make such planning and management possible, there would have to be cooperation between sectors, between states in federal governments, between countries and governments. Institutions for hydro-diplomacy include "truly" representative river basin organizations (RBOs) that involve different stakeholders. RBOs need to work alongside other regional platforms across sectors and with the drivers of change in different rivers and different basins. Agreements will work on the ground only if they involve water users and have their support and take into account local politics. In order to catalyse and mobilise hydro-diplomacy, it is necessary to have in place processes in national agendas and in international dialogues, and also processes that support interaction with stakeholders.[12]

Opportunities for regional collaboration in water resources management

Water sector planning, design and management

The hydrologic and hydraulic regime of Ganga, Brahmaputra and Meghna rivers consists of numerous looped and cross-connected channels with extensive flood plain and depression storage areas. A laudable initiative is the Bangladesh-India joint dredging started in 2010 of the Ichamati one of the cross-border rivers situated in the South-West of Bangladesh. As development progresses and more projects are completed the problem of interdependence and impact assessment grows more complex and the cost of correcting adverse impacts increases. The planning, designing, implementing, monitoring and operating is thus a dynamic process that require an integrated approach of improvement refinement and updating from time to time.

Flood forecasting and warning

A regional numerical flood forecasting model could be established covering the entire region. The proposed forecasting model will allow longer lead time of forecasts for the lower riparian countries. For example, formal agreements have created enabling conditions for the regional flood forecasting system of the Mekong River Commission to perform effectively. The model will need topographic information, channel cross sections, rainfall and evaporation data and upstream boundary conditions. All these information and data are expected to be available in one form or other with the respective country. Telemetric stations at various locations within the basins can be installed and brought under a realtime data acquisition network. A robust data exchange protocol between the riparian countries is essential. Without a legal and institutional framework the data and information cannot be used in formal dialogues and negotiations. Realising the importance, an agreement on water quality in the St. John River and its tributary rivers between Canada and the United States categorically states that there should be ‘‘exchange appropriate information about plans, programs, and actions which could affect water quality in the Basin.’’[13] Similarly, an international monitoring network under the framework of the International Rhine Commission is in operation for more than 40 years. International river basins in the European Union work in accordance with EU directives. At present a joint monitoring systems is being developed under the framework of the Environmental Programme for the Danube River Basin.[14]

Co-operation with neighboring countries is very important for effective management of flood forecasting and warning services to be rendered for extending its benefits to the people. There is immediate need for institutional strengthening, human resource management, and community participation in flood forecasting and flood monitoring work for better management and utility of forecasts.

Ecosystem management: Sundarban

Covering around than 10,200 square kilometers of deltaic floodplains across Bangladesh and India, the Sundarban region contains the largest continuous block of mangrove ecosystem remaining in the world. This unique ecosystem is a delicate balance between the freshwater flows of the tributaries and distributaries of the Ganga–Brahmaputra riverine system and saline waters of the Bay of Bengal. The Sundarban is internationally recognized for its high biodiversity of mangrove flora and fauna supported by terrestrial and aquatic (freshwater and marine) environment. The shared Sundarban region signifies a strong opportunity for strategic cooperation and coordinated or joint actions between Bangladesh and India, resulting in simultaneous poverty reduction and sustainable ecosystem management. Given that each country’s portion of the Sundarban is essentially part of the same ecosystem, the region would benefit from coordinated and collective policy development between Bangladesh and India on conservation strategies that could be implemented jointly or by each country individually.

Energy development

The energy demand of South Asia has grown exponentially and is predicted to be three times within the next 15 to 20 years. Power and energy trade in the region has been identified as one of the solutions for the energy deficit due to the uneven natural resources endowment and production capabilities of the different countries. There have been several international good practices of energy cooperation, around the world. The Southern African Power Pool (SAPP) serves as an example for regional grid connection, where SAPP member states managed to separate politics from their common interests in energy. The Association of Southeast Asian Nations (ASEAN) Power Grid is another case of regional cooperation in power and energy trade. In South Asia, a few bilateral initiatives are worth noting. Bhutan has been exporting large proportions of its hydropower to India. the theoretical hydropower potential of Nepal is estimated as 83,000 MW. However, development of this will largely depend upon the demand for energy in India and Bangladesh and modalities of cooperation among the countries in the future. India and Nepal have signed around 10 memoranda of understanding for trans border power exchanges and are working on constructing a 400kV transmission line. A recent plan to build a cross-border power grid between India and Bangladesh will contribute to reducing the daily power gap of 2,000 MW in Bangladesh.[15] Establishing political stability and commitment, as well as addressing technical and commercial issues can pave the way for greater cooperation in energy and build trust amongst the countries.

Inland navigation

In view of the physiographic setting of Bangladesh and the northern states of India, waterways present a cheaper transport alternative for bulk transport of agricultural and other goods. Potential for development of navigation for the transport of goods has largely been under-utilised due to geopolitical reasons. Presently only two inter-country navigation routes exist between India and Bangladesh.

Nepal is a land-locked country, principally dependent upon land routes to the ports in India and Bangladesh for the transport of goods. Nepal is greatly interested in opening navigation routes to the sea using the river network in India and Bangladesh. Navigation on the Gandak and Kosi, via the Mahananda and Karatoya into the Ganges-Brahmaputra system has been proposed by Bangladesh. Such a navigation route will pass through the Siliguri neck that is sensitive strategic issue to India.

Emergency response and damage assessment

Emergency response requires damage and needs assessment defining the impact of a flood in the short-term and long-term. An emergency response system (ERS) should be

implemented within the Ganges Brahmaputra Meghna basins where the flood forecasting modelling system could be integrated. The ERS should provide information on the extensive impact assessment in relation to extent, depth and duration of inundation for next few days. Long-term impact could also be assessed based on model results. The ERS should also recommend the future change in cropping and laduse pattern necessary to minimise the flood risk. This could be useful for long-term preparedness for flood disaster management purposes.

Regional water sector database

An Internet-based regional water resources database (RWRD) could be established to support regional experts or planners in assessing available water resource, demands and limitations in this region to plan for best uses of this resources or to formulate alternative strategies by sharing information. Effective basin level water resources management requires holistic, credible and reliable data and information. Modern tools and innovative technologies used in advantageous entry points in transboundary water such as flood management, climate change, energy security, water quality improvement can facilitate the process of a more comprehensive and inclusive data and information exchange. There are examples of data and information exchange in many international basins around the world, these have taken a lot of time and experience to formulate. These mechanisms will be different for different areas and context, but these examples show that innovative analytical tools and web based communication materials in the public domain can act as a catalyst towards cooperation.

Examples include Nile Information System (http://nileis.nilebasin.org/data) and Mekong River Commission Flood Forecasting System (http://ffw.mrcmekong.org/). For future reconciliation it is important to ensure that data in all countries have the same authenticity level and standards. Data should be analyzed, interpreted, and converted in pre-determined formats, with application of corresponding analytical methods. Standardisation of data and information can be ensured by existing regional bodies like SAARC Meteorological Research Centre as the necessary first step towards this type of exchange.

Joint research

Cooperation, can come from common areas of collaboration in conducting joint research programmes across the basin to generate improved understanding (technical and social) about both upstream and downstream stretches of the river. Such trans boundary collaborations through strategic projects related to water-related risks like floods, sedimentation, and erosion – common to some or all riparian states of the basin – could be a starting point for them to achieve a shared vision and commitment that can break down the barriers among them to work jointly on priority issues.

Conclusion

Extremely fertile lands have led to prosperous tracts dotted by thriving cities and countless villages in South Asia, the land has been shaped by some of the most intricate and complex river systems in the world. Furthermore, the region is one of the least integrated areas of the world. The region is also home to some of the poorest communities of the world. Livelihood and food security of vast majority of the region's poor are water-dependent. Unfortunately, water resources have often been a contentious issue and has led to disagreement amongst the countries. This has led to over-abstraction, pollution, fragmentation and ecosystem damage. On the other hand, rapid development and progress means that countries in South Asia are set to rise as emerging economies. Against this backdrop, cooperation in a number of issues including water has received a great deal of attention in the region. With growing environmental concerns and strong disagreement about water infrastructures, the region is looking at facilitating trust building processes, focusing not only on knowledge management, thematic studies, environmental monitoring but also on ensuring soft skills towards improving political sensitivity and negotiation. The common goal should not be focused only on infrastructure development, but also on environmental conservation, information and monitoring systems, legal frameworks, and accompanying institutions.

Consensus building and cooperation requires trust and political will, platforms for dialogue and transparency, knowledge and information, capacity and tools for integration of competing demands and for identifying mutual benefits. Platforms and partnerships for dialogue that work across sectors and constituencies, and inform and backstop governments would need to be put in place. Effective governance at the national level, sound policies and laws that align with trans-boundary issues would also need to align with hydro-diplomacy processes. There would need to be a better understanding of the issues that countries and citizens want to solve and what their concerns are. Lastly, it would be necessary to drive the application of the existing international processes related to water.

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Brief Biography

Ms. Bushra Nishat has over 20 years' experience in water and environment resources management in Bangladesh and the South Asia region. Her background in environmental sciences and mathematical modeling coupled with involvement in socio-political dialogues gives her a uniquely integrated understanding of the complexities in natural resources management in the region. Previously, as South Asia Programmes Manager at the International Water Association, she led a policy engagement in Bangladesh on management of the Sundarban, which is a trans boundary mangrove forest situated in the Ganges-Brahmaputra-Meghna delta across India and Bangladesh. She also supported the development of a knowledge base on the Brahmaputra basin, mainly focusing on basin delineation, hydrological and morphological data analysis. Before joining IWA, she worked as Project Manager with IUCN of a trans-boundary water dialogue project in Bangladesh and India where she coordinated more than twenty joint research activities and organized more than 50 cross-border dialogues on a range of issues related to water and water resources in the South Asia region. She is currently working with the Food and Agricultural Organization of the United Nations as a Water Resources Expert.

Ms. Nishat graduated from Bangladesh University of Engineering and Technology (BUET) and completed her Masters from UNESCO-IHE Institute for Water Education, Netherlands. She has more than 7 years' experience in using numerical modeling tools and advanced technology to support water and environmental resources planning. As a water resource engineer and basin modeler, she was responsible for the development of a basin model for the entire Ganges-Brahmaputra-Meghna basin. The model is being used to understand the impacts of upstream water withdrawal and climate change and climate variability in trans boundary river basins on water availability, flooding, salinity intrusion and groundwater in Bangladesh. She is familiar with the physical setting of the basins and understands the different hydrological, environment and development issues related to trans boundary rivers in this region.

Ms. Nishat has co-authored books on water and hydro diplomacy, has a few journal papers to her credit and developed a *River Atlas* which documents 54 rivers including the Ganges-Brahmaputra-Meghna rivers shared between Bangladesh and India.

MARINE PROTECTED AREA IN BANGLADESH: ROLE OF STAKEHOLDERS

Captain Mohammad Joynal Abedin, (ND), afwc, psc, BN

Introduction

Ocean covers about 70% of the earth's surface. That is why; Arthur C. Clarke correctly said, "How inappropriate to call this planet Earth when it is quite clearly Ocean."[1] This ocean accommodates huge marine ecosystems which include oceans, coasts, seas, low tide elevation, salt marshes, mangroves, estuaries, reefs, deep sea, sea floor etc.[2] These marine ecosystems and biodiversity maintains a crucial balance for the welfare of mankind, by providing economic, social and environmental benefits to the growing population of entire world. Due to the ever-growing demand for exploitation of marine resources specially fishery; the marine resources are under constant threat. In many parts of world including Bangladesh the fish resources are declining due to over fishing, destructive trawling, and manmade and natural hazards etc. Understanding this reality, world community has been urging the coastal nations for the protection of the important marine resources through restriction on exploitation of resources in demarcated marine areas in territorial waters, EEZ (Exclusive Economic Zone) and high seas for the cause of human benefit. This marine protection area (MPA), like Eco-park/safari parks on land, ensures maintenance of marine ecosystems and biodiversity; which, in turn; maintain required fish stock for sustainable exploitation in future. It will also generate tourism opportunity and other blue economy prospect for the nation particularly for the effected population. On the other hand restriction on fishing will have adverse effect on the fishing community concern; which would in turns, may lead the MPA unsuccessful. Hence for MPA to be successful, authority would be required to take intervention measures like providing loan, alternative livelihood and rationing etc.[3] Otherwise, the affected community may violate MPA regulations or may be forced to take-up other detrimental livelihoods like becoming illegal immigrants or drug trafficker.

Considering above view points, this study will put forward argument in favour of requirement of marine protected areas for sustainable living resources for Bangladesh. Then the paper will discuss MPA and its types which will also give idea on the level of protection applicable in MPAs. After a touch upon further more on MPA, it will highlight the importance of stakeholders' view in materialization of MPA objectives. As a whole the paper will propose for a holistic research in the arena of MPA for Bangladesh.

Prevailing Situation in Marine Area of Bangladesh

Bangladesh is one of the eight countries that constitute coastal area of Bay of Bengal. About one fourth world population lives in these eight countries.[4] A good percentage of people of these countries live in the coastal area of this Bay.[5] In addition to providing

habitats to numerous species, the EEZ of Bangladesh in the Bay of Bengal also directly and indirectly supports livelihoods of about eleven million people living in the coastal area of Bangladesh.[6] After the recent maritime delimitation, Bangladesh got approximately 118, 813 square kilometers sea area which is around 80% of the country's land area.[7] The country depends on its marine biodiversity and coastal ecosystem which is more pronounce than many costal countries and therefore, Bangladesh government has given major emphasis on the potential of the blue economy.[8] Though generally coastal people are poor segment of the population but they have easy access to marine resources.[9] Socio-economic condition and landlessness of poor people of coastal area coupled with easy access to marine resources force them to live on fishery, specially artisanal fishery. Since Bangladesh do not have adequate capacity to exploit deep sea fishing, poor people live on small scale fishing and with the passage of time, the pressure on the marine fishery intensifying day by day.[10] Though the total fish catch in the coastal area of Bangladesh not decreasing but the catch per unit efforts have been decreasing.[11]

Even large scale fishing trawlers carry out fishing within 40 meter depth instead of in deeper and blue seas.[12] In addition, human-generated hazards like grounding, pollution from oil spill, bilge (burned/waste oil) discharge, sewerage, waste material specially polythene etc aslo affect the marine environment specially marine fishery. As such the entire ecosystem including living resources in the marine area of Bangladesh is in depletion state.[13] Use of same fishing ground by many stake holders creates conflict at one hand and damages the ecosystem and marine environment at another.[14] Moreover, industrial trawlers carryout trawling at the bottom destroying benthic faunal community. Like many other parts of the world, huge fishing pressure is degrading very promising coast, estuaries, mangrove and many other marine habitant including nursery grounds bringing imbalance and disorder.[15] Continuation of such ill fishing practices may impact negatively in future bringing further decline in marine landing of Bangladesh marine sector. Therefore these negative impact and imbalance would degrade the marine environment, biodiversity and ecosystem day by day. In addition, according to forecast ocean-based industries are anticipated to increase manifold by 2030. For instance the industrial-scale fisheries, marine and coastal tourism and port activities may double and marine aquaculture may jump to triple by 2030. Hence, pressures on marine ecosystems are likely to intensify in the coming years.[16] But the impact of the pressure would be understood from real life examples.

Visualization of the Imbalance: Examples

Human activities also affect inshore ecosystem and environment, and the connectivity of the marine environment means that such activities may occur a considerable distance from the sea, but can still have a significant impact on the communities in question. For example, overfishing in off Alaska coast was the main reason which caused collapse of Steller communities of sea lions and harbour seals. These are the main food source for the killer whales, which was forced to take alternative prey, including sea otters around the Aleutian Islands.[17] Sea otters prey is sea urchins, thus due to the decline of sea otters, populations of sea urchins exploded which led to the overgrazing and collapse of kelp beds. This kelp beds are the food source and home for many marine species.[18] Another

example is Thailand where overfishing created decline of sea fish creating imbalance both for ecosystem and consumers. Fisheries department of Thailand allowed overfishing specially overfishing of anchovy fish. As anchovy is in the food chain of few other economy fish, harvesting of anchovy fish decreased and fish stock of other economy fishes declined. In 1962 fish catch per hour was 297 kg per hour which dropped to 17 kg per hour by 2011. As a result the price of most of the anchovy fish dropped to 100 Baht creating a loss of 765 Baht in economy fishes.[19]

Requirement of Declaration of Marine Protected Area

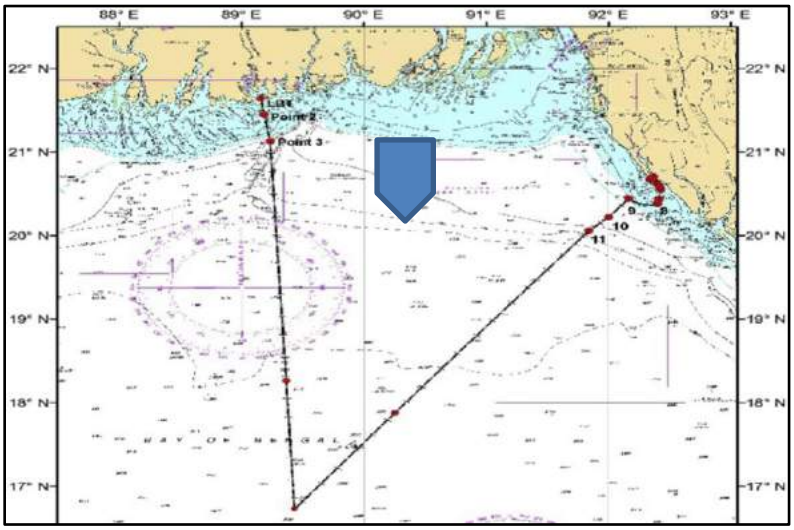
After a growing understanding and visualization of the threat to marine ecosystem and biodiversity, in 1962, World Congress on National Parks started talking on the protection of ecosystem and environment in their first international conservation meetings to draw attention of the world. Later, in 1982 in continuation of that meeting, urged for the inclusion of marine and coastal ecosystems/environmental sites into the worldwide network of protected areas.[20] UNEP Aichi declaration called for, "By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, specially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems."[21] This conservation/ protection can take number of forms/terms according to the requirements like Wildlife Sanctuary, National Park, Special Biodiversity Area like Ratargul Swamp forest of Sylhet, Vulture Safe Zone, Ecopark, Botanical Garden and special park etc.[22]

In addition to the Aichi declaration, United Nations Convention on Law of the Sea (1982) (UNCLOS) made an article as an obligation for conservation of the marine environment on coastal country.[23] As Bangladesh is a party to the UNCLOS, it is binding on the country to comply with its convention (UNTC, websites). According to Article 61(2) of UNCLOS every coastal country is responsible for conservation and management measures against overexploitation including maintenance or restoration of harvested species of marine living resources in the zones under its Jurisdiction. Bangladesh is also a signatory to several other international instrument/treaties stating responsibilities for conservation of marine resources, like the Convention on Biological Diversity (1992), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (1975) and the Ramsar Convention on Wetlands of International Importance (1971). All these conventions stated obligations, responsibilities and duties on Bangladesh to conserve the marine biodiversity and environment.[24]

While addressing the requirement of protection of marine living resources and in line with international call, government of Bangladesh declared the country's first ever Marine Protected Area (MPA) in Swatch of No Ground known as SoNG-MPA on 3 November 2014, to safeguard dolphins, sharks, whales, sea turtles and other oceanic species under the Wildlife (Conservation and Security) Act, 2012.[25] The wild life further includes Irrawaddy, pink river, bottlenose, spinner and spotted dolphins; finless porpoise; fin, humpback, sperm, dwarf sperm, killer or orca and false killer whales; and hammerhead, blue, whale, tiger and sawfish sharks.[26] Swatch of No Ground is a name of

ocean area south of Mongla. The specialty of this area is that it is like river on the sea floor known as canyon and the depth of water is few hundred meters. The declared MPA covers 1,738 square kilometers demarcated as a five-sided polygon with the following corner coordinates: Northeast – E 89° 40' 30" N 21° 37' 35", Southeast – E 89° 40' 30" N 21° 20' 28", Northwest – E 89° 21' 13'' N 21° 37' 35", South E 89° 31' 14" N 21° 06' 25" and Southwest E 89° 21' 13" N 21° 19' 57"; and" (CBD website, 2015).

Figure 1: Declared SoNG MPA (not to scale)



Source: Author's Self Construct

According to the Aichi Biodiversity Target, it is an obligation for Bangladesh to declare at least 10% of its marine area as protected areas, by 2020. Whereas, the first ever declared SoNG-MPA is only equal to about 1.46% of the total maritime area of Bangladesh.[27] Which is a meager beginning only, with no addition even by 2019 (MOFE, 2019).

Marine Protected Area Defined

Marine protected area in short MPA may be defined as an area of littoral or ocean area or low tide elevation or terrain, associated with its overlying water, fauna, flora, cultural and historical features, which are being reserved by law or other means to protect the ecosystem and biodiversity.[28] Marine protected areas' boundaries always include some area of ocean; even it is only a small fraction of the total area of the territory. MPA are the enclosed areas where human activities kept under some restrictions for greater interest of conserving natural environment, its associated waters, the inhabitant ecosystems, biodiversity and any cultural or historical resources that would necessitate preservation or management.[29]

Forms of MPA or Level of Protection in MPA

Traditionally, marine ecosystems and biodiversity are protected by local, national, regional and international authorities and may differ substantially from nation to nation. So, there are many forms of MPAs basing on the nature of activities that are allowed within the boundaries of the protected areas. Different levels of protection found within MPAs are listed below:

According to Use:

No Access: These are the very rare MPAs where any sort of access is prohibited. These may only be used for research purposes.

No Impact: MPAs that allow access to the area but do not permit any extraction, installations, disposal of pollutants and disruption to the environment. These MPAs are also used for research purpose only.

No-Take: People can access into the MPA but cannot extract or destroy anything in the area. These are also known as marine reserves. Papahanuamokuakea Marine National Monument of USA near Hawaii is such an example. As on October 2018, 2.25% MPAs of the world are 'No Take'.

Multiple Use: The MPAs permit extractive uses (like fishing) with some restrictions.

According to How Long

Permanent: Protection continues unless terminated by legislation.

Conditional: May continue into the future, however, may only be terminated upon achieving its objectives.

Temporary: Terminated after a predetermined time frame to achieve a conservation goals.

According to the Period in a Year

Year-Round: Protection remains throughout the year.

Seasonal: MPAs that offer protection during specific time periods depending upon some requirement.

Rotating: Though very rare, but includes those MPAs that move between particular geographic areas.

Genesis of MPA

The world's first MPA was probably the Fort Jefferson National Monument designated in 1935 in Florida, covering 18850 ha of sea and 35 ha of land.[30] However, according to[31] the world's first official MPA was established in 1925 at Glacier Bay, Alaska, which incorporated coastal waters important for whale and seal communities. The designation of MPAs is relatively slow as only 125 was recognized by 1974 and 1,306 by 1994. As on 10 February 2019, there are 14, 841 MPAs covering 7.47% or 27,061,861km^2 area of the world against around 245449 terrestrial protected areas covering 14.9% of the world's land area as listed by the IUCN in 2019 (UNEP-WCMC, IUCN and NGS, 2018, Last updated Jan 2109 in website). Whereas, our SoNG-MPA covers only 1.46% of the total marine waters of our country.

Distinctiveness of MPA Compared to Land Protection Area

Marine ecosystems do not have distinct boundaries as in the case of land protected areas. The physical features of the sea such as sea temperature, currents, salinity, tectonic features, etc. are common in a wider area which has direct effect from area fur distance away from a targeted area. On the contrary, in case of terrestrial ecosystems, has relatively distinct physiographic boundaries, e.g., landscape features and geological changes. Hence a wider spatial planning is necessary for MPA implementation.[32]

Present Status of SoNG-MPA

According to section 16 of Wildlife Act 2012, after the declaration of the MPA, the necessary regulatory arrangements for prohibition of illegal fishing, prevention of pollution from ships, others restrictions and instructions were expected from respective government department for conservation of the target species in the SoNG-MPA. Though concerned agency is working with this, however, notable progress regarding MPA implementation/management details are yet to be published.[33]

So, does declaration alone without any legal arrangement take any effect towards implementation of first ever MPA of Bangladesh? Unfortunately, our people do not bother any sort of conservation business rather people think this is their right to exploit the area at the fullest whether it is good or bad as a whole. They think they have right to consume not conserve. Conserving is the duty of government. They consider public or common property as nobody's property when comes for preservation, even for their own sustainability. This reality in a densely populated country is not very encouraging for conservation of depleting natural resources and ecosystem. For the people's futures strict monitoring and rigorous measures has to be undertaken against violators.[34]

Illegal, Unreported and Unregulated (IUU) fishing is the top most problem in marine area of Bangladesh.[35] Approximately, 66,000 unregistered fishing trawlers do fishing in the sea area of Bangladesh.[36] Therefore, destructive fishing activities do not spare SoNG-MPA; for example, if a whale is somehow knotted with fishing net, it will die painfully

and gradually, though it may be unintentional. This would lead to the explosion of whale's prey; in turn which would led to the extinction of prey's prey, thus imbalance is created. But the question is do fishers know this reality? This indicate the crucial role of fishermen or the stakeholders for the management of MPA.

Requirement of Involvement of Stakeholders

Stakeholders of the MPA include primarily fishing community, seafarers and government officials and also include conservation society, non-government agencies, business and commercial communities. Understanding of different stakeholders, their aspirations, practices and interests are central to ecosystem-based management.[37] UNCLOS-III has mentioned the economic interest of the coastal fishing communities (UNCLOS, 1983 article 61(3)). It also mentioned that special attention to be given to the requirements of developing countries. According to for a management strategy to be successful, involvement of stakeholders in MPA creation and management is considered to be essential element.[38] When an MPA is established often stakeholders become discontented as they may perceive a loss of opportunities.[39] This negative feeling can lead to poor acceptance and failure of MPA objectives.[40] Thus, understanding stakeholders' perception, interest and their problem will enable concerned authority to improve maintenance of MPA.[41] Research also suggests that understanding the association of demographic and social factors with their environmental awareness and perceptions can provide valuable understandings to increase management efficiency.[42]

Having peoples' negative perception coupled with socioeconomic factors of fishing communities suggest that implementation of MPA would be very difficult as the MPA is far out of sight. More over socioeconomic condition of the people would not allow them remain without fishing for their livelihoods. Therefore, there should be some alternative arrangements that would provide job and means for their livelihood.[43]

As explained above, often MPAs are exposed to a number of human-generated hazards like grounding, pollution from oil spill, bilge (burned/waste oil) discharge, sewerage, waste material specially polythene etc. These hazards also threaten the success of MPA for which both managers and stake holders need to understand the challenges. If human activity is the cause of hazards, then people undertaking those activities need to be educated to avert, halt and mitigate hazards.[44] Accordingly, suggested that management can formulate effective education programs by understanding the driving factors that address people's perceptions of hazard.[45]

In the book titled *Marine Trans boundary Conservation and Protected Areas* edited by Peter Mackelworth argued that economic loss due to depleted fish stock is too high for small scale fisheries. Authors stated that imposing restriction on fishing for conservation of area to recover the living resources will be more burdensome for the said fishers. Authors suggested that introduction of compensation or payment to affected communities

would provide incentives to attract users to actively participate in implementing protected areas.[46]

Imperative for an Empirical Study

Marine resource beneficiaries like fishermen, seafarers are always happy to have protection of resources for their benefit, but they usually object when question of sacrifice comes showing many logics and excuses. Even it is seen during national and regional meetings/ discussions that Bangladesh fisher groups protest whenever a restriction or protected area is proposed. This is because lack of awareness, understanding of MPA and its ultimate benefit in the long run. But it is also believed that socioeconomic conditions of the poor fishers of Bangladesh coast mostly drive them to fish in SoNG-MPA. Research suggests that there is connection between alternative livelihood and fishing effort.[47] As sea remains out of the sight of our people, it would not be possible for enforcement authorities alone achieve effective implementation of MPA. Their participation, motivation and alternative to fishing would be necessary. The Convention on Biological Diversity also emphasizes the requirement of attention to social dimension. So for future of the poor segment of the coastal people and for future of nation as a whole a detail study through survey would benefit in many ways. It may be suggested that a complete research on the association of socioeconomic factors of fishers including their perception towards marine protected area would be a frame work for effective implementation of MPAs and conservation of our marine resources for sustainable exploitation.

Concluding Remarks

Conservation of biodiversity and conservation of marine resources is crucial for survival of mankind. According to this demand and to follow up International call Bangladesh declared first ever MPA in swatch of no ground in the sea area of Bangladesh. The regulations regarding its implementation, is yet to be seen. But it is sure that for successful implementation, stakeholders particularly fishers' involvement is necessary for which study on fishers socio economic condition and their perception would be useful for formulating viable strategy. Moreover stakeholders' perception of hazards like grounding, pollution, debris would also affect the MPA. As such detailed study on these areas would be imperative for successful MPA for the sustainable future of the marine resources of our country.

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Brief Biography

Capt M Joynal Abedin, **(ND), afwc, psc,** BN joined Bangladesh Naval Academy on 1st July 1990 as cadet and commissioned in Executive Branch on 1st Jan 1993. After commission he has served in number of BN ships and establishment including Bangladesh Coast Guard in various capacities. He has done number of courses at home and abroad. Few of the mentionable courses are Advance Turkish Language Course in Turkey, Navigation & Direction Specialization in India, Missile Command & Tactics in BNS ISSA KHAN, Container Handling Course under Chattagram Port Authority. Captain Abedin obtained Master of Business Administration from Dhaka University as regular program conducted in MIST from 2002-2004 where he stood first amongst 45 civil and military students. He also completed Master of Science in Military studies and Masters of Philosophy from Bangladesh University of Professionals. Presently he is pursuing PhD program in Ocean and Coastal Management from same university. In addition to native language, he can speak in English, Turkish and Arabic. He is an alumnus of Mirpur Staff College and Armed Forces War Course of NDC. He has commanded 07 small ships, OPV and frigates including including BNS OSMAN. His command ships also include BNS DARSHAK in Sudan for UN Mission. Presently he is acting as Colonel General Staff of Defence Services Command and Staff College, Mirpur. He has visited number of countries including China, India, Malaysia, Myanmar, Sri Lanka, Sudan, Saudi Arabia, Italy, Pakistan, Turkey and Indonesia. He is married to Farhana Akhter Lucky and blessed with two daughters and one son.

SOCIAL RESEARCH: A COMPREHENSIVE UNDERSTANDING

Lieutenant Colonel Sk Abu Farook Md Rownak Salehin, psc, Inf

Introduction

The term '**research**' comes from the French word 'recerchier' that means to search again. If we dissect the word 'research' we may write 're-search' where ***re means time and again***, and ***search means explore/ examine/ search***. So research means 'explore/ examine/ search something time and again'. '***Research***' is no longer restricted to small elite of professionals and fulltime researchers in these days. Rather all the professionals are concerned with research because they need to conduct flawless research as part of the academic courses/ professional developments. Such professionals need to complete the research themselves within a relatively short time without being assisted by others for data collection and analysis. This paper attempts to present a comprehensive understanding for conducting social research following all the required parameters.

Research is a scientific approach of answering a research question, solving a problem or generating new knowledge through a systematic and orderly collection of data and analyzing the same with an ultimate goal of making it useful in Decision Making. The definition most importantly signifies one thing; research must be able to answering a research question and solving a problem or answering a research question and generating new knowledge. That means, at the end of the research the researcher must develop a road map/ solution to the problem.

The basic/ general objectives of a social research are: to d***iscover*** new theory/ idea, or unexplored area of study, to ***resolve*** or identify contradictions existing in the area of study, to ***survey*** *or examine* old conclusions with the new data, and to ***translate*** *perception* into *reality*.

Broad Category/ Types of Research

Scientific Research is a systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena. Purpose is to build theory. Natural Science is the study of the *universe* and how it works. Natural science *depends on observation and experiments* whereas social science is the study of *human* and their interactions that *depends on observation, surveys and opinion.*

Social Research is a systematic method of *discovering new facts or verifying old facts,* and *their sequences, interrelationship, causal explanations, and the natural laws* which govern them.[1]

Research is named/ classified in different types according to different perspectives as shown in the Table below:-

Table 1: Different types of Research

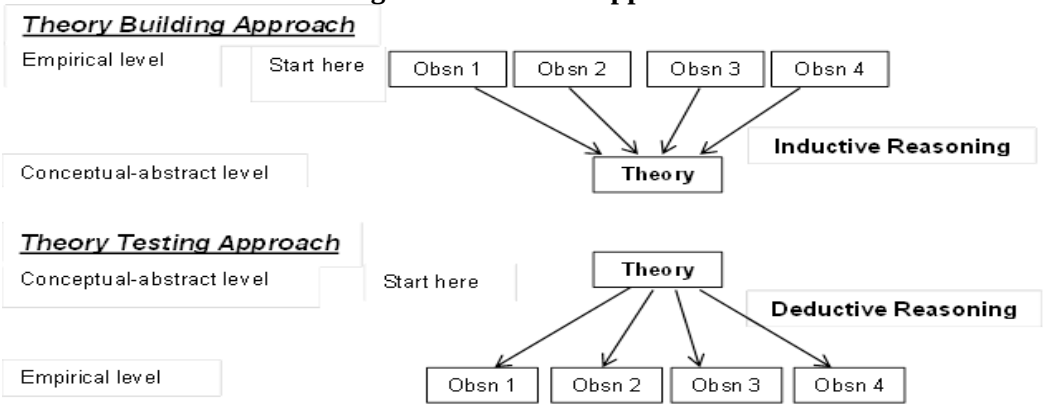
Application	*Objectives*	*Information Sought*
• **Pure**. Determine or establish facts and relationships within a discipline to develop theories or • **Applied**. Purpose is to obtaining information for resolving a particular problem (Pure research has little application to policy and management but could be done to guide applied research)	• **Descriptive**. Describing the existing situation systematically. Usually answering the questions; who, what, when, where. • **Correlational**. Relationship or linkage between two variables • **Causal Explanation**. Finding the reason(s) of any happening with systematic investigation • **Exploratory**. Finding something which was not known before or if even known, not explicitly • **Explanatory**. Seeks to explain the subject matter being researched and tries to answer the question what, how and why • **Evaluation**. This is quite extensive as it measures the effectiveness of a program. • **Prediction**. By studying the past or know fact, telling about the future or unknown related facts.	• **Quantitative**. Objective: Numerical Data, Quantification • **Qualitative**. Subjective: Interpretative data, Hermeneutics (Objective Oriented Criteria)

Source: Author's Self Construct

Research Approach

There are two distinct approaches; deductive approach and inductive approach. Theory building is a process (inductive reasoning) in which research begins with observations and derive a theory. Theory testing (deductive reasoning) begins with a theory and that guides which observations to be made.

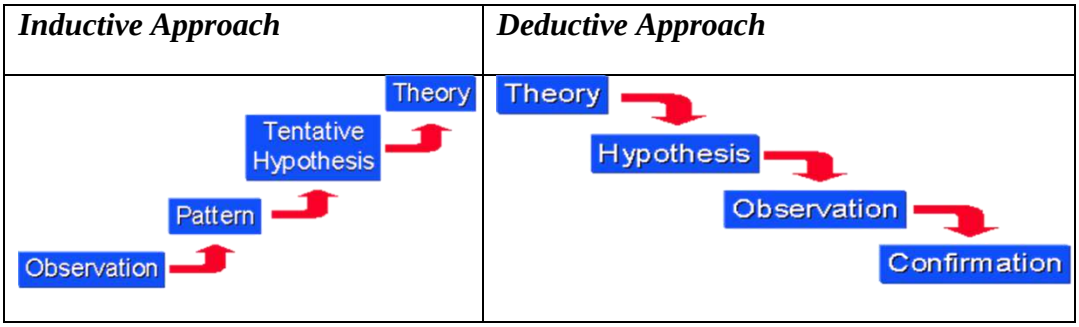
Figure 1: Research Approach



Source: Author's self-construct

Chronology of both approaches is shown below:-

Figure 2: Types of Approach



Source: Author's Self Construct

Terminologies/ Research Jargons

Social research is theoretical, meaning that much of it is concerned with developing, exploring or testing the theories or ideas that social researchers have about the world. It is also empirical, meaning that it is based on observations and measurements of reality.[2]

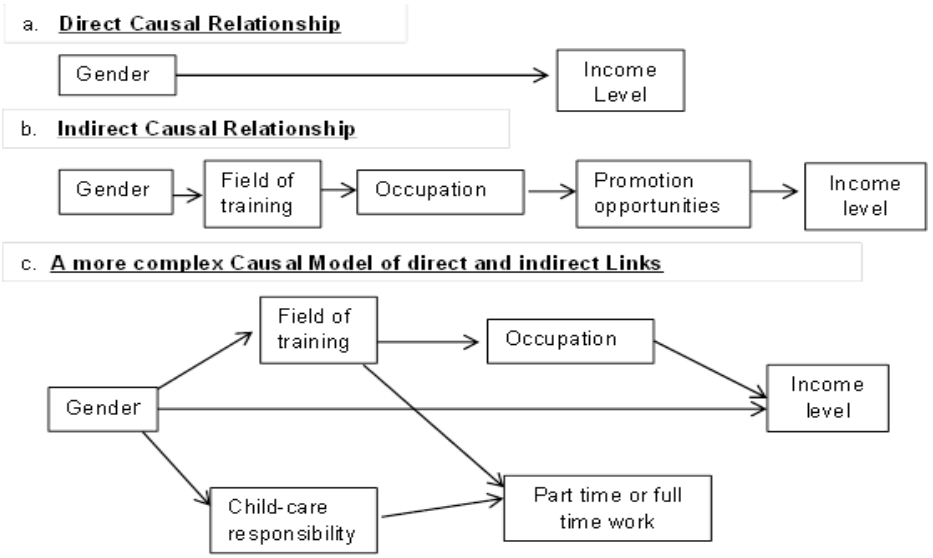
A variable is defined as anything that has a quantity or quality that varies. Variable represent the measurable traits that can change over the course of a scientific experiment. Researchers have identified many types of variables namely independent, dependent, intervening, moderator, extraneous, control, categorical and continuous variables. Social researches are mostly concerned about first two types of variables.

a. Independent Variable - factor that is assumed to influence the problem is called independent variable. In all probability, the independent variable(s) will have some effect on (or relationship with) the dependent variables.

b. Dependent Variable - factor that is used to describe/ measure the problem understudy is called dependent variable. In other words, the variation in the dependent variable depends on the variation in the independent variable.

In social research, causal means 'cause-effect' relationships between variables. Causal explanations argue that phenomenon Y (income level) is affected by factor X (gender). Some causal explanations will be simple while others will be more complex. Examples of different causal relationships are stated below:[3]

Figure 3: Different Causal Relationship



Source: Author's Self Construct

Research Method and Research Methodology - research method is the tool or technique used for conducting the research whereas research methodology is the systematic way to conduct the study in various steps. The common research methods are descriptive analysis, exploratory analysis, causal analysis, in-depth study etc. whereas the research methodology systematically identify the research problem, research design, sample design, data collection techniques, data analysis techniques etcetera.[4]

Operationalize - The process whereby the dependent and independent variables to be researched are defined and specified in a way that allows both dependent and independent variables to be observed and measured and allows for the variation and manipulation of the independent variables.

Criteria/ Qualities of Research

Qualities of a Good Research - a research must focus on priority problem while defining the purpose clearly. Research design must be planned meticulously so as to ensure adequate analysis from right perspective. Ethical issues should be considered with due importance. Research findings must be presented unambiguously including limitations. Criteria of different types of research are as shown in Table 2 below:

Table 2: Different types of research

Descriptive Studies	Clear + Complete + Specific
Correlational Studies	Clear + Complete + Specific + Main variables to be correlated
Exploratory Studies	Clear + Complete + Specific
Explanatory Studies	Clear + Complete + Specific + Main variables to be correlated + Identify the direction of the relationship

Source: Author's Self Construct

Qualities of a Researcher - a researcher must have certain qualities for conducting research successfully: open and creative mind, critical and cognitive thinking ability, knowledge, and experience, communication skills, patience and perseverance.

Research Ethics

"If you steal from one author its plagiarism; if you collect from many it's research" - Wilson Mizner

Plagiarism - the presentation of the work of another person as one's own or without proper acknowledgement is known as plagiarism. University of Illinois at Chicago identified 10 main forms of Plagiarism that researchers commit:

a. Taking passages from own previous work without adding citations.
b. Re-writing someone's work without properly citing sources.
c. Using quotations, but not citing the source.
d. Interweaving various sources together in the work without citing.
e. Citing some, but not all passages that should be cited.
f. Melding together cited and uncited sections of the piece.
g. Providing proper citations, but fails to change the structure and wording of the borrowed ideas enough.
h. Inaccurately citing the source.
j. Relying heavily on other people's work, and fails to bring original thought.

Ways to Avoid Plagiarism - there are six ways to avoid plagiarism:

a. **Paraphrase** - information relevant for the research work, the researcher may:

(1) Read it and put it into own words.
(2) Avoid copying verbatim more than two words in a row.
(3) For using more than two words together that needs quotation mark.
(4) About 10-20% of the final product should appear as directly quoted.

b. **Citing** - usually entails the addition of the author(s) and the date of the publication or similar information. Not citing properly can constitute plagiarism.

c. **Quoting** - When quoting a source a researcher should use the quote exactly the way it appears. Quoting must be done correctly to avoid plagiarism allegations.

d. **Citing Quotes** - it is different than citing paraphrased material. It usually involves the addition of page number/ paragraph number in the case of web content.

e. **Citing Own Material** - researcher must treat the text of own work in the same manner as he/ she would treat someone else's work, and accordingly cite that.

f. **Referencing** - is the most important factor of avoiding plagiarism. It includes:

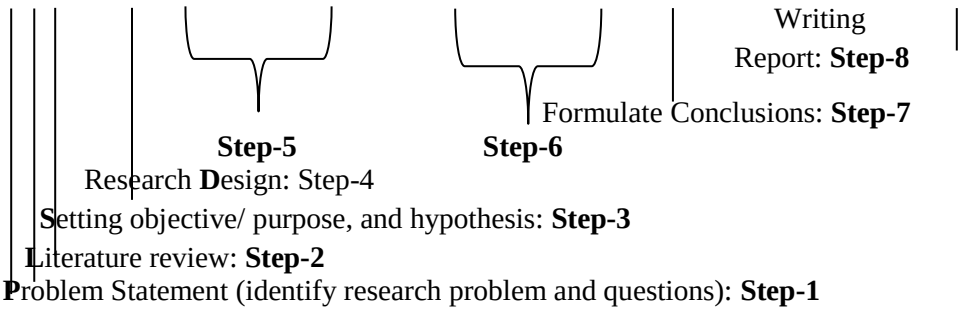
(1) A reference page or page of works cited at the end of the paper.
(2) Meet document formatting guidelines used by the institution.
(3) Specific information i.e. author, date of publication, title, and source.
(4) Correct references.

Ethical Precautions - a researcher must avoid followings while collecting data:

a. Deceiving a respondent about the true purpose of the research.
b. Asking embarrassing question to respondent.
c. Asking respondent a question that causes emotional turmoil/ invade privacy.
d. Compelling the respondent to participate.
e. Violating a promise of confidentiality.
f. Revealing only a part of the fact/ presenting fact out of the context.
g. Falsifying findings to please the client/ offering misleading presentations.

Logical Sequence/ Steps of a Social Research

Steps - one must understand how to go about and complete the arduous work following a logical sequence. Again a researcher must not think that without completing one he/ she cannot move on to the next step(s). The process is always dynamic. Let us see the statement PLS design data collection and data analysis to formulate a research report which is illustrated below:-[5]



Step-1 (Identify Research Problems and Questions)

Identify Research Problems - Researcher should first think about a broad area that will benefit him/ her in future (related to job or field of expertise the researcher is interested to develop). The researcher should look into further details of the broad area of interest that has already been determined. Now the researcher should study related books/ reference materials and so on for choosing the specific area of research.

Identify the Problem - this is an extension of the previous work. The researcher needs to do brainstorming, find out relevant books, discuss with friends and other scholarly people for identifying the research problem. The criteria to evaluate a Problem are:

a. Is the problem that I feel/ is of interest to me?
b. Does the problem have solution or still unsolved?
c. Is the problem worthwhile (meaningful/ related)?
d. Is sufficient time available to complete the work?
e. Type of data that I require and sources available to collect them.

Crafting the Problem Statement - a problem statement works as a foundation to the research work, which needs to be born in mind at all times for formulating other parts of the research. A problem statement should contain followings:

a. An overview of the issue (summary/ background).
b. Description of the nature of the problem (question in mind).
c. Major factors that might influence the problem.
d. Researcher needs to *discover* new knowledge/ solve a problem (goal).

Identify Research Questions - Description of the objective and purpose of the study is the key tool to identify research questions. There are two distinct questions; primary and secondary. Primary question is a single one that addresses the purpose. Secondary questions must be so formulated that should be able to answer primary question. The techniques:

a.	**What Question**.	What is to be studied? (It requires descriptive answers of something)
b.	**Why Question**.	Why is it to be studied? (Root causes for which something is happening)
c.	**How Question**.	How is it to be studied? (Concerned with solution/ changes)

Step-2 (Review of the Literature)

Extensive readings are expected by the researcher for developing good idea about the area he is going to explore or avoiding duplication of previous research. Step-2 begins right after identifying the broad area of research or area of interest, and continues till the researcher ends data collection. Followings must be born in mind:[6]

a. Read relevant books/ previous research papers/ journals etcetera.
b. Prepare summary of the read materials (books/ relevant research work).
c. Note the different data/ information that are determined before.
d. Identify the area that is not yet explored, or disagreed with previous findings.
e. Thereafter confirm specific area for research.

Technique of Writing Literature Review - the summary of each literature is to be written within a short paragraph. After completing the summary of all the literatures individually, the researcher needs to develop a concluding summary/ findings of the literatures that he/ she has reviewed so far. Researcher needs to identify the research gap from the previous researches, and specify his/ her specific area of research at the end of this step.

Step-3 (Setting Objective/ Purpose and Hypothesis)

Objective and Problem Statement are two completely different facets. Before setting the objectives of the research the researcher must be satisfied with following questions:[7]

a. What is the time line?
b. What is the geographical location?
c. What is the interested aspect of the topic for the researcher?
d. Why does the researcher want to investigate the problem?
e. What is to analyze (data about and from which conclusions to be drawn)?

Objectives meet the purpose associated with the research. It is linked with the research question. Objective should also attempt to draw outcome or solution to the problem. A researcher must set the objectives of his/ her research correctly so as to moving towards right direction. The objectives can be summed by the catchword **SMART** as shown below:-

a. **Specific -** selected objectives that have to be achieved must be specific.
b. **Measurable -** researcher must be able to quantify the objectives.
c. **Appropriate -** objectives must be aligned with the needs of target audience.
d. **Realistic -** objectives must be attainable with existing resources.
e. **Time -** time limit for achieving the objective.

Research Hypothesis - a hypothesis is a concrete statement of prediction. Not all studies like exploratory (inductive research) have hypothesis. It is applicable for correlational and explanatory objective oriented research where a researcher attempts to identify the relationship between two variables. A single study may have one or more hypotheses. Guidelines for formulating hypothesis correctly are:

a. **Simple and Clear** - hypothesis must be unambiguous and be stated into concrete terms. Example: Modern warfare demonstrated that there is no alternative to the joint operation. What is the definition of Modern Warfare? It can create confusion.

b. **Specific and Testable** - hypothesis must have singular meaning, specific to the problem and testable through empirical (observed) data.

c. **Ability to Test** - hypothesis should be so formulated that it can be tested by the available methods.

d. **Related to Existing Theory** - a tested hypothesis should qualify or confirm one or more existing theories.

e. **In Line with Research Methods** - methods of data collection at times may not be permissible. Strategic decisions may require interview of the policy makers.

f. **Empirically Verifiable** - hypothesis must clearly outline variables and cases, and the relationship which depends on the type of hypothesis being tested.

Null versus Alternative Hypothesis - when we pose a research question, we want to know whether the outcome is due to some influence (known as independent variable) or due to chance (no effect). Null Hypothesis (H0) is straightforward that only refers no effect whereas Alternative Hypotheses (H1)/ (H2)/ (H3) are testable statements. Example: a researcher is investigating the effects of a new training program, where he believes that one of the outcomes will be that there will be less absenteeism. In this case the two hypotheses (Null and Alternative) might be stated; the null hypothesis: *there will be no significant difference in employee absenteeism*, which is tested against the alternative hypothesis*: there will be a significant decrease in employee absenteeism*.

Step-4 (Research Design and Research Proposal)

A research needs a design/ structure before data collection or analysis. A research design is not just a work plan but the work plan will flow from it. The function of a research design is to ensure that the type of evidence needed to answer the research question/ test a theory/ describe some phenomenon. An architect must understand the uses and the needs of the occupants before developing a work plan. Similarly, in social research the issues of sampling, method of data collection, analysis are to be comprehended, and accordingly research design needs to be developed. Research design is different from the method by which data are collected. The research design should be developed only when the topic and problem are selected or identified, objectives are set and hypothesis is framed. A research design answers to the following questions:[8]

a. What the study is all about?
b. What type of data is required and what are the sources of data?
c. What is the purpose of research?
d. What should be the place or area of study?
e. What should be the amount of resources needed for the study?
f. How much time is actually required?

g. Which method of data collection should be appropriate?
h. How should the data be analyzed?
j. What would be the methodology of the study?

Research Proposal - a research design is submitted in the form of research proposal. The proposal must cover key issues. The prescribed format is stated below:-[9]

- ✓ **Title of the Proposed Research**
- ✓ Keywords

1.0 Problem Statement
2.0 Research Question(s)
3.0 Literature Review
4.0 Research Objectives/ Purpose and Hypothesis
5.0 Illustration of Conceptual Framework
6.0 Research Methods
  6.1 What methods are to be used?
  6.2 Rational of such methods
  6.3 How data will be collected?
7.0 Analysis Plan
  7.1 How data will be analyzed?
  7.2 What quantitative/qualitative tools will be used?
  7.3 Will there be any expert consultation-if so, who are they?
  7.4 What will be the nature of consultation?
8.0 Resource and time schedule
  8.1 How much material resources are needed?
  8.2 How much intellectual support is wanted?
  8.3 What time schedule will be followed?

Conceptual Framework - is the building block of a research. This framework should represent initial concept of the problem, manner in which the research needs to be developed and be able to serve as a road map. The examples stated in the 'Research Methodology' précis of DSCSC are easy to comprehend conceptual framework.

Step-5 (Data Collection)

Before Data Collection, a researcher must be able to comprehend the importance and application of sampling. There are scholars who named 'Sample Design' as a separate step. Sample is a part of a population, and population is the full set of items or people under investigation. Sampling is the process of selecting group of people from a population of interest. There are three catch words often used by the researchers in sample size. These are; sampling frame - is a list of the items or people forming a population from which a sample is taken, sampling element - is the unit of analysis or case in a population (a person, a group, an organization) that is being measured, sampling unit - means the individual who is the particular target to be interviewed.

Types of Sampling - there are many types of sampling but we are mostly concerned about probability sampling and non-probability sampling designs. The probability sampling designs includes following:[10]

a. **Random Sampling** - is a sample system in which every member of the population has an equal chance of being selected. This is applicable when population size is small, homogeneous and readily available. Each element of the frame thus has an equal probability of selection.

b. **Stratified Random Sampling** - is applicable where population holds a number of distinct categories. The frame can be organized into separate 'strata'. Each stratum is then sampled as an independent sub-population, out of which individual elements can be randomly selected. Every unit in a stratum has same chance of being selected.

c. **Systematic Sampling** - relies on arranging the target population according to some ordering scheme and then selecting the elements at regular intervals through that ordered list. A simple example would be to select every 10th name from the telephone directory (also referred to as 'sampling with a skip of 10').

d. **Cluster Sampling** - population divided into clusters of homogeneous units (usually based on geographical contiguity). Sampling units are groups rather than individuals. A sample of such clusters is then selected.

The non-probability sampling designs include following types of sampling:

a. **Quota Sampling** - a sample selected so that its most important demographic characteristics match those of the population interest. Example: an interviewer may be told to sample 200 females and 300 males between the age of 45 and 60. In quota sampling the selection of the sample is non-random.

b. **Accidental Sampling** - convenience/ accidental/ haphazard is a type of nonprobability sampling that involves the sample being drawn from that part of the population which is close to hand, readily available and convenient. Example, if the interviewer was to conduct a survey at a shopping center early in the morning on a specific day, he/she could interview limited number of people who have gone there at that given time, which would not represent the views of other members of society. This type of sampling is useful for pilot testing.

c. **Purposive Sampling or Judgmental** - the researcher chooses the sample based on who they think would be appropriate for the study. This is used primarily when there are a limited number of people that have expertise in the area being researched.

d. **Snowball Sampling** - is appropriate to use when the members of a population are difficult to locate. A snowball sample is one in which the researcher collects data on the few members of the target population he or she can locate, then asks those individuals to provide information needed to locate other members of that population whom they know. Example: study of drug addicts, call-girls.

Mixed Sampling Designs - means combination of probability and nonprobability (purposive) sampling methods. Mixed method sampling strategies may employ all the probability and purposive techniques. There are four types of mixed method sampling techniques are used: basic mixed method sampling, sequential mixed method sampling, concurrent mixed method sampling, and multilevel mixed method sampling.

Sample Size Calculation - the theory for identifying sample size depends on whether the population size is known or unknown. The calculations are:

a. **When Population Size is Known:** $\mathbf{n = \frac{N}{1+N(e)2}}$

n = sample size, N = total population, e = error probability (5% means .05)

b. **When Population Size is Not Known**: $\mathbf{n = \frac{Z^2P(1-P)}{(e)2}}$

Z is the confidence level (95%). The calculated value of Z is 1.96 (mathematician identified this value through higher calculation), p = Standard Deviation (.5), q = 1-p, e = margin of error (.05 means 5%).[11]

Data - are the plural form of datum. A collection of data also called the data set. A single observation is a data point or datum. Observations should be so selected that they should represent all relevant groups in the data. Researchers must resist the temptation to collect everything. Planning and managing data collection systematically requires an understanding of the different types of data associated with different approaches, methods, and specific techniques of data collection. When we think about data, we can distinguish them into two broad categories; primary versus secondary and qualitative versus quantitative.

a. **Primary versus Secondary Data** - primary data are data that are collected for the first time for the purpose of a particular study. Primary data is closely related to the methods and techniques of data collection. For example primary data will often be collected through techniques such as experimentation, interviewing, observation and surveys. On the contrary information, which is already collected and available in some form to the researcher, is known as secondary data. In fact, secondary data is often the start point for data collection. Secondary data comprises both internal and external data sources encompassing internal information (databases, reports, previous analyses) and external data sources (published reports, government surveys, publications, previous research findings and increasingly, internet and web-based sources of information).

b. **Qualitative versus Quantitative Data** - qualitative data are data in the form of descriptive accounts of observations. These are non-numerical data that cannot be interpreted and analyzed mathematically, statistically, or both. It is therefore associated with phenomena that cannot be, or is difficult to quantify. Quantitative data are data in the form of numbers that can be interpreted and analyzed mathematically, statistically, or both ways. It is, therefore, only

applicable to phenomena that can be quantified and measured. The dichotomy between quantitative and qualitative research stems essentially from the notions of what constitutes scientific as opposed to non-scientific research methodologies. The natural sciences that are primarily concerned with phenomena that is quantitative in nature where the researcher doesn't have advanced knowledge. In the social sciences, the researcher is concerned to measure and evaluate is qualitative in nature and, therefore, qualitative research techniques are more appropriate in social research.

Methods of Data Collection - data collection techniques allow us to systematically collect information of the objects of the study like people, phenomenon etcetera. There are mainly two types of data collection techniques (quantitative and qualitative) that we are concerned with in social research. However, few methods of data collection are interview method, survey method, focus group discussion (FGD), observation method, content analysis, case study etcetera. The following methods are discussed in details:[12]

a. **Interview Method -** the purpose of interview is to explore the views, experiences, beliefs/ motivations of individuals on specific matters. When designing an interview schedule it is imperative to ask questions that are likely to yield as much information as possible and be able to address the objectives of the research. Good questions should be open-ended, neutral and understandable. Types of interviews:

(1) **Structured Interviews** – are verbally administered questionnaires, in which a list of predetermined questions is asked, with little or no scope for follow-up questions to responses that warrant further elaboration.

(2) **Unstructured Interviews** - do not reflect any preconceived theories or ideas. Such an interview may simply start with an opening question such as 'Can you tell me about your experience of visiting this historic battle ground?' and will then progress based upon the response.

b. **FGD -** is a discussion of a group of persons guided by a facilitator (moderator) where group members talk freely and spontaneously about the topic fixed in advance. Focus group generally includes 6-12 persons selected by the researcher, who are knowledgeable about a specific subject. The focus group strategy is often used as a starting point for developing a survey. Such group interviews can stimulate new ideas and concepts, reveal potential problems in a research design, and help interpret evidence generated from a quantitative study. There are several advantages:

(1) Provide quick and inexpensive sources of information.

(2) Scope to talk directly to the respondents for clarifying ideas and views.

(3) Respondents can develop their reactions build upon other participants.

(4) Successful FGD can be carried out through teleconferencing.

c. **Observation Method of Data Collection and Recording** - is best suited to identifying hidden issues and problems in an organization. It is concerned with collecting primary data through looking and noting. Some of the main alternatives for collecting and storing observational data include; *mechanical and/or electronic means, written materials and records,* and *observation followed up by written case notes*. More structured observational techniques can be particularly useful where the researcher knows precisely what is required and what is to be observed/ measured.

d. **Content Analysis** - is a research technique for making references by systematically and objectively identifying specific characteristics within text. It includes observation as well as analysis. For example, the frequency of appearance of tribal women and members of other minority groups in mass media may be studies using content analysis. The primary goal of content analysis is to take a verbal, non-quantitative document and transform it into quantitative data. The researcher first constructs a set of mutually exclusive categories that can be used to analyze documents and then record each of these categories.

e. **Questionnaires** - a questionnaire is a series of questions designed to provide accurate information from every member of the sample. There is an extremely wide range of different types of approaches to using questioning techniques to collect data. In brief the questionnaire should be as short as possible, have a logical structure, have questions which are simple wherever possible, avoid ambiguous and leading questions, and above all use a specific choice of answers where possible. The researcher must have clear idea about types of questions and questioning techniques, only then researcher can determine appropriate questioning techniques and approaches that are followed for data collections like formal – informal, structured – unstructured, large scale – small scale, individual – group, in depth - descriptive, qualitative – quantitative and face-to-face – administered. The question types are:

(1) **Closed (or pre-coded) Questions** - are the most common type of question. They are good for routine questions with limited or structured answers and can be easily summarized and analyzed.

(2) **Open Questions** - are more suitable for open-ended and flexible enquiries, particularly in an interview context. Such responses are likely to give deeper insights. They are particularly good for identifying the unexpected and are therefore valuable in exploratory contexts; but can be time-consuming to answer. It is difficult to easily summarize and analyze.

(3) **Pre-coded Questions** - Most surveys concentrate on pre-coded questions because the results are in a format which can easily be collated and analyzed. Studies which concentrate on open questions fall in to the category of qualitative research whereas a pre-coded focus leads to quantitative research.

Question Styles and Formats - there is a wide range of styles and formats, and the same question can often be presented in a different but acceptable ways. The response to a question might be to tick a box, fill in a number, or to circle an answer or number. For instance the scale may use terms such as:[13]

Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree
Strongly Agree			Disagree

Some closed (or pre-coded) questions:

- Are you: Male Female *(please ring)* ***or we may use….***

  Are you: Male or Female *(please tick ✓)*

- How old are you? ……years *(please enter figure)* ***or we may use…***

  How old are you? <15 ☐ (*please tick ✓)*
  15–19 ☐
  20–29 ☐
  30–39 ☐
  40–49 ☐
  50–59 ☐
  60> ☐

  - Does your organization have a Website? **Yes** **Unsure** **No** *(please tick✓)*
    ☐ ☐ ☐
  - I am fully satisfied with …… (please ring number below)

Strongly Agree	slightly agree	neither agree nor disagree	slightly disagree	strongly disagree
1	2	3	4	5

  - I use public transport to travel to my place of work (please tick ✓)

always	usually	sometimes	rarely	never
☐	☐	☐	☐	☐

Some Open Questions:

- Please list the range of different types of organization with which you have first-hand experience (work experience, job satisfaction, leadership)

. . . .

- Please list 3 good and 3 bad points about your experience as a student of DSCSC:

Good	**Bad**
1	1
2	2
3	3

- Please complete the following sentence:
  - If there was one thing I could change about induction week at this DSCSC

    . . . .

  - In what respect your prior experience in unit helpful during the course in DSCSC?

    . . . .

  - Do you have any further comments about the importance of unit service?

    . . . .

  - If you have any other comments that you want to make please use the space below:

    . . . .

Thank you for taking the time to complete this questionnaire; please return it (in the enclosed envelope through official mail/ via the internal mail).

Key Issues in Data Collection - the criteria for effective data collection is to maintain data quality through validity, reliability and generalizability.

a. **Validity -** extent to which the data collection method or research method describes or measures what it is supposed to describe or measure.

b. **Reliability** - relates to the extent to which a particular data collection approach will yield the same results on different occasions.

c. **Generalizability** - relates to the extent to which results from data can be generalized to other situations.

There are three key dimensions for data:

a. **Sampling and Measurement Errors** - both types of errors can, and do occur in data collection with perhaps obvious potential effects on validity, reliability and generalizability.

b. **Data Recording, Storage and Retrieval** - can have important effects on data quality. The researcher must give careful consideration as to how data will be recorded and stored. Sometimes for example, data recording, storage and retrieval can prove problematical.

c. **Preparation for Data Gathering** - data quality can also be affected by the extent to which the researcher has prepared for the data-gathering process. In particular, is the preparation required to ensure that the researcher is familiar with the necessary research and measuring instruments being used.

Choosing Data Collection Methods – a researcher must keep certain factors at the backdrop while choosing data collection method; objectives/ purpose of research, personal skills and expertise, cost/ budgets, time available for completing the work, availability of data. The following must be considered:

a. **Ethical and Legal Issues** - are more important considerations and criteria for selecting between research methodologies. Example: whether or not respondents should be informed that they are being researched, and legal issues pertaining to the collection, storage and use of data.

b. **Using more than one Method** - research project may require and involve more than one method of data collection. Example: secondary research followed by observation and finally focuses on group interviews and a large-scale survey. Experimental research may be used in combination with focus groups and surveys and so on. Where two or more methods are combined is known as triangulation.

Step-6 (Data Analysis)

Data Analysis - there are many different ways to analyze data, some are simple and some are complex, some involve grouping while others involve detailed statistical analysis. The most important thing is to choose a method that is in harmony with the parameters that the researcher has set and with the kind of data at hand. The method of data processing is editing, coding, classification, tabulation and data diagrams (charts, graphs). The data can be analyzed at three levels:[14]

a. **Univariate** - analysis means describing attributes of each variable independently. Therefore no statistically significant assumption or hypothesis can be tested. The basic analytic tool used is frequency distribution in numbers and percentages. Frequency distributions group respondents into the sub-categories

into which variables have been divided. After percent distribution, the central tendency of the data is detected through computation of means, median and mode. Later, depending on the purpose of research, a test of difference of means can be performed. Next, the tendency of dispersion is also detected through range, variance and standard deviation. The skewed distribution pattern can also be examined through graphical representation in the form of kurtosis.

b. **Bivariate** - analysis involves two variables; independent and dependent to determine if there is any association between them. The basic tool used is cross-tabulation of two variables. In cross-tabulations the sub-categories of independent and dependent variables are cross-tabulated to ascertain if a relationship exists between them. Usually this is accomplished through percentage distribution of sub-categories and is known as percentage contingency analysis. Usually the absolute number of respondents, and the row and column percentages, give a reasonably good idea as to the possible association, attitude towards abortion by religion. Example: N=300, Muslim=100, Hindus=100, Protestants=100. Strongly favorable=25, favorable=75, neither favorable nor unfavorable=90, unfavorable=55, strongly unfavorable=55. The attitude towards abortion by religion in Bangladesh (2016) as follows:

Attitude towards Abortion	*Religion*				
	Muslim	*Hindu*	*Christian*	*Total*	*Total %*
Strongly favorable	0	(20%) 5	(80%) 20	25	8
Favorable	(7%) 5	(27%) 20	(67%) 50	75	25
Neither favorable nor unfavorable	(17%) 15	(55%) 50	(28%) 25	90	30
Unfavorable	(55%) 30	(36%) 20	(9%) 5	55	18
Strongly unfavorable	(91%) 50	(9%) 5	0	55	18
Total:	**100**	**100**	**100**	**300**	**100**

Level of Measurement	Statistics used
Nominal	Chi-square, Kundall's tau, Gamma, Sommer's D, Cramer's V etc.
Ordinal	Spearman Rank Order Correlation, Spearman Rho, Kruskal Wallis
Interval	Kruskal Wallis, Pearson-r
Ratio	Pearson-r, multiple regression, ANOVA, Factorial, MCA and etc.

c. **Multivariate** - analysis involves more than two variables. The purpose is to establish causal relationship through controlling the intervening variables. Example: What is the cause of breast cancer?

(1) Age?
(2) Marital status?
(3) Level of education?
(4) Income?
(5) Contraceptive prevalence?

d. Considering the above case; if we want to establish age as the cause, the effect of other four variables (marital status, education, income and contraceptive prevalence) must be controlled. This is extremely difficult through cross tabulation. Therefore various statistical tests are used. The most common statistical tests are:

(1) Multiple Regression Analysis: breast cancer by age, by marital status, by level of education, by income, by contraceptive prevalence.
(b) ANOVA: similar procedure
(c) Factorial Analysis: similar procedure
(d) Log Linear Analysis: similar procedure

Step – 7 (Formulating Conclusion)

Conclusion refers to the acceptance or rejection of the hypothesis or assumptions. A researcher must formulate conclusion in a way that it should entail theoretical explanations for acceptance or rejection of hypothesis. It must provide an implication of the findings for the future development. A set of recommendations made after the conclusions includes:

a. Recommendations relate to possible interventions that may solve the problem.
b. Recommendations may initiate significant changes towards desired direction.
c. Warning of consequences that may spill if suggested actions not implemented.
d. Recommendations must appear realistic, cost-effective and suitable.

Step – 8 (Report Writing)

Purpose of Report - is to provide the reader with useful information for the organizations. It also should describe how we fit quantitative and qualitative analysis. A successful report must be:

a. **Clear** - well structured, clear, concise, suitable for the intended audience.
b. **Professional** - statistically correct and produced with a decent reading tune.
c. **Well Illustrated** - illustrations that aid understanding, integrated with text.
d. **Valid** - reliable results and valid results correspond to the problem statement.

General Structure of a Complete Research Work[15]

- Title fly
- Title page
- **Preliminaries**
  - **Abstract/Executive summary**. Abstract length maximums: 150 words entered as one paragraph. Use plain text only (avoid using bullets, numbered paragraphs, citations, footnotes, tables, graphs, or illustrations). The abstract should appear on one page (line-spacing Multiple 1.5). An Abstract contains 6 major elements of research:
    - ✓ Objective of Study
    - ✓ Theoretical framework used
    - ✓ Methodology: Definition and Measurement of key variables, Hypothesis(es) or assumptions, Method of data collection, sample design and sample size
    - ✓ Key findings
    - ✓ Analysis
    - ✓ Conclusion
  - Acknowledgement
  - Acronyms/ List of Abbreviations (when applicable).
  - List of tables
  - List of figures
  - List of illustrations
- **Introduction**
  - **Background**: State the question, background the problem (describe similar work through literature survey), outline the approach, describe the contents of the rest of the paper, and identify the gap of the research
  - **Problem Statement**: Outline the problem with clear difference and relationship between problem and symptom.
  - **Research Question/s**: Outline the research questions from the primary to the specifics.
  - **Research Objectives**: Outline the objectives and indicate how they are linked to the problem and the research questions.
  - **Proposition**: Delineate the proposition and link with the hypothesis which should be linked with the objective.
  - Definitions
  - Assumptions

- **Literature review**
  - Validation of the problem
  - Objective/s
  - Hypothesis
- **Research method**
  - Clearly indicate what will be covered and if necessary define each concept and variables
  - Outline the target group and purpose of accessing the stated group
  - Show how and why certain techniques are being used
- Analytical framework
- Body of the report
  - Describe data, methods, analyses, findings
  - Don't include too much technical detail
  - Divide up into sections, subsections
  - Sections can be divided by hypothesis or objectives
- Major findings
- **Conclusion**: Summarize what has been discovered, show how the questions have been answered, it must be believable, simple and concise.
- **Recommendations**
  - Directly answer based on the problem statement
  - Focus on the three major contributions – how society, industry, and literature have gained
  - Be outcome driven not output driven
  - It must be practical and implementable
  - Show what may have been missed out if the research was not conducted
- **Limitations**: Outline which promises could not be met and why, state what was not part of the work as outlined through the definition – this is a reminder at the end for those who may have had some questions while reading through.
- **Future research agenda**: Indicate what can be further achieved as a continuity of this research, and show how a research remains dynamic and is not an end to itself.
- **Bibliography/Reference**: Use any standard referencing system.

- **Annex**:
  - This is where the technical details go
  - Be as technical as you like
  - Document your analysis so it can be reproduced by others
  - Include the data set if feasible

Referencing

Referencing is a standardized method of formatting the information sources that the researcher has used in the written work. Any given referencing style serves two purposes; acknowledges the source and allows the reader to trace the source. It certainly supports the arguments and provides credibility to the work and acknowledges the source of an argument or idea to avoid plagiarism. There are three common referencing styles that are used in the social research; documentary note styles (The Oxford Style Manual, The Chicago Manual of Style, and The MHRA Style Guide), parenthetical styles or author-date styles (Harvard, APA, and MLA), and numbered styles (Vancouver, and IEEE).[16]

Conclusion

It is essential to plan and design how the research will be completed. A researcher should study relevant reference materials before initiating, planning, designing and conducting a social research work. During this process the purpose and objectives of the research must be determined and important decisions made with regard to the methods of research and data collection, and alternative methods of data analysis. The researchers should ascertain data and information requirements, and sampling strategy in enough detail so that the researcher can then identifies, selects between, and specifies the most appropriate methods of data collection. A researcher must give due importance to collect data carefully so as to maintain the validity of the research.

The nature and purpose of data analysis in the research process will primarily be dictated by the research objectives and type of information sought. The techniques of data analysis differ according to the nature of the data itself, with a major distinction between the categories of qualitative and quantitative data. Quantitative techniques of data analysis range from relatively simple and straightforward descriptive statistics to the most complex levels and techniques involving multivariant analysis. In the case of more qualitative data different methods of analysing and interpreting data will need to be used. Qualitative techniques of data analysis the researcher needs to be pragmatic and clue full.

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Brief Biography

Lieutenant Colonel Sk Abu Farook Md Rownak Salehin, **psc, Inf** was commissioned with 29th Bangladesh Military Academy (BMA) Long Course on 16th December 1993 in the Corps of Infantry. He commanded 12th Bangladesh Infantry Regiment. As Staff Officer (SO) he served as Grade-II SO in Military Secretary's Branch, Army Headquarters, and Grade-III SO in the Headquarters 93 Armoured Brigade. As Instructor he served as Platoon Commander in both BMA and Non-commissioned Officers' Academy. He has actively participated in Counter Insurgency Operations in Chittagong Hill Tracts for two terms. He worked as SO (Operations) of Bangladesh Contingent in Sierra Leone, and Military Observer (MILOB) in Ivory Coast under Blue Helmets. He was the pioneer Senior SO (Operations) at the newly raised Sector Headquarters, Abidjan Sector for planning and coordinating the final offensive that terminated the conflict in Ivory Coast in the year 2011. Besides attending various courses at home he has also attended Comprehensive Crisis Management Course in USA and Defence Management Course in India. A graduate of Defence Services Command and Staff Course (DSCSC), Mirpur, he also served as a Directing Staff over there. Presently he is serving as GSO-1 (Publication) Army Printing Press, Dhaka Cantonment.

GERMANY'S DESIRED ENDS IN IRAQ-IRAN REGION DURING WORLD WAR II (WWII)

Colonel Mohammad Sheraf Uddin Khan, afwc, psc

Introduction

The history of Persian Gulf region during World War II (hereinafter WWII) is about diplomacy, geo-politics, and conflict between colonialism and nationalism focused mostly on Iraq and Iran: ''It is a tale of invasions, coups d'état, logistics, covert operations, scorched earth, high politics, and warfighting.''[1] Although Hitler coveted the rich oil supplies of this region, the Persian Gulf theatre saw very little of warfighting due to the Allied strategic success in other theatres of war. Compared to all other theatres of WWII Persia had been a quiet one though it was important to both the Allies and the Axis. The Anglo and Anglo-Russian military attacks on Iraq and Iran for being pro-German in the early stage of WWII were the major military operations.[2] Interestingly, though the attacks were conducted against them for being pro-German, no significant actions were undertaken by the German forces except the symbolic actions by the *Luftwaffe* to support the Iraqi regime against the British attacks. Certainly Germany had some interests in the region as they maintained a presence in Syria. Therefore, the question remains 'Why didn't Germany put in much effort in Iraq and Iran? Is it that Germany didn't have enough interest in the region or they wanted to avail their ends by some other means? It needs a closer look to understand and analyse Germany's interests and role in Iraq and Iran. For this, initially this essay will give a short overview of situation in Iraq and Iran to set the scene. It will thereafter reveal that Germany's interest in the region was mostly economic and that could be maintained through the collapse of the British influence in the region. The discussion will also portray that Germany wanted to attain their desired ends in the area by means of exploiting the Arab nationalist movement through covert activities and information operations to create and maintain a chaotic situation in the region for the British. They wanted to create a scenario for the British to surrender in this region by defeating Soviet forces and capturing the Caucasus, and through Axis's success in North Africa up to the Suez Canal; thereby ending in a political solution with the British. The essay will finally reveal that Germany's plans and actions to accomplish their desired ends in the region could not see light because of their dependency on the success of operation Barbarossa, the unexpectedly quick development of the nationalist movement in Iraq, and Hitler's desire to maintain covert posture in supporting the movement.

Iraq-Iran an Overview

Located at the northernmost extent of the Persian Gulf Iraq became a fully sovereign country on 3 October 1932 after the end of *Mandatory Iraq*.[3] However, according to the Anglo-Iraqian treaty signed in June 1930, Iraq granted the British the right to continue military movements through the country and to use the facilities of Al Habbaniyah and Basra air bases.[4] Iraq cut off diplomatic relations with Germany in 1939 in accordance to

the treaty but started dishonouring many clauses of the treaty from the beginning of WWII. They neither declared war with Germany nor broke off relations with Italy. Rather there had been a rise in nationalism and anti-British sentiment in Iraq from the beginning of 1939. Nazi Germany wanted to exploit this anti-colonialist sentiment to persuade Iraq in their favour.

In Iran, Reza Shah's government declared at the beginning of WWII that Iran would remain non-aligned. He knew that the British and the Soviets had interests in Iran and would take any measures to safeguard those. On the other hand, despite having good economic ties with Germany he was afraid of Germany's ideology and their expansion program. During WWII both Allied Forces and the Axis craved for Iran's oil resources situated close to the head of the Persian Gulf. The location of Iran was as such that it had the potential to be used as a 'land bridge' over which military supply could flow into Soviet Union from the Anglo-Americans.[5]

Germany's Understanding and Assessment of the Iran-Iraq Region and Desired Ends

Germany had a long history of economic relation with Iraq and Iran. Germany's economic relations with Iraq started in the later part of nineteenth century but could not flourish like the British. Therefore, the British commercial empire in Iraq was a matter of envy for Germany. As such, even before WWI Germany felt the necessity to degrade British influence in the region to secure own commercial interests. Germany wanted to construct a Berlin-Baghdad railway as part of a master design to crack British commercial empire in the east. The railway line construction progressed up to the Turkey-Iraq border in 1913 and could not proceed further due to the outbreak of WWI.[6] Therefore, from commercial point of view Iraq remained important to Germany prior to and during WWII.

When Hitler came to the power of Germany in 1933, the relations between Germany and Iran started getting stronger.[7] Reza Shah Pahlavi was wanted to import manufacturing technology from Germany to enhance technological advancement of his nation. To this end, a good number of German experts availed the opportunity to work in different capacities in Iran. Gradually, trade relation with Iran turned very important to Germany. The trade exceeded so rapidly that in 1939 Germany became Iran's principal trade partner, accounting for 41 per cent of its foreign trade.[8] The two countries had become important economic partners, with Iran integrated into Nazism's "New Order."[9]

In the years prior to WWII, rise of an anti-British sentiment in the Arab region triggered growth of a pro-German feeling among the Arabs in the form of a nationalist movement. The Arabs were stimulated by the German's growing military strength. They started believing that only Germany can free the Arab world from British Imperialism. However, Germany did understand that this pro-German feelings amongst the Arabs was not so deep rooted, but could be utilised to ignite the anti-British sentiment further to destabilise British empire in the region with a view to securing own commercial interests. However, Germany was not interested to get directly engaged in the oil-producing countries because of the powerful nations' special interest in those countries.[10] Instead, they wanted

to achieve their ends using covert means without exposing their desire. German perception on Iraq-Iran region was further clear when they decided to leave Arab and Levant to Italian domain of interest during the formation of Rome Berlin Axis in 1936. Therefore, the German covert strategy of supporting Arab nationalist movement maintaining a low-key position continued.

Germany's Pursuance of Desired Ends

After the invasion of Poland in1939, the Nazis desired to destabilize the British empires by actively influencing strategic and economic activities in the Persian Gulf region.[11] They mostly focused on conducting information operations by secret agents. The Germans used propaganda to influence the Arabs to mobilise them to overthrow the pro-British monarchy in favour of a pro-German regime.[12] In case of Iraq, by early 1941 specific areas of Bagdad became safe haven for Axis spies and other agents. These agents succeeded in propagating anti-British sentiment among the Arabs utilising the Grand Mufti of Jerusalem.[13] Besides, Germany started sending Gestapo agents and other infiltrators to Tehran during the pre-World War II years to conduct intelligence operation. Ambassador Fritz Grobba was the most significant among these agents. These German operatives convinced the Iranian government and acquired approval to use Iranian land to campaign against the British and the Jews.

Shortly after WWII began in 1939, Hitler engaged in a strategic alliance with the Mufti of Jerusalem. Thereafter, the Mufti thereafter played a vital role in instigating the pro-German coup attempt in Iraq in 1941.[14] Consequently, in April 1941 the pro-British monarch was overthrown and Rashid Ali el Gailani was held to power through a coup led by a group of pro-German Iraqi army officers called the ''Golden Square''. After the coup, Iraqi forces surrounded and attacked British air base at Habbaniya.[15] Meanwhile, Rashid Ali continued talk with the British officials to gain time for the German forces to arrive in the theatre and intervene directly.[16] Rashid Ali's government sought urgent military support from Berlin. German High Command decided to provide military assistance. Subsequently, in a meeting held on 06 May 1941 German High Command decided to give all support possible to Iraq and to strengthen the uprising against the British. They sent Dr. Grobba to Baghdad to resume diplomatic relation with Iraq and started planning the means and ways to support Iraq.[17]

The revolt in Iraq was premature however the Germans realised that their failure to assist Iraq would thwart the possibility of obtaining Iraqi oilfields in future.[18] Even after this realisation, initially Hitler was unwilling to help probably with his conviction of remaining away from direct military in the oil-rich region. Hitler finally decided to support Iraq considering that the revolt would tie down British Forces in this region, making their position weak in Western Europe.[19] At this backdrop, on 23 May 1941 Hitler issued 'Directive Number 30' to send a covert military mission naming 'Special Staff F' to Iraq. Hitler selected General Hellmuth Felmy as the Chief of the Mission. The tasks assigned to this mission were to advise and support the Iraqi Forces and to acquire intelligence for future German operations. The directive set a constraint that members of this mission would be regarded as volunteers who would be wearing tropical uniform

with Iraqi badges to maintain covert nature of the operation. German aircrafts would also carry Iraqi markings to operate in disguise. The principle aim of the planned German air actions was to bolster the fighting spirit of the Iraqis so that they could fight a fierce battle against the British. It was decided to deliver arms to the rebels from Syria in agreement with the French, as such no propaganda was planned to be conducted against the French in Syria.[20] It was also planned to despatch a motorised expeditionary force from Transcaucasia against Iraq after the collapse of Soviet Union. The German major operations would then make the condition of the British forces in Iraq untenable.[21] Leaving behind no chance of ambiguity, on 25 May in another directive Hitler stated operation against Russia as his priority and mentioned that nothing beyond the ruling of earlier directive would be done in Iraq at that moment. He explicitly mentioned that, operations in the Persian Gulf cannot be decided until Operation Barbarossa is complete.[22]

Before the German disguised forces went operational in Iraq, on 6 May the RAF aircrafts completely defeated Iraqi forces. The horror generated by the British aircrafts spread all over the Iraqi forces causing their morale to reach to the lowest ebb.[23] Consequently, the low scale disguised air actions conducted by *Luftwaffe* in May 1941 failed to ignite the Arab uprising as expected.[24] The rebellions failed to put up any meaningful resistance against the British actions. British forces steadily advanced up to Bagdad and drew an end to the revolt with an armistice signed on May 30. On 29 May, in the hours of darkness German military mission including Dr. Grobba left Iraq. Rashid Ali and his government also fled. The Germans did not see any hope in Iraq for nearly a year. In May 1942 Hitler was again becoming hopeful to conquer Middle-East. In this connection, he sent a letter to Rashid Ali assuring to support Iraq at the appropriate time to make them free from the British occupation. This appropriate time never came and the sequel of conquering Middle-East never became the reality.

While events in Iraq were unfolding in 1941, German information and intelligence operation in Iran were also ongoing. The Germans conducted propaganda campaign by *Radio Zeesen*[25] to influence Iranians through airing programs on Islamic ideological belief. The propaganda attempted to portray Hitler as the 'Twelfth Imam of Islam' who returned to destroy the Jews and the communists. The aired programs also compared Hitler's struggle with that of Prophet Mohammad against the Jews. They also aired reference from the Quran to ignite the Iranians against Britain and the Soviet Union.[26] Beside this propaganda, the influence operations on ground by the Germans holding influential positions in Iran were also on.[27] In the summer of 1941, the Mufti encouraged the coup attempt in Iran in favour of the Germans that failed in Iraq earlier. He agitated Iranians against the allies and influenced them to cut off their supply completely. His effort was augmented by the Germans who entered Iran after the end of operations in Iraq and occupied positions in the railway network of the country. The British and the Russians became anxious of this and felt the necessity to secure the Iranian communication network for their future operations and break the Iran-Nazi alliance.[28]

Accordingly, the Anglo-Soviet forces invaded Iran in October, 1941 to secure their ends and draw and end to Iran-Nazi association.[29] They swiftly captured the southern and norther part of Iran. Though the allies used Shah's refusal to expel the Germans from Iran as a plea for the invasion, in reality they were afraid of the possible German success in capturing the Caucasus and wanted to draw an end to the German espionage operations in Iran.[30] Though after the Allied invasion the German secret information operations inside Iran lost impetus, it continued from Berlin. The Germans utilised Mufti for propaganda to influence Arabs in Tehran using Radio Berlin where he was allocated airtime. The effect of this propaganda was visible in the placards displayed by the locals in Tehran with writings: "In heaven, Allah is your master. On Earth, it is Adolf Hitler."[31] However, Germany's influence in Iran was blurred when Iran signed a Tripartite Treaty with the Soviet Union and Great Britain in January 1942. Consequently, Iran terminated all sorts of relations with Germany and expelled all the German nationals. Iran's formal declaration of war against Germany in September 1943 drew an end to the German possibilities in the region.[32]

Evaluation of German Plans and Actions

In Iraq-Iran region, though the German intelligence and information operation had the initial success in instigating Arab nationalist movement, the ultimate success could not be achieved due to a number of reasons. Primarily, the Germans failed to develop any timely and concrete plan for exploiting the pro-German nationalist movements to accomplish their ends. Instead, they ended up generating a half-hearted and insufficient military effort for supporting the revolt in time of need.[33] While the planning to provide military assistance to strengthen the revolt in Iraq, nobody gave any importance to Foreign Minister Von Ribbentrop's proposal for an augmented air effort in Iraq because Hitler was obsessed with Barbarossa that time. Hitler believed that Russia was England's last hope and only by defeating Russia Germany can become the master of Europe.[34] He also believed that he had no other alternative but to conduct the planned operations in Caucasus to set the pre-condition for the elimination of Britain-Soviet alliance.[35] Concerning the Soviet Union, Hitler believed in military victory, while with Britain he wanted to reach a political solution. This was because Hitler envisioned that America's rise would be at the cost of the British Empire and Germany and Great Britain would fight a war together against the Americans.[36]

Another area of analysis is the revolt in Iraq. Perhaps, the revolt in Iraq took place in an unexpectedly quick manner than visualised by German politicians. German intelligence service failed to identify the signs of the unrest in Iraq that quickly turned to revolt.[37] There can be another explanation that the German secret agents operating on ground were more effective in their job of igniting the nationalist movement and succeeded in turning the movement to revolt earlier than expected. However, they failed to communicate the same to the higher command in time. Furthermore, question remains as to why the Iraqis also did not make any endeavour to make an arrangement for assistance from Germany, prior to the revolt. Perhaps the actions of the German agents on the ground made the Iraqis over-confident that the German military assistance would not take much time to reach. A timely intimation by the intelligence could have kept an option open for the

German High Command to divert the forces planned to enter Athens on 27 April 1941 to strike Iraq immediately. Even after timely communication whether Hitler would divert these forces to Iraq or not that only he knew. The type of covert response planned by 'Directive Number 30' implies that he would not divert the force planned for Athens to Iraq. Because when the directive was issued on 23 May, much before that on 06 May the RAF aircrafts had shattered the morale of the Iraqi forces. The precarious condition of the rebels after the RAF attack also could not convince Hitler to allocate sufficient resources to support them. Whereas, a little more allotment of resources earmarked for Barbarossa could make the difference. But, Hitler remaining preoccupied with Operation Barbarossa missed the opportunity to take control of Iraq putting is aside as a sequel.[38]

Why did Hitler do so? Perhaps, he overestimated that with the planned covert German support the nationalist movement would be able to tie town British forces for a prolonged period. In the meantime, he would be able to complete Operation Barbarossa and Axis forces would reach up to Suez Canal in North Africa. But, Arab rebels were expecting direct and immediate military intervention by Germany in decisive scale that he failed to perceive. Absence of desired level of overt presence of German forces could not strengthen the nationalist movement. Therefore, the poor, under equipped forces uncertain of future could not or did not resist the British forces for long. On the other hand, in Iran, German fifth-columnist tried to maintain chaotic situation against the British and Soviet forces; but Germany's failure in Operation Barbarossa gave a signal to the Iranians about the future of the war. Ultimately, the Iranians turned their face away from the Germans.

Conclusion

Germany had its commercial interest over Iraq-Iran region from the time before the WWI. The British commercial empire in the region was a concern for them on way of securing their ends. During the initial years of WWII Hitler endeavoured to secure Germany's ends by exploiting the Arab uprising developed out of anti-British sentiment. German secret agents deployed in Iraq exploiting the Grand Mufti of Jerusalem conducted propaganda warfare that ultimately resulted in a revolt in May 1941. Hitler failed to support the Coup as desired by the new government of Rashid Ali against the British offensive. The insufficient covert support of Germans failed to strengthen the morale of the rebels that eventually led to the end of revolt and fleeing of German nationals to Iran. Failing in Iraq, German clandestine efforts continued in Iran to ignite Arab uprising. Iran-Nazi alliance started growing fuelled by effective German intelligence operation. Anxious by the growing Iran-Nazi association the British and Soviet forces launched Anglo-Soviet invasion in October 1941 to take control of the Iranian communication network and to eliminate German intelligence operation in Iran. Though Iranian government was continuing to uphold German interests denying the British-Soviet demands, with the German defeat in Barbarossa the Iranians turned away from them. They entered into a tripartite agreement with the British and the Soviets. After this, Germany endeavoured to continue propaganda operations from Berlin. However, with Iran's formal declaration of war against Germany in 1943, Germany's fate in the region was sealed. The prime reason Germany failed to secure their interests in the region

is for failing to establish timely plans to utilise the Arab movement. The Arab revolt also did take place much before their anticipation; to the worst, Germany was late in learning about the coup from their intelligence service. Probably, early information would have left an option for the Germans to support Iraq with the forces allocated for Athens. However, Hitler maintained a covert posture of small scale support for the revolt in Iraq. Probably, his conviction of avoiding direct military engagement in oil-rich region and hope of entering into a political arrangement with the British after defeating the Russians in Operation Barbarossa drove him to maintain a low-key covert posture in Iraq.

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Brief Biography

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PROTECTION THROUGH PROJECTION- A PARADIGM SHIFT OF FORCE EMPLOYMENT IN UN PEACEKEEPING PERATION: CHALLENGES OF 1ST BANGLADESH RAPIDLY DEPLOYABLE (BANRDB) AND WAY FORWARD FOR BANGLADESH ARMY

Lieutenant Colonel Mohammad Taufique Hamid, psc, G, Arty

Introduction

Since its establishment on 24 October, 1945 United Nations (UN) has passed a long way. Its Department of Peace Keeping Operation (DPKO) is found to be instrumental for establishing peace in many parts of the world. Bangladesh has become part of peacekeeping since 1988 through UN Iraq-Iran Military Observer Group and by late 90s it has become one of the top troops contributing country in the world.[1] As of today, it has contributed in bringing peace in war ravaged countries around the globe even with supreme sacrifice. BANGLADESH has become a brand for peacekeeping operation which stands even higher than many countries of west and east. Among all these peacekeeping missions, DR Congo (DRC) is the most significant one for Bangladesh Army from deployment point of view, duration, number of troops committed, diverse ethnic clashes and risk involved, and most importantly for the maximum number of BD Army personnel embracing martyrdom in peacekeeping.

Map 1: DR Congo

Source: Author's collection

UN involvement in DRC is predated in 60s since its independence from Belgian colonial masters in 30 June 1960[2] to overcome a separatist movement in the southern Kananga Province. The 2nd Congo War began in August 1998, little more than a year after the 1st Congo War, the bloodiest war which brought all the bordering nations into a regional conflict. Following the Lusaka Agreement which was signed by all six warring nations, the most ambitious peace operation of UN to date, a second round of UN peace operation in DRC, commenced in 1999 with United Nations Organization Mission in the

DR Congo (MONUC), originally mandated to oversee a ceasefire, with an exit scheduled to coincide with the completion of democratic transition in the country.[3] But outcome of 2006 election could not achieve the expected stable and democratic ambience. Instead of exit, the mission grew up to the largest UN peacekeeping mission and restructured as United Nations Organization Stabilization Mission in the DRC (MONUSCO) in 2010.[4] After years of building up MONUSCO's strength and powers, the Secretary-General asked MONUSCO to determine an exit strategy with GoDRC. In 2015, UN Security Council (UNSC) outlined the MONUSCO's exit strategy[5] alongside capacity building of local authorities for a functional and accountable state presence in the conflict-affected areas of DRC and create an open and stable political sphere for next December 2016 election following President Kabila's last term of presidency.[6] But, Mr Kabila's refusal to step down and 'no election in 2016' induced nationwide violence and its spillover effect was about to bring regional instability. The broad consensus achieved among the key political actors with signing of the 31 Dec 2016 in Kinshasa, the capital of DRC.[7] Meanwhile, the situation at Kasai and North Kivu province got worse. Clash between government force (FARDC) and different armed groups, supported by neighboring foreign rebels, was so catastrophic that hundreds of thousands of people, including FARDC, died and millions of people got displaced from their land.[8] As a result, the election of 2017 December was postponed too.

Two opposing demands: reduction of force with an exit strategy and protection of civilian, coupled with mandated challenge of next election brought a new concept of force employment based on flexibility and mobility, with less logistic requirement, to enhance Mission's footprint across DRC. On the top of it, Trump administration's budget cut (up to quarter of a billion)[9] was a serious blow to UN and specifically to Peace Keeping Operation. In 2016, a new concept of '*Protection through Projection (**PtrP**)*' came up which ultimately lead the way on the wake of budget cut and mandated reduction of force while dwelling with almost the same diverse violence and security threat. This concept relies on Rapidly Deployable Battalions (RDB) with increased mobility and self-sustenance, capable of operating independently for a short period of time to far-flanged areas.

Peacekeeping Mission in DRC is the largest of its kind and it has served the purpose of testing ground of many peace keeping concepts and strategy,[10] and *PtrP* and RDB concept is last of its kind and RDB is its outcome. It showed a new way which is economical from peacekeeping budget point view, affordable and plausible from security parameters and most importantly can be employed, for sure, in any mission that wants to implement its exit strategy. BANRDB 1(2BIR) is the pioneer RDB of Bangladesh Army which is being currently deployed in MONUSCO. This paper will first highlight the differences between an RDB and a framework battalion, then evolution of *PtrP* concept will be analyzed with a view to understanding the tactical and technical requirements of an RDB followed by the challenges 1st BANRDB faced during its preparation and

deployment in MONUSCO and lastly how Bangladesh Army should prepare its mission going units to take this challenge and remain as the one of the top troop contributing country (TCC) in days to come will be discussed.

Outlook of A Framework Battalion and Its Operational Employment

'The United Nations infantry battalion is the backbone of United Nations peace keeping, braving danger, and helping suffering civilians and restoring stability across war-torn society.'[11] Standard infantry battalion, which is also known as frame-work battalion, generally designed on a modular structure with independent operational capability and logistic sustainment to be versatile and capable of performing multifaceted tasks unique to the peacekeeping environment.[12]

Map 2: Deployment of Troops in DRC

Source; Author's collection

Operational Employment of a Framework Battalion (Protection through Presence). The battalion will generally be deployed in three to four dispersed and self-sustained static operating bases from which it executes mission essential tasks by proactive robust mobile or static operations in all terrain, weather and visibility conditions to accomplish the mission. Some of the major features of the UN Infantry Battalion organization includes, maintaining inherent C3 capability up to section level; having credible protected mobility at company level; state of the art technological enhancements in surveillance, observation, monitoring, tracking and communication means; qualitative, specialized and self-sustained logistic support structure; dynamic and responsive potential to carry out outreach and engagement; maintaining high state of operational mission readiness, including the capability to conduct conventional offensive and defensive operations for the protection of the mandate, etc.[13]

Force Employment and Activities. As a matter of fact, these company operating bases (COB) are permanent bases/positions which are prepared with prefabricated accommodation, ablution, defense stores etc provided by mission logistic base. If the company as a whole or part of it is deployed for a short period of time it is termed as

Temporary Operating Base (TOB). These operating bases are chosen in an area which are pivotal and critical for the success of the battalion's mission accomplishment. TOB/COB carry out both short and long range patrols, area dominance etc to accomplish its mandated task. But COB/TOB are not capable of repeated redeployment due to nature of its organization and logistic holdings.

a. Generally, a COB is supposed to conduct patrolling to each large town every three days and minor villages once fortnight.[14] In doing so, most of the COB/TOB carry out at least two short range day patrol every day and one at night, and minimum one long range patrol to remote areas staying overnight.[15]

b. Apart from the routine patrol, COB also carry out key leader engagement where security awareness and other issues pertaining to mandated tasks are discussed in threadbare with local population.

c. At times to dominate or show force presence for a considerable time in distant areas, and to deter operations by AGs, with regards to protection of local population, mobile operating bases (MOB) or Standing Combat Detachments (SCD) are also employed. The concept of MOB and SCD within the framework battalion are:[16]

(1) Proactive deployment rather than reactive deployment to show the military presence in troubled areas and enhance the confidence of the population.

(2) Planned 15-20 kms away from the radius of permanent bases, can be deployed by Avn.

(3). MOB/ SCD is a 25-30 men team, organized for no more than 10 days. It is worth mentioning that framework battalions do not have SCD kit which includes hundreds of item from tent to ablution, generator to deep freezer, barbed wire to electric lights. These are provided by UN Logistic Bases and few SCD kits were made available to each sector by January 2017.

d. For self-sustainment, COB maintains 72 hours of ammo, fuel, water, rations and medical supplies for the company. COB cannot provide, neither possess, logistic support for all three platoons to operate independently. Apart from that, UN logistic base provides framework battalions with generator, defence stores, ablution, water and prefabricated accommodation, for the company as a whole while they are in COB.

Budget Cut of UN and Need for a New Concept to Accomplish Mandated Task with Less Force. After 2015 UNSC resolution, MONUSCO began planning for a "Force Transformation,'[17] keeping in mind both exit strategy and *Brahimi Report*[18] who strongly advocated that peace keeping missions need to be more flexible, mobile and responsive to changing threats and conflict dynamics in their area of operation. How to reduce troops and precisely who should be repatriated- was another problem that mission leadership

had to deal with. Firstly, looked for areas where the human right violations had been the least for past few years and armed groups/ rebels were negotiated by MONUSCO or GoDRC; thus, BANBAT 2/16, deployed in Aru-Mahagi area was repatriated in late 2015. Then, underperforming contingents were removed from DRC which was determined by a performance oriented evaluation system known as Measurement of Force Effectiveness Process (MFEP). More than a quarter of a billion dollar US budget cut resulted sharp reduction of MONUSCO troops ceiling from 19,815 to 16,215:[19] more than 3000 troops, which is more than three battalion size force! Basing on the outcome of MFEP, an Indian contingent was removed.[20] Removal of a framework battalion by winding up its COB have left wider area to be secured by remaining smaller force. In order to continue delivering protection of civilians with a smaller permanent force presence on the ground, MONUSCO officials applied *PtrP* for their operations in North Kivu for the first time in the mid of 2017.[21] It is worth mentioning that the US budget cut of US$ 250 million declared in December 2017 further shrunk to US$285[22] and following that the EU also asked for cuts to the tune of US$170 million.[23] That means, world is likely to experience some more peacekeeping budget reduction in future. On the other hand, the new mandate (2018) reiterate the previous one- 'standardize a culture of performance' for contingents and scale their performance to decide on who remains and who is sent off.[24]

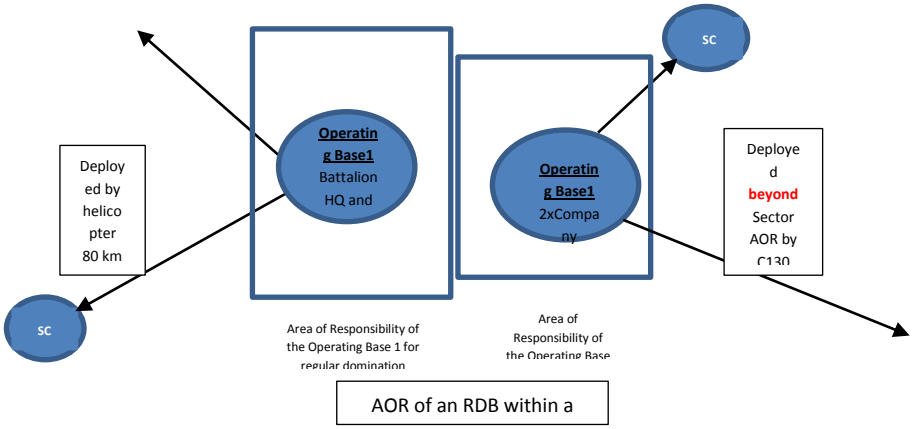
'Protection through *Projection*': A New Concept of Force Employment

UNSC Resolution 2147(23 March 2014) clearly asked for exit strategy and reduction of force. MONUSCO brought out 'Statement of Unit Requirement for Rapid Deployable Battalion

(RDB)' by September 2014. Renewed mandate of 2015, urged upon introducing mobility enhanced RDB to increase the mission's flexibility and to mitigate the vacuum of force presence due to drawdown of force. The 2016 mandate reiterated this recommendation and Force Headquarters brought out new 'Force Concept of Operation' in 15 December 2016 where it clearly emphasized on tactics, techniques and procedures that must be followed by shrunken military components within the mission area to accomplish mandated task.

Core Concept.[25] Mission will maintain less static presence and will increasingly rely on highly mobile troops and civilian mission personnel to deploy to areas for a period of approximately one to three weeks. Teams will carry out both civilian and military operation without establishing a base, from temporary positions, to areas where the Mission has no existing presence. For the implementation of the concept an RDB will be operating from one/ two operating bases. From these bases, a greater portion of force can be projected onto the ground as SCD, releasing a larger portion of the Force for short term, dynamic intervention and preventive action. Each RDB will deploy to a specific AOR but must be able to deploy in any location on the orders of the Force Commander.[26]

Figure 1: Protection through Projection: RDB is deployed with two operating bases and sending SCD to project force presence for a shorter duration to an extended one with its own resources (within and even beyond sector boundary)



Source: Author's construct

One of the striking difference in the 'Protection through Projection', while deploying SCDs in hotspots which are void of military presence, is the collaboration of UN civilian sections with military force in an SCD. So, an SCD commander need to know accompanying civil sections representatives, their jurisdiction, charter of duties, reporting channel etc which seemed difficult at times.[27]

Employment of the New Concept. As part of the force transformation vis-à-vis force reduction, MONUSCO began to identify COBs and TOBs for closure and North Kivu Province was selected as a testing ground in particular to test *PtrP* and functionality of RDB.[28] As the premier, it faced some difficulties but the next one, BANRDB got success by containing Djugu crisis which erupted in Djugu territory between Hema and Lendu tribes and was about to escalate and repeat 2003-like Congo crisis. There were some areas to improve but it paved the way for subsequent RDB. Thus the force employment concept has begun its transformation, and - MONUSCO started adjusting its protection of civilian's strategy, shifting from a 'protection -by – presence' to a 'Protection through projection' approach.[29]

What is Rapidly Deployable Battalion? RDB is a robust, mobile and agile force capable of operating by day and night, at short notice, on foot, by road or air deploy in hostile environment, with integral logistic support and able to sustain itself for extended period of time without external assistance.[30]

Capabilities of an RDB that Make it Different form a Framework Battalion. According to 'The Statement of the Unit Requirement', any TCC sending an RDB has to comply with following:

a. The RDBs will operate from single or multiple operating bases depending on situation and will be able to deploy, at short notice, by air or road to fill security gaps where there is no routine UN presence, or respond to situations where additional security forces are required- in particular to areas where civilians are at risk.

b. RDBs must be prepared to deploy troops by air without vehicles or substantive stores to deal with imminent crisis; additional resources will then follow on should they be required.

c. Able to temporarily deploy any sub-unit or sub-unit element up to four different company sized location. So, each company and platoons within are capable of operating independently.

d. RDB should be prepared and configured to deploy its elements in phased approach. Leading elements of the RDB, comprising dismounted infantry forces, would be deployed at speed to mitigate imminent or ongoing crisis. Following elements, including additional equipment, will reinforce the operation as necessary.

e. RDB is equipped with C-130/MI 26 air-transportable vehicle and equipment, have sufficient firepower; all its light utility and armoured vehicles should be air-transportable.

f. Should be cable to plan and execute, at short notice, airmobile operations at company and battalion level; should have trained troops to secure a landing sites to allow sub-sequent waves to come.

1st BANRDB: Expectations and Reality Check

2nd Bangladesh Infantry Regiment (2 BIR) was earmarked to replace BANBAT1/20 in North Sector of MONUSCO in November 2017. In 23 August 2017 the unit was notified for its new role and soon the unit started converting to RDB from framework battalion. The biggest challenge was where to start with since this was the first of its kind for Bangladesh Army and by then there were only two RDBs in MONUSCO (INDRDB and PAKRDB) who were in the process of gradual transformation from framework battalion to RDB in the mission area but 2 BIR was assigned to go as complete RDB, and relief in place the BANBAT 1/20 in North Sector.

Reorganize Table of Organization and Pre-deployment Training. The RDB TO&E have many new inclusion like Light Armoured Vehicle (LAV), mini UAV, all terrain quad bike etc which ultimately demanded specific training and men to operate. Keeping in mind the changing operational diversity and likely employment, BANRDB1 pioneered following training, in Bangladesh during its pre-deployment training:

a. Field Training Exercise by each company for 4 days in Thakurgaon with APC, LAV, UAV to a distance of 70 km; SCD deployments were also practiced.
b. Communication exercise was carried out making operating base at Thakurgaon, Battalion HQ at Sayedpur, and Sector HQ at deployment cell established in Dhaka.
c. Carried out 1st computer assisted war-game on peacekeeping mission at Army War-game Centre.
d. Refresher pre-deployment training, prior to departure from Bangladesh, in Bangladesh Institute for Peace Support Operation Training (BIPSOT) where all platoons' earmarked leading element of each company and battalion Quick Reaction Force (QRF) have undergone mission oriented training and rappelling from helicopter.
e. UAV training under unit arrangement.
f. LAV training and firing in Ghatail and Hathazari Field Firing Range.

BANRDB AOR: An Operational Paradox. Every RDB, be that INDRDB or PAKRDB or even to that effect BANRDB, is unique due to respective operational area of

Map 3: Different sectors of RDB.

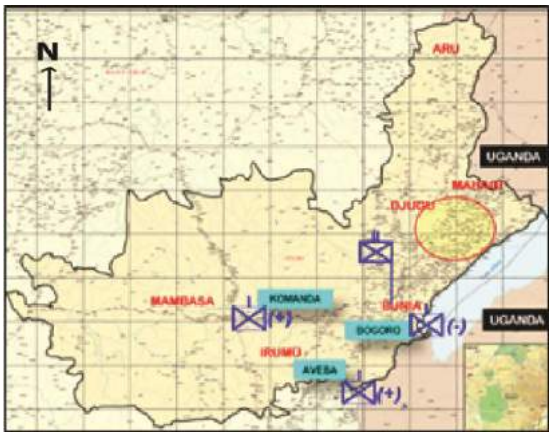
Source: Author's collection

responsibility, geography and proximity of other UN military contingents. There are four operational sectors in DRC where MONUSCO military and police are being assigned with their mandated task. Three RDBs are deployed in three sectors covering the large part of the conflict zone. All these operational sector have more than one framework battalions in a sector and a RDB, framework battalions of any sector are ensuring

protection by presence in their AOR by conducting patrols from their COB/MOB, providing escorts to all other agencies and conduct operation to stabilize situations as and when necessary while RDB provides SCD/MOBs to hotspots and other areas which are void of MONUSCO military presence. As such, RDB conserves most of its military capability for its mandated task. As opposed to that, North Sector has only one framework battalion (Moroccan Contingent) and it's located more than 250 km away. As such, being the only UN military outfit in Itury, it has to hold 3xCOB and dominate their AOR, provide escorts for a one way distance of 20-200km, town domination patrol etc for which RDB is not meant for. So, BANRDB's operational responsibility is broiled with two opposing nature of duty: framework battalion's 'protection by presence' and RDB's 'protection through projection'. Till date, BANRDB is holding three operating bases, still known as COB, with strength more than a company and regularly sending SCDs to distances from 50-150km from the COBs.

Arrival of BANRDB in Mission Area and Djugu Crisis. Djugu was the epicenter of the lturi civil war from 1998 to 2003. The territory consists of 11 tribes/communities,

Map 4: Location of MONUSCO forces



Source: Author's collection

Photo 1: MONUSCO forces of Bangladesh

Source: Author's collection

is the second most populated territory in lturi province and is marked by historical inequality between the Hema and Lendu tribes. The nearest MONUSCO Force (Bangladeshi Contingent) is located at Bunia, 84 km south-west of Djugu. After the lturi civil war, lturi remained insecure but tensions between these two communities have

remained relatively calm. In December 2017, following a series of events, a surge of violence erupted between the communities including destruction of crops, burning of houses and villages and even massacres which resulted huge internal displacement of people from Djugu to other territories and even beyond Congo- to Uganda across Lake Albert. The 1st Flight of 136 troops landed in Bunia on 07 January, the situation was near to explode. Immediately a reconnaissance mission was sent to Djugu with outgoing members of BANBAT1/20, and the report was catastrophic. By 10th noon, , even before getting the checked-in luggage from Entebbe (port of entry for MONUSCO), 1st SCD of BANRDB was established at Djugu Centre with the help of BANBAT1/20 members whose return flight was due just after two days. It is learnt from the locals that Lendu communities, in many places, have already completed their war rituals, that they do before attacking their rivals/ enemy, and was about to start mass scale attack on Hemas. By next two weeks, even before the 4th and last flight of BANRDB arrived, one more SCD was deployed at BLUKWA. Flames of burning villages over the pitch black sky line, kids and women crying around the SCD, sporadic fires of armed Lendu or retaliation by FARDC or PNC etc. have haunted every men of SCD to remain awake in the alarm post almost every night. Till mid-March situation was so volatile that most of the towns and villages of Blukwa were vacated and those became almost lifeless, thousands of people, most women and children gathered beside the SCDs.

Role of BANRDB in Djugu Crisis. BANRDB has deployed number of SCDs in the epicenter of the crisis. BANRDB carried out numerous joint operations, mass sensitization

Photo 2: BANRDB

Source: Author's collection

and escorting of almost every agencies that includes MONUSCO highest officials, UN envoys, relief and aid agencies, international news agency like BBC, Fox News etc. So far, BANRDB has deployed total 25 SCDs (10 February to 25 September) in DJUGU territory in different timeframe. Besides the SCDs number of special patrols were launched from BUNIA to link up with the SCDs. Two joint operations were conducted with URUBAT with a view to exploring the furthest corner of DJUGU. A heli-borne joint-operation - (Platoon each form BANRDB and URUBAT) was launched on 18

March to rescue the stranded Uruguayan patrol them from Jhoo which failed due to bad weather condition. The next day they were rescued by Bangladesh- Uruguayan joint land operation.

Performance of BANRDB. BANRDB has deployed number of SCD following the concept. Was it a successful one? Comments of SRSG, Force Commander, Deputy Force Commander *PtrP* and Head of Office Bunia bears the testimony of it:

"It's difficult to believe that we could contain Djugu. Good job done" Leila Zerrougui, during her visit to RDB on 10 April 2018.

"My deep appreciation to BANRDB for the hospitality and the efficient work for the protection of civilian that has been carried out. The UN is proud of you". Cecilia Piazza, Head of Office Bunia, Date: 08 May 2018

"It has been a pleasure, for me, as Force Commander of MONUSCO, to visit Aveba and confirm the enthusiasm and professionalism of its members. Peace to DRC". Lt General Elias Rodrigues, Force Commander, MONUSCO, date 31 May 2018

"SCD deployment in Djugu was particularly successful because it was not as costly as other Protection through projection deployments- the SCD could reach the area by road, and didn't have to rely on costly air assets". After Action Review by MONUSCO HQ."[31]

Takeaways of 1st BANRDB

- **Platoon level cohesion and independent operability is the key to succees**. An infantry platoon is the nucleus of an SCD which is augmented by company heavy weapon like Machine Gun and Mortar detachment, sniper and some tradesmen like cook, vehicle technician. Performance of RDB solely depends on SCD and the later on platoons of the battalion.

- **Efficient vehicle and equipment handling**. Staying miles away, moving through rugged terrains all by a platoon where there is almost no likelihood of outsourcing, each member operating a special equipment or a vehicle

Photo 3: APC/LAV/Light vehicle

Source: Author's collection

(APC/LAV/Light vehicle/ special vehicle like water bowser) has to be proficient enough. In an average, an SCD hits high on weekly mileage of vehicle by 4000 km.

- Every member of an SCD has to be mentally and physically robust. There were numerous nights in a row when men observed 'stand to' the whole night and the following day had to go out for patrol twice.

- **Use of mini UAV** was instrumental. There were many instances where UAV's live feed identified suspicious movement of assailants around SCD or Hema villages and contingencies were applied to avert the situation. Yet, the SCD commanders have suggested to have at least one night vision capable UAV per UAV team.

- **Understanding accompanying UN civilian counterparts** like Stabilization and Security Unit , Joint Human Rights Organization , Child Protection , Civil Affairs Section, UN Department of Safety and Security etc who used to be stationed at field offices and dealt by Sector or Brigade staffs, but not by the infantry platoon commanders on ground.

- Each Contingent, be that a framework battalion or an RDB, is duly evaluated for its performance. To remain as one of the top troops contributing country, each battalion has to perform well and that can only be achieved if its platoons are performing well according to MFEP.

RDB and its Trade-off. RDBs will be the last element to leave the mission after playing a key role in mitigating any risks as the force transitions its responsibility for security to DRC security Force.[32] That means, RDBs will be the last contingents to leave DRC which is a kind of assurance to TCCs that they will have longer mission duration than the framework battalions. RDB is more self-sustained and has got more contingent owned equipment for independent operation by platoon level troops than framework battalion, and requires less support from UN logistic bases for its operation like sending SCD/MOB. This is indeed a money saver for UN and is likely to be more employed in other ongoing/ forthcoming missions considering the budgetary realities.

Conclusion

MONUSCO is the largest peacekeeping mission in the world. The mission has been a testing ground for many peacekeeping policies and tools since 1999 following its own transformation to MONUSCO from MONUC, creation of force intervention brigade and so on. Keeping in mind the exit strategy, pressure from both regional and global stakeholders, and above all budget cut of UN has compelled the mission leadership to change the force employment concept to accomplish the same mandated task with fewer force. Thus, once-effective 'Protection through *Presence*' concept seemed outdated to

provide protection of civilian in the conflict zones. As of today, most of the UN peacekeeping missions around the globe, primarily, relies on the employment framework battalions to ensure protection of civilian and perform their mandated tasks. These framework battalions deploy their companies in varied number of COB/TOBs in critical areas within their given area of responsibility. Over the years, it is found that a large portion of framework battalion's force is tied down for the protection of its own and can provide less to outreach and to meet new challenges over its vast area of operation. Situation further aggravated when battalions were repatriated owing to the budget crisis and due to exit strategy. A military contingent with higher mobility and self-sustenance, capable of operating independently for a short duration to distant places void of force presence, without burdening the UN logistic- was outlined by the mission HQ and a new comprehensive approach to the protection of civilians: *PtrP* came into being. It is already been tested in two of the most ravaged area of DRC- Kasai and Ituri, although the former had some set back yet it was an eye opener for the later.

RDB is an infantry battalion with greater mobility, capable of quick redeployment with its integral logistics assets in hotspots within and beyond its own area of operation provides an edge to the operational commander to deal with any emergency. Success of *PtrP* largely depends on the performance of the RDB especially on its SCDs, composed of an infantry platoon with augmented fire power and protection, which can operate independently for a considerable period of time. RDB's logistic grouping and self-sustenance capability is heavy on Contingent Owned Equipment which is a budget saver for the DPKO. RDB operates from one or two main operating base and releases bulk of its force for projection in distant areas. RDB would be the best choice for mission leadership to retain till the last, particularly when exit strategy of any peacekeeping mission is due to be implemented, which is evident for every mission. Performance of military contingent is another aspect which is determined, now a days, through a performance based evaluation system. Underperforming contingents are sent off at the earliest while executing the exit strategy of the mission.

Day by day, with the increase of UN missions in many parts of the world and growing interest of other nations to become TCC, it is very challenging for Bangladesh Army to remain as one of the top troops contributing country. Budget cut of super powers or organizations like EU are in a down trend and there is no foreseeable change in near future. It implies, smaller force for peacekeeping operation albeit new and diverse nature threats in the conflict zones. *PtrP* and RDB are going to lead peacekeeping missions across the world in days to come. As a leading TCC, Bangladesh Army should prepare its forthcoming contingents in line with RDB so that any contingent can take over RDB responsibility and perform well against the set bench marks to guard against any early repatriation for poor performance, thus ensures its stay in a mission area till the last.

Recommendations

Where there is a mission there would be an exit strategy. If Bangladesh Army can send more RDBs in future peacekeeping missions, it will ensure retention of its contingent till the last of the mission. 1st BANRDB is a success following *PtrP*. It is

indeed an eye opener for Bangladesh. Lessons from the 1st BANRDB would surely help Bangladesh Army for preparing its outfits for future peacekeeping assignments. In doing so following are recommended:

- Modify pre-deployment training with special emphasis on platoon level cohesion.
- Appropriate selection of efficient operators for special equipment and drivers for all types of vehicle.
- Tough medical selection process to ensure physically fit men are selected for mission. Training on mini-UAV and inclusion of mini-UAV with night vision capability.
- Organize field training exercise to impart *PtrP* concept and test platoon's independent operability.

Include charter of duty of UN civilian sections, who form part of SCD, to achieve better output at SCD level albeit the sector or brigade level cooperation are good.

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Brief Biography

Lieutenant Colonel Mohammad Taufique Hamid, psc, G, was commissioned with 33rd BMA Long Course in the Corps of Artillery in 1995. Apart from the regimental appointments, he has also served as Platoon Commander in Bangladesh Military Academy, Brigade Major of Headquarters 9 Artillery Brigade, Senior Instructor Gunnery in the School of Artillery and Directing Staff of Defence Services Command and Staff College. He commanded 28 Medium Regiment Artillery. He attained Masters in Defence Studies from Bangladesh University of Professional and University of Kelenia, Sri Lanka. He served under Blue Helmet in 2006 as Military Observer in DR Congo. He served as Chief Operations Officer of 1st Bangladesh Rapidly Deployable Battalion (BANRDB) in DR Congo. Presently he is serving as Directing Staff in DSCSC.

RELEVANCE OF GALLIPOLI CAMPAIGN IN MODERN ERA: AN OPERATIONAL PERSPECTIVE

Lieutenant Colonel Md Humayun Kabir, SUP, SPP, psc, Inf

Introduction

The Gallipoli Campaign of 1915 was one of the most strategically significant theatres during the Great War of 1914-1918.[1] The campaign, also known as the Dardanelles Campaign, took place at the peninsula of Gallipoli in modern day Turkey (the then Ottoman Empire). It is regarded as one of the most tragic episodes for the British history of First World War where Britain along with her Allies, mostly French, New Zealand, Australian and Indian suffered an unprecedented defeat and lost thousands of lives. In the context of the First World War the operation primarily aimed at opening another front against Germans to affect the stalemate on the Western front.[2] The secondary purpose of the Dardanelles expedition was to capture Constantinople and thereby defeat Turkey, an ally of Germany. It was also hoped that this strategy would protect Egypt from Turkish attack and that it would aid Russia and bring Balkan nations into the war on the side of the allies.[3] This campaign was initially planned and executed as an entirely naval venture[4] and slowly paced for a joint operation with massive amphibious landing efforts. Failing to achieve any potential success the campaign terminated with a phenomenal Allied evacuation.

Had the campaign been successful for the Allies, it would have definitely altered the course of war in their favour. But, unfortunate enough for the Allies, it was altogether a failed endeavour that overrides limited successes.[5] The apparently strategic brilliant plan was underplayed by both strategic planner and operational level commander. Adequate resources were not put in place in proper time by strategic planners and the operational level commanders failed to understand the overarching strategic context as they embarked on the operation without appropriately visualizing the end state. The operational art, as studied today, was not executed prudently by the operational commander.[6] Hence no tactical success could be exploited by the operational commander to achieve operational success. As a result, commanders' miserably failed to translate any operational victory into strategic success. Undoubtedly, the campaign offered many lessons for decades and they are well identified and applied in the context mostly in Second World War, Korean War etc. But, a big question remains whether or not it still offers enduring lessons for the contemporary environment where it is mostly dominated by asymmetric threats like RMA, COIN, Cyber-attack or NEC.

Taking the lead from this argument an endeavour will be made in this paper to analyze the campaign from an operational perspective and draw enduring lessons (if any) that are best suited in today's further more complicated and fluid/ fragile environment. To address the first part of the question of operational level prosecution, initially the strategic

context of the campaign itself will be discussed to bridge with the operational level. Later, the execution of the campaign will be discussed highlighting the major events to facilitate its analysis to identify the success and failure issue of the campaign. Finally, to address the second part of the question, taking into consideration the analysis few lessons will be identified with an additional emphasis to put forward any enduring lesson that are offered in the contemporary environment.

Understanding the Strategic Context/ Perspective of the Campaign

As mentioned earlier the primary reason to initiate this offensive was to break the deadlock of the Western front. On 13 January 1915, the War Council in Britain was discussing the new offensive plan coined by Commander in Chief of the Western front

Figure 1: Map of Gallipoli and Dardanelles

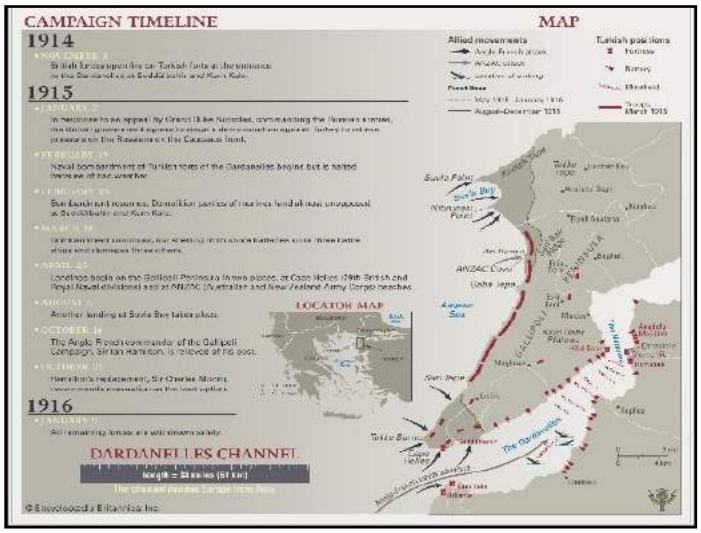
Source: Author's collection

(Field Marshal John French) to break the stalemate but with no hope at all. Winston Churchill, the then First Admiralty of Britain, revealed his naval attack plan on the Dardanelles.[7] 'The War Council turned eagerly from the dreary vista of a slogging match on the western front to brighter prospects, as they seemed, in the Mediterranean.'[8] Churchill argued that forcing the Dardanelles would allow the Allies to help Russia to build their military capability and get them engaged with Germany in yet another front. Allies hoped that engaging Germany in two fronts would diminish German power and would ultimately change the course of the First World War in favour of the Allies.[9] The dead lock of Western front and vigorous enthusiasm of Churchill forced the then British

Secretary of State of War Kitchener and Prime Minister Asquith to provide rather a passive support for the campaign.[10]

Taking Turkey out of the war was one scheme that was also envisioned through the war. Like Churchill, Kitchener conceived it as a naval operation to capture Constantinople. It was strongly perceived that it would take Turkey out of the war, encourage the

Figure 2: Time Line of Gallipoli Campaign



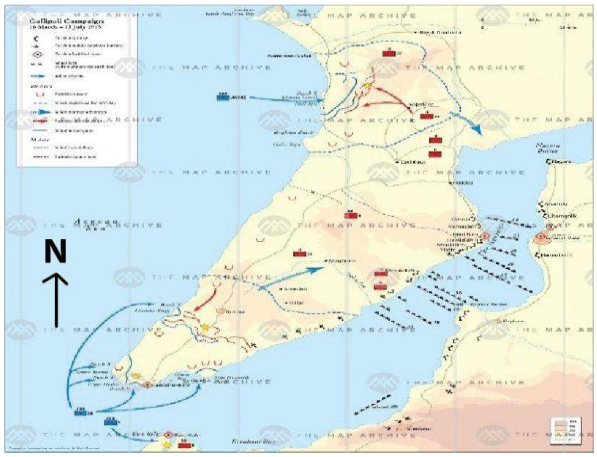
Source: Author's collection

Balkan nations to join the Allied camp. It thus ensures the return to the Russians their warm-water supply route through the Black Sea which the Turks blocked earlier. The Allies, underestimating the enemy, hoped and conceived that the Turkish people abused by their rulers for a long time would not fight for their rulers against the Allies.[11] The plan also thought off handing the captured forts along the Dardanelles and garrison Constantinople to the Russians who would then tie the Germans down in yet another front from the east.

The establishment of the Berlin-Baghdad Trans-Rail communication was a matter of worry for the Allies. By December 1914 the Serbian army was destroyed by the Germans. Germany took over the two-hundred mile Serbian section of the railway between Austria and Bulgaria, and in the following month the Balkan railway transported a regular supply of ammunition and other logistics unmolested from Berlin to Constantinople. This helped the Germans to extend their domination in an unbroken line from the North Sea to the Adriatic and Asia Minor.[12] The Allies were very uncomfortable

with this progress in addition to the dead lock in the Western front. The Allies needed to prevent further progress to strengthen the capability of the Central Power in this theatre.

Figure 3: Gallipoli Campaign (movement of Land and Naval Forces)



Source: Author's collection

The Russian request for a demonstration was another reason for launching the campaign. There are number of issues that forced them to make that request. During August and September of 1914 Russia was routed by the Germans in the battle of Tannenberg and of the Masurian Lakes. On the issue of the closure of Dardanelles on 27 September 1914, Russia was forced to declare war against Turkey on 2 November 1914.[13] But the supply situation was so bad that by the beginning of December their guns were frozen into silence for want of ammunition. The Troops morale and combat effectiveness went so deep down that in December 1914, she had to even retreat before the Austrians in Galicia. Adding to it in December 1914, Enver Pasha of Turkey, in an audacious attempt, took an Army of 100,000 into the Caucasus to evict the Russians in order to reclaim it as a Turkish province.[14] Though Enver had a total defeat and fell back with only 12,000 frostbitten men, the Russians wanted this 'demonstration' to draw the Turks away from Russia and solve the Straits issue.[15] As part of the grand strategic plan, Britain was thinking of forcing the Dardanelles more than half a month before the Turks closed it; the issue received formal attention through the telegram sent by the British Ambassador at St. Petersburg to London on 2 January 1915. 'It conveyed a request to the British Government to arrange a demonstration against Turkey made by none other than Grand Duke Nicholas, the Russian Commander-in-chief'.[16] The request helped the War Council reach to a decision point on 13 January 1915[17] and it instructed the Admiralty 'to prepare for a naval expedition in February, to take Gallipoli peninsula, with Constantinople as its objective'.[18]

Understanding the Operational Level with its Prosecution

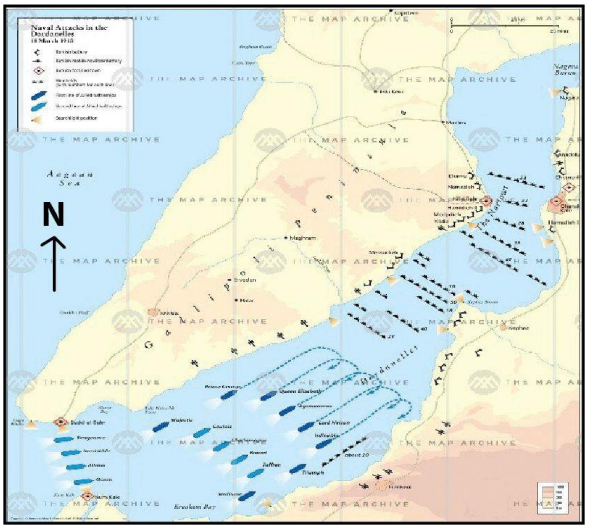
Now that the strategic context has been outlined, it is necessary to understand the operational level to bridge it with strategic context. It has been defined in the UK Glossary of Joint and Multinational Terms and Definition in JWP 0-01.1 that, 'The level of war at which campaigns and major operations are planned, conducted and sustained to accomplish strategic objectives within theatres or areas of operations'. In the context of Gallipoli the operational level overlaps with the strategic level. It has been discussed earlier that the campaign was conceived in the War Council by Churchill in the presence of Asquith and Kitchener in London. Later, other than major strategic decision making mostly it was planned, conducted and sustained at Gallipoli by the operational level commander. Still, Kitchener shares many criticisms to intervene with the effective functioning of the operational level commander by not releasing troops or providing adequate logistic for Gallipoli.

As coined by Churchill, initially an attempt was made to force a way by sea alone through the straits of Dardanelles that led to sea of Marmora, the Bosphorous and Constantinople on 19 February 1915. After making the naval attack plan when Carden departed the command to Admiral De Robeck on the ground of ill-health, De Robeck launched a rather well worked out naval operation with his capital ships in order to systematically reduce Turkish defences at the mouth of Dardanelles. The initial attempt seemed to be going well outranging the Turkish land based artillery driving off defenders but the Turkish mobile artillery caused sufficient problem to makeshift mine sweepers thereby progress was not proceeding as planned. Weather halted the progress for a week where the Turks could lay another layer of mines. Naval effort ultimately was stalled when the minesweepers were unable to clear any channel for the battle fleet and in an audacious attempt three battleship, Irresistible, Ocean and Bouvet got hit by mines. This essentially necessitated a land based operation to clear the forts where the Turks artillery was based.

Initial naval attempt moved the lethargic Turk to get busy preparing strong defences under German General Von Sanders.[19] Integrating no land based troops or operation with the naval operation subsequently proved so costly that on the beaches at Helles, where naval detachments after destroying gun positions twice withdrew without a single casualty, the 29th Division was to lose three thousand men before nightfall on its arrival two months later.[20] The aspect of jointery was overlooked in the initial planning which proved very expensive (loss of lives) for the operational environment. After the failed naval attempt when it was strongly felt for a land based operation based on joint expedition force Sir Ian Hamilton embarked on the operation for the Gallipoli peninsula on 25 April 1915.[21] Being the operational commander to rejuvenate the failed naval attempt to success, Hamilton did not apply operational art to achieve success in the peninsula. Strangely enough, Hamilton's decision to land the army in the south of the Gallipoli peninsula rather than in the north at Bulair was a crucial factor in the British

Navy's decision to give up the purely naval attack and thus the aspect of jointery could not contribute greatly in achieving success in that theatre in the first instant.[22]

Figure 4: The Naval Attacks at Dardanelles



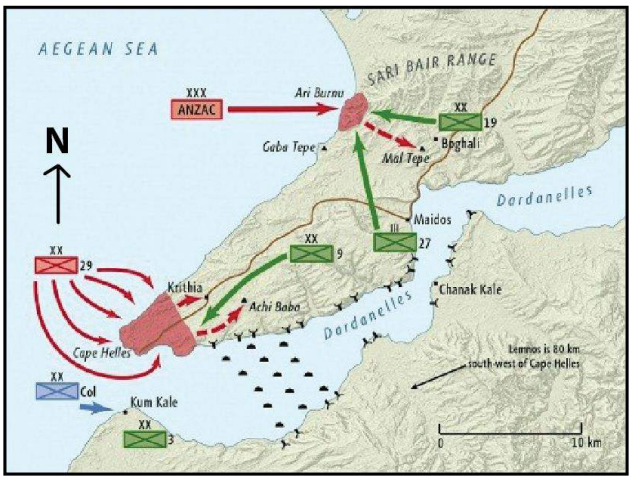
Source: Author's collection

Von Sanders defending Gallipoli and the Straits with Turkish Fifth Army generally anticipated Allied landings sites quite accurately thus could defend them successfully. The landing of 25 April took place at Helles in five landing sites namely S, V, W, X and Y where 29th British Division and Royal Naval Division landed.[23] At Kum kale, the French 6th Colonial Regiment of 1 French Division landed where the temporary landing caught Turkish defenders unprepared[24] but the success at the Asiatic shore was exploited by Hamilton. This was perhaps mis-planning at the operational level where indirect approach or flexibility did not play any role to exploit fleeting opportunity or to exploit any unexpected success. Instead, as planned, the French feint force re-embarked from Kum Kale to reinforce the right wing at Helles where the British had landed. Here, Allies prepared to launch a series of offensives known as First Krithia (28 April), Second Krithia (6-8 May); and Third Krithia (4 June) aimed at capturing the high point of Achi Baba but with not much of success. Similar attack technique was followed after repeated failure with not much support from the naval gun fire. From the beginning of the landing, there remained confusion in terms of discerning the supporting and supported concept between the army and navy. It happened because the planning was not coherently by either the navy and army commanders. So, at Helles, jointery primarily did not fulfil the

pre-condition of planning, conducting and sustaining the operational level. The subsequent story of the operation at Helles also did not proceed as planned and it was mostly make shift arrangement without applying much of the operational art by the operational commander in the theatre.

The Anzac landing on 25 April 1915, primarily planned as a diversionary dawn attack for Z Beach, did not proceed as planned. It was commanded by Birdwood and composed of Australian and New Zealand Army Corps. The navy landed the troops too far north.[25] The inconceivable faulty landing of Anzac forces together with normal confusion of war made the amphibious landing ever more critical. Slow landing of artillery and Turkish snipers added tremendous operational difficulty. Furthermore, Turkish artillery fire led to the Anzacs to dig in resulting in several months of intensive trench warfare. Later, the drive to link the force of Anzac with the Helles remained a far cry and could never be materialized. In essence, no tactical success was achieved by any commander that could contribute remarkably to operational success. Hamilton did not intervene much with Birdwood which was lethargic for the operational conduct. He was reluctant to shift his force from sectors and did not strictly direct the commanders to pursue vigorously the mission assigned to them. This lacking in command technique at operational level created a vacuum of coherent command climate which further reduced the possibility of success.

Figure 5: The Land Offensive



Source: Author's collection

To break the stalemate at Helles and Anzac, Hamilton and Birdwood planned for a major break out on the night 6/7 August from the northern flank of the Anzac position named as Sulva Bay. The Suvla part of the August offensive under General Stopford was initially successful in capturing Chunuk Blair but a counter attack by Mustafa Kemal drove them off the summit. Subsequently, the Allies could not advance more than a mile and then stalemate set in. Landing problems at Suvla plagued all landing divisions with much

confusion and lack of orders, poor maps, ineffective leadership, inadequate staff work, and, especially, water shortage were few of them to contribute the failure. Thus the result was nothing but a dug in trench battle for several months like Helles and Anzac.

In the dug-in stalemate situation there was some planning for reintroducing manoeuvre in the battlefield but went nowhere. Meanwhile, the onset of winter in November, cold, rainy weather, flooded trenches, worst ever health condition for the troops painted a picture of imminent disaster for the Allies. General Hamilton requested for evacuation but was immediately relieved of command and replaced by General Charles Monro on 14 October. No wonder by any thought, Monro, after a tour in the front in the late October also recommended for evacuation. Amidst a provoked debate for the evacuation discussion in London, Churchill and Kitchener even in a desperate attempt pressurized Birdwood to head for Bulair again which he thought to be infeasible and never executed. Finally, the evacuation plan was approved on 12 December. Ironically, the evacuation was the most successful of the entire campaign that started on 19 December and terminated on 9 January 1916. The potential number of casualties was estimated to be figure of 40,000 but the excellent execution could drag down the figure to 200. The evacuation phase of the campaign was planned jointly, conducted masterfully achieving a silver lining at the end of the campaign.

Analysis of the Campaign

Underlining the major events of the campaign it is clear that there were stories of success and failure in the campaign. But, inherently the small tactical successes could not be turned into operational success in order to achieve the strategic objectives. There were reasons for failures for which the campaign has been described by historians as a story of 'muddle, mismanagement, and useless sacrifice.'[26] The operational commanders and their role play were questioned immediately by Dardanelles Commission and later by many military historians for many years. In fact, if the campaign is analyzed it offers many facets to underpin the reasons for not achieving the strategic end state. Though no operational level existed at that time yet, the very roles played by De Robeck, Hamilton and Monre were nothing but execution of operational level prosecution of war. There were reasons for the failure of the naval operation and later the land one and, for the success of evacuation at the end. Despite the brilliant evacuation historians for centuries have described it as a failure as it failed to achieve any strategic objective. Though the strategic plan sometimes has been described as a brilliant one but the tactically folly jeopardizes the entire game plan. But, had the forcing of the Straits by February's naval operation been successful, the course of First World War might have been different. Churchill would have been crowned as a strategically brilliant planner. But, the envisioned success only collapsed with multidimensional factors that demand further analysis.

It would not be unwise perhaps to criticize the failure to formulate appropriate 'War Policy' that contributed largely to the failure of Gallipoli campaign. The strategic

perspective was not set correctly with adequate means to achieve the end state. Strategy in the fullest sense of the word – defined by Captain Liddell Hart is 'the distribution and transmission of military means to fulfill the ends of policy.'[27] He further argued that the lack of proper war policy might be down played by military as it happened in Gallipoli. Churchill is largely blamed for failing to formulate appropriate war policy. Not attacking by both army and navy simultaneously, which they later did, was also a folly in the planning process at the strategic level. The Turkish official history condemns the Allies for not attacking with both army and navy at the same time.[28] The next immediate issue that strikes badly this campaign was lack of sufficient means that was critical enabler. Kitchener and the cabinet in London were largely blamed for not preparing the enterprise properly, for not supporting the campaign with sufficient men and munitions once land operations commenced.[29] Hence, even if the operational commander had pursued their objective vigorously, insufficient means could result in failing to achieve the strategic objective. The first volume of the Australian official history, published in 1921, also describes Churchill's plan to be an excess of imagination.[30] So, it is of utmost important one for the strategic trend setter to work out the means and ways for the operational commander to turn it to a success.

Leadership is repeatedly blamed in this campaign. The existing command climate and its functioning did not contribute coherently in the campaign. Poor leadership associated with lack of coordination, and sometimes understanding, between the army and navy and between British and French forces down played the success.[31] During the naval operation Carden later De Robeck, complacent with over confidence of guaranteed success, failed to exercise the meticulous leadership to force the Straits. Though the proved brilliant in Boer War and South African War Hamilton presented himself as a poor leader as operational commander. Hamilton unaware of the operational perspective hurriedly took over the command.[32] He mostly relied on his staffs and remained out of touch with the front line troops. He was also over-optimistic about success and played blame game where he deferred Kitchener over the vital supply of men and munitions.[33] Hamilton failed to exercise his command especially in Helles and Anzac over Hunter-Weston and Birdwood and later at Sulva over Stopford. He even failed to exploit many fleeting opportunities in time. It was echoed in the passage in *The Song of Roland* by Mr Masefield's fine prose of the Gallipoli Campaign, 'They had delayed too long; they could not be in time'. It is further added by Mr Lloyd George, 'Too late in moving here, too late in arriving there, too late in coming to this decision, too late in starting with enterprises, too late in preparing! In this war the foot-steps of the Allied forces have been dogged by the mocking spectre of "too late."[34] Though the prime responsibility for the delay in its dispatch rests upon the shoulders of that great-hearted 'apostle of autocratic centralization', Lord Kitchener, 'who believed in the east and shell to the west.'[35] In such circumstances, it is tempting to conclude that lack of leadership skill can be largely blamed for the defeat.

Before embarking in any campaign understanding of the existing operational environment and acquiring appropriate operational intelligence is undoubtedly the key to

success. But, this was overlooked by the Allies. When Hamilton was informed by Kitchener that, 'we are sending a military force to support the fleet now at the Dardanelles, and you are to have command'[36] Hamilton had hardly any knowledge of the entire plan. Hamilton wrote in his Gallipoli Diary, 'but my knowledge of the Dardanelles was nil; of the Turk nil; of the strength of our own forces next to nil. Although I have met K. almost every day during the past six months, and although he has twice hinted that I might be sent to Salonika, never once, to the best of my recollection had he mentioned the word Dardanelles.'[37] If this is the depth of knowledge of an operational commander for a campaign and more importantly his subsequent involvement with the operational progress, the operation is bound to fail. It is imperative for the commander to hit hard on enemy vulnerability while protecting his own vulnerability from enemy attack applying operational art prudently. Losing three capital ships in the initial naval phase and sacrificing thousands of lives to establish a small beach head depicted improper application of operational art. A commander in order to be successful must remain thoroughly acquainted with the operational environment and gather all necessary operational intelligence for applying operational art to achieve success in his theatre.

At the operational level jointery play a pivotal role for a coherent application of available resources to achieve operational success. The Gallipoli campaign was truly joint, multinational and multi agency. The Turkish view point on this battle was, 'seldom have so many countries of the world, races, and nations sent their representative to so small a place with the praiseworthy intention of killing one another.'[38] But, there lacked jointery in application sense. There was poor coordination of naval and ground forces and it became clear with the progress of the campaign. The navy, which was ultimately meant to be the supported arm, was not really convinced of either the value or feasibility of the campaign and so opened itself to severe criticism that it was not providing the land component with the necessary support to secure the peninsular.[39] The naval assault on the Turkish forts was totally successful, but the ground forces were not ready to capitalize on the gain. By the time the ground forces were ready, the Turks under Von Sanders were fully prepared to oppose the landings. The action of multinational force failed to exploit their potential mainly due to a lack of understanding of the essence of jointery. Joint planning and the nomination of a joint commander by Churchill or Kitchener was absent from the outset. Churchill largely took the blame for this debacle and lost his cabinet post.[40] A joint approach at the operational level is one of the principal components to achieve success in campaign.

Logistic was one of the key underpinning factors for the failure of the campaign. Logistics got little attention in Dardanelles. The supply situation after the campaign had started to make the sustainment much more difficult than anticipated. Drinking water was so short that soldiers had been reduced to sucking stones to keep their mouths from drying. The water shipped from the Nile in Egypt firstly was inadequate; secondly offloading was difficult due to ranges of Turks artillery. The water crisis gave birth to many unhygienic diseases and the sick state went rocket high at a later stage. Supplies of all kinds need to be moved from ship to shore by lighter craft without any port facility.

Sometimes, the unloading was so difficult due to the wrong selection of beaches that half the men were employed to unload them while half were busy fighting. In essence, the logistic in all fronts were not calculated properly. It also delayed the initial mobilization of 29 Division as the loading had to be redone again. The supply of ammunition was another grey area that were not well looked after. Without sufficient supply commanders at Gallipoli did not enjoy operational flexibility to exercise their will to victory.

If the execution- failure matrix is analyzed for this campaign the poor tactical actions of many commanding officers in Gallipoli simply reflected and exacerbated bad strategic and operational decision making.[41] Hamilton and the entire staff did a poor job of choosing landing beaches/ sites both in Helles (April) and Suvla (August) that also contributed greatly for the failure. They could have chosen either separate place or concentrate landing in few beaches instead of many. The deception at Kum Kale could have sufficiently exploited to force the Straits from Asian side instead of European Turkey. Inter arms rivalry, as mentioned earlier and poor coordination between Hamilton and Robeck vividly added another dimension for failure. Hamilton avoided contact with front line troops and mostly relied on reports relayed to his Headquarters on the island of Imbros. The poor staff job to suggest commanders to facilitate proper decision making also contributed to the failure matrix. In essence, agility of mind of the leaders, a neatly planned and coordinated plan, prudent staff job, and definitely a brilliant execution supported by sufficient logistic were necessary to achieve success in the campaign.

Lessons Identified vis-à-vis Enduring Lessons for Contemporary Environment

From aforementioned discussion it is apparently established that failure to formulate appropriate war policy, the leadership and various attributes of the operational commanders and logistics contributed to the failure of the campaign. It can be argued that these are the major lessons to be drawn from Gallipoli. But, the campaign was fought almost a century ago and it is really difficult to draw enduring lessons from such a historic old campaign for the contemporary environment where the threats are mostly asymmetric in nature. The lessons from this campaign were applied in Second World War, Korean War (amphibious operation), Falkland war etc. The key concern is that Gallipoli was purely conventional in nature and modern warfare is COIN, RMA, NEC dominated (Afghanistan). Yet, the possibility of conventional military attacks cannot be ruled out in future like Falkland or Libyan campaign.

It is apparently clear that at operational level, intellectual process is highly demanded from a commander. It precedes his formatted military learning. He needs to direct constantly his commanders intellectually (operational art) taking into considerations the fluid changing nature of the battlefield which he would never be able to predict before. If this is put into the context of Gallipoli, it can be seriously argued that there was a potential absence of operational art i.e. the way De Robeck, Hamilton went about organizing, deploying, executing and sustaining the campaign. Fore planning and farsightedness were compromised at both strategic and operational level that caused the campaign to suffer. But, whether rectification of the causes of failure would have really

brought victory or not is big question. Lessons from Gallipoli formed the basis of amphibious operations during the inter-war period for many countries including USA, Japan and Britain yet many operations did not see success. There were hardly any lessons left to identify and incorporated at the start of Second World War. But, definitely there are few fundamental issues that hold good for all environments and all operations, be in conventional or asymmetric. Focusing on this perspective, few overarching lessons are identified in subsequent paragraph that are applicable for present day environment as well.

While planning at the strategic level, the war policy must be formulated in a manner that satisfies the ends, ways, means matrix. At the operational level, the commander must possess a complete understanding or political awareness of the strategic context. The military being a state instrument or a means to achieve the political ends must be complimentary to each other. Political figures must understand the capability of the military. In the case of Gallipoli, both political and military awareness and their employment were played wrongfully. Churchill, Kitchener and Hamilton never had the sufficient means to reach their end; they were always short of sufficient means.[42] Arguably, the repetition is again largely observed in Afghanistan where the strategic and operational level did not complement each other. The political or strategic planner did not clearly spell out the envisioned 'end state' or potential lack of end state hindered ISAF to achieve success where sufficient means and ways are abundant. So, the matrix of ends, ways and means must be neatly planned both at strategic and operational level for any future campaign. If the ends, ways and means are put in place and the operational commander has a deeper understanding of the end state, it may still fail if the operational art is not applied prudently. The very selection of landing beaches, inflexibility in shifting efforts, exploiting fleeting opportunity, applying an indirect approach were few shortfalls of Gallipoli. Commanders failed to apply their intellect to find a way out resorting to formatted attack techniques repeatedly losing thousands of valuable lives.

Planning, executing and sustaining the campaign are the key functions of operational commander and it demands a joint approach, threat awareness, ensuring good staff work, adaptability to a changing fluid situation/flexibility or agility of mind. In essence, the operational commander needs to exercise his leadership skill in every moment. Though initiated as a naval operation Gallipoli switched to a joint operation led by Hamilton avoiding jointery aspect. As such, most of the execution was not joint in the true sense. The poor army and navy coordination and conflict of supporting and supported arms debacle contributed negatively to the campaign. A neatly tied joint plan and execution is bound to bring a decisive result as it is seen in Normandy or Korean War. At operational level, the pre requisites of joint operation like clear objective, appropriate commitment, good leadership and last but not the least element of luck must play its part.

It is equally important to have a clear understanding of own capability and capability of threat forces. Both under estimation of the enemy and over estimation of own power proved catastrophic in Gallipoli. The seemingly pathetic Turkish attempt to seize Suez Canal in January 1915 and the poor performance in the Balkan Wars supposedly

instigated the British to think them insignificant. Churchill even claimed that seeing the Union Jack in Dardanelles the Turks might get up from defence and surrender. But, Allied planners failed to appreciate that all these wars were not fought by not only ethnically Turkish units but the Arabs, Kurdish, Armenians for what they performed poorly. But, while fighting at Gallipoli inspired by national survivability issue, the Turks fought well and never mutinied.[43]

Finally it can be summarized that the formulation of appropriate war policy to satisfy the ends, ways and means matrix, dynamic leadership with flexibility/agility of commanders mind to adapt in ever changing fluid situation and knowing the enemy and operational environment holds true for the contemporary environment and continue to hold true for future days to come.

Conclusion

Viewing from an optimist's prism, it can also be argued that the Gallipoli campaign, if successful, would have altered the course of the First World War. The strategic situation of taking Turkey out of war and effect the warm water supply to Russia would definitely help opening a new front for the Germans. Though not tested yet it could be argued that tying down the Germans on two fronts would necessarily hasten Allied victory. But the tragedy is that much uncoordinated effort by operational commanders and poor leadership not only failed to achieve any success it also ensured a great tragedy in terms of loss of lives. British casualties including imperial forces amounted to approximately 205,000. French losses were estimated around 47,000. Turkey incurred around 250,000.[44] Thus it is described by Brigadier Aspinall-Oglander, the official British Historian of Gallipoli, who wrote: 'the drama of the Dardanelles campaign, by reason of the beauty of its setting, the grandeur of its theme and the unhappiness of its ending, will always rank amongst the world's classic tragedies.'[45]

While Gallipoli is analyzed from the Allies perspective it is worth mentioning the operational prosecution and tactical effectiveness of the Turks under Von Sanders. The apparently impregnable Turkish defensive perimeter was nothing but brilliant operational planning from the outset. As the campaign developed operational art was applied by Von Sanders and Kemal Ataturk very meticulously to alter the course of the battle. Had Kemal been not successful at Sulva, the Allies would have taken the situation in their favour. The underlying point is leadership plays the pivotal role in all major campaigns. Hence it is argued that, 'it is Gallipoli, the war that got away from its handlers, is a tale of all that is fine and all that is foolish in the human condition.'[46]

In the context of Gallipoli, a question that got little attention from any author or analyst is that whether or not the forcing of Dardanelles by first naval attempt or capturing of Gallipoli would fulfil the envisioned strategic end state. Once the sea of Marmora had been reached through the Dardanelles still there existed the obstacle of Golden Horn and Constantinople to get past. In the operational planning sufficient force was not catered for capturing or clearing that part. It would be unwise to think that the Turks would have

given up their capital without any resistance. The Russian Black Sea Fleet could hardly assist in capturing the capital as well. So, one might argue that the proposition and planning from strategic planner (War Council) was not mature enough from the outset. Thus the planning, to some, was truly a manoeuvrist plan; to others, it was flawed in its very conception.[47] In this context Churchill has been criticized as 'an adventurer more interested in ends than means and inclined to see war as an epic rather than a tragedy.'[48]

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Brief Biography

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CHALLENGES OF CONTEMPORARY OPERATIONAL ENVIRONMENT: MEASURES TO PREPARE THE COMMANDERS TO FACE THE CHALLENGES

Lieutenant Colonel Muhammad Sharif Ul Alam, psc, Arty

Introduction

'The End of the Cold War' and the 'September 11' attacks on US installations are the two most significant events that changed the traditional perception about security and security environment.[1] The former event caused a paradigm shift in the context of conflict and transformed ideas of warfare from interstate paradigm to intrastate paradigm.[2] On the other hand, the latter event had so much impact on the security environment that *The Economist* magazine desorbed 'September 11' as ''the day the world changed.''[3] These two landmark events not only influenced the geo-strategic environment, but also shaped the contemporary operational environment (COE). Numerous new elements of the operational environment such as unpredictable elements of failed and failing states, complex cultural and demographic issues, technological ascendency, cyberspace and social media have significantly influenced and shaped the COE.[4] Due to this paradigm shift in the COE, modern militaries such as the Israeli Defense Forces (IDF) in 2006 found itself caught unprepared when it was fighting against Hezbollah in Lebanon.[5] Hence, successful mission accomplishment in the COE requires a deep understanding of the operational environment.[6] Political, ideological, and technical landscape of COE is evolving at an exponentially increasing rate every day. To fight, win and survive in such evolving and fluid COE, militaries need to develop a deep understanding of the nature of changes and should continue to adapt to the changes to remain relevant in such COE.

No matter the operating environment in which a military service fights, leadership is the key to all successful military efforts.[7] A military commander is one of the most important actors in COE; his leadership is often the difference between success and failure.[8] Hence, operations in the COE are considered as commander centric warfare.[9] From that perspective, it is important to prepare military commanders to face the challenges of COE.[10] Today military leaders need to be educated on the political, strategic, historical, and cultural framework of a more complex world, as well as need to develop a thorough understanding of the nature of the war they are likely to face in near future. Rapid advances in information and communication technologies coupled with changes in the character of warfare demands additional skills for effective military leadership in future conflicts.[11] At this backdrop, this essay will first analyze few salient characteristics of COE and then it will put forward few thought for the commanders to face the challenges of COE.

Characteristics of COE

The operational environment is a composite of the conditions, circumstances, and influences that affects the employment of military forces and bear heavily on the decisions of the unit commander.[12] The operational environment not only includes all enemy, friendly, and neutral systems across the spectrum of conflict, it also includes an understanding of the physical environment, the state of governance, technology, and the culture of the local population.[13] Unfamiliar threats and their unpredictable ways of warfare, complex physical environments, complex demographic issues coupled with diverse cultural-ethnic dimensions, the preeminence of technology and cyberspace are a few salient characteristics of the COE. Characteristics of those elements and their effect on military operations are highlighted below:

Unfamiliar Threats and Their Unpredictable Way of Warfare. Diversified threats and their multifaceted engagements are prominent characteristics of COE. Donald Rumsfeld, 21st US Secretary of Defense described present day threat environment as follows:

> There are known knowns….We also know there are known unknowns; But there are also unknown unknowns — the ones we don't know we don't know. And ….. it is the latter category that tends to be the difficult ones.[14]

Today, threats range from well-led, well-trained and well equipped conventional military formations to irregular and hybrid forces.[15] One of the major characteristics of COE is the continued evolution of threats that extends from smaller, lower-technology opponents using more adaptive, asymmetric methods to larger, modernized forces able to engage forces in more conventional, symmetrical ways.[16] Belligerents, regardless of their technological or military capability, use every political, economic, informational, and military measure at their disposal to achieve their objectives.[17] Threats make use of complex terrain, urban environment, and force dispersal method as it was observed in case of ISIL (Islamic States of Iraq and Levant), Hezbollah, and Taliban to offset the competencies of conventional forces. The COE is extremely fluid because of the continually changing alliances, partnerships, and actors.[18] For example, in the Syrian conflict there are number of belligerents named Syrian Arab Republic and allies (a coalition of Syrian Armed Forces, National Defense Force, Hezbollah, Iran, Foreign Shia militias, and Russia), Syrian Opposition and Allies (a coalition of Syrian National Coalition and Interim Government, Syrian National Coalition, Free Syrian Army and affiliate groups, Syrian Salvation Government, Al-Nusra Front / Jabhat Fateh al-Sham / Hay'at Tahrir al-Sham, ISIL, North Syria Federation, Syrian Democratic Council) and U.S.-led coalition against ISIL who are involved in the conflict with diverse interests and motives. Each of these actors are interconnected with a complex set of interest which has made the COE

of Syria fluid, chaotic and unpredictable. The dynamic, fluid and combative nature of such threat have given rise to the concept of three block war; the military need to fight simultaneously a conventional war, a counterinsurgency operation and peace support/nation building operations.[19] In US military doctrine such military operation is defined as 'Full Spectrum Operations' (to combine offensive, defensive, and stability or civil support operations simultaneously).[20] Hence, military forces in the COE need to remain prepared to act and adapt to the rapidly changing situations and shift their role in response to the fluid situation.

Complex Physical Environment. Due to the presence of difficult terrain, built up area and rapid urbanization the physical environment of the COE is complex.[21] Moreover, it is congested (thickly populated and lacks maneuver space), contested (belligerents seek to deny maneuver of each other), constrained (lack of freedom to use force due to collateral damage and civilian causality) and cluttered (inability to distinguish individuals, items or events whether friendly or enemy).[22] Due to the cumulative effects of all those factors, the front line of the operational area is disappearing.[23] The design of the cities with their abundance of varied infrastructure limit and restrict current military capabilities such as stealth, mobility, intelligence, surveillance, navigation and target designation.[24] For example, if someone looks at the ongoing conflicts across the globe such as in Syria and Yemen, it is apparent that these conflicts are being fought in congested, contested, constrained and cluttered operating environment. Conventional military forces find it difficult to employ all their combat potential in such operating environment. Hence, a military need to adapt doctrine, acquire a new set of skills and practice appropriate command approach to operate effectively in such complex physical environment.

Complex Demographic, Ethnic and Cultural Issues. Complex demography, critical ethnic and cultural issues add complexity to the COE. There is a expanding wave of ultra-nationalism across the globe specially in Europe and Asia in recent years; that is a fertile ground and one of the root causes of conflict across the globe. According to UNHCR, the number of forcibly displaced people, both within countries and across borders as a result of persecution, conflict, or generalized violence has grown by over 50 percent in the last 10 years; in 2007 there were 42.7 million forcibly displaced people, and by the end of 2017 the figure was 68.5 million.[25] Today 1 out of every 110 people in the world is displaced.[26] Moreover, contemporary conflicts are deeply rooted in complex cultural and ethnic issues. Warfare is no more an engagement of two opposite military forces rather it's a complex interaction between numerous actors. In the COE, the population is central to the outcome of the military operation.[27] T.E. Lawrence compared operation in such critical and complex demographic, cultural and ethnic environment as eating soup with knife.[28] Hence, commanders need deep understanding on geopolitical, social, historical, cultural perspective of COE.

Technological Advancement. Technological advancement of recent years has a dominant effect on shaping the COE. Belligerents use advanced (such as drone) as well as simple technologies (such as improvised explosive devices) to upset each other's capability. For example, the technologically advanced US military and its allies is presently fighting a war with high tech drone and precision guided ammunition in Afghanistan. On the other hand, hybrid and irregular forces are also making effective use of technology. For example, Hezbollah developed a robust and technically advanced underground command and control system to help the expedient delivery of orders to the front in the war with Israel in 2006.[29] Despite extensive air strike in Lebanon, the IDF failed to disrupt communication networks of Hezbollah.[30] Thus, technology poses both opportunities and challenges for belligerents in COE. Conventional forces face tremendous challenges to cope with the technologically advanced hybrid forces.

Evolving Fourth and Fifth Domain of Warfare. Along with the traditional war fighting domains of land, sea and air, the domains of space, and cyberspace is rapidly evolving and becoming an integrated part of advanced militaries' land operation. Anticipated future trends favor the decreased emphasis on traditional large-scale land operations and increased frequency and intensity of conflict in space and cyberspace; even in future perhaps these newer domains may become preeminent for a given operation.[31] Cyberspace and Information technology is extensively used by irregular and hybrid forces to facilitate psychological operations specially to conduct propaganda activities for shaping people's perception and generating support for their cause. They use the internet and social media to mobilize people and resources locally, regionally and globally. For example, in recent years ISIL and Al Qaida successfully used the cyber domain to conduct psychological operations across the globe. Military forces trained for conventional operations face challenge to counter the successful use of cyber domain by the irregular and hybrid threats.

Preparation of Military Leaders

To cope with the rapidly changing and evolving COE, the military forces need to continuously adapt its doctrine, education, training, and command approach.[32] Indeed, philosopher of war Carl von Clausewitz's observation that the uncertainty and complexity of combat demand leaders who possess 'Military Genius' seems more relevant in today's COE than it was nearly two centuries ago.[33] Following are few of the thought for the future military leaders adopting which might make them more prepared for the conflict in COE:

- Firstly, military doctrine may be adapted to the changes and challenges of the COE.
- Secondly, commanders need to be educated on geopolitical, social, historical, and cultural perspective of COE.

- Thirdly, through training and experience commanders need to develop the required skills essential to operate successfully in the COE.
- And finally, commanders should practice adaptive leadership and mission command to generate flexibility and adaptability in military operation.

Above mentioned issues are highlighted and explained with relevant examples below:

Adaptive Doctrine. Paradigm shifts in the operational environment necessitate key changes in military doctrine. Doctrine should recognize the strategic, operational and tactical level challenges of the COE and provide the required guidance on how to cope with the challenges of COE. Historically, it is observed that militaries always prepare for the last war fought.[34] During the Lebanon War -2006, the IDF's doctrine was based on 'Effect Based Operation' and 'Precision Fire Power.'[35] The doctrine was formulated on the IDF's experience of 'Second Intifada' (Palestinian uprising of 2000).[36] The Lebanon War-2006 ended with Hezbollah undefeated because the IDF's doctrine had insufficient guideline to fight a hybrid threat like Hezbollah.[37] Similarly, the US military was facing challenges in Iraq and Afghanistan in fighting new pattern of conflict. Recognizing the challenges of COE, General Petrous along with John Nagl prepared and published a doctrinal publication named '*Field Manual 3-24:Counter Insurgency'* in December 15, 2006.[38] *The New York Post* in their column of December 20, 2006 identified the manual as "*the most improved government publication of the decade*" and "*a genuinely useful tool*" for US officers in Iraq.[39] This doctrinal publication changed the way of war by the US military and caused many tactical and operational level successes in Iraq and Afghanistan. In addition, militaries need to adapt doctrine and develop practices such as civil-military interaction and nation building activities to counter the psychological operations of irregular or hybrid forces. There is also a need to integrate the newest domains of space and cyberspace with operations in the traditional domain of land.[40] Moreover, it is essential to develop indigenous capacity for cyber defense, so that one can retain effective use of one's own information assets while destroying or disabling the opponent's in the critical moment of the war.

Thinking Leader. In today's context Military leaders need to learn to think critically along with preparing to fight. Challenges and opportunities of COE demands focus, foresight, intellect, professionalism, communicative skill and forthrightness in a military leader.[41] Thomas Modly, the U.S. Under Secretary of the Navy, aptly said:-

> The world that is emerging today is one in which continuous expansion of thought and capacity is necessary to achieve a competitive advantage.[42]

The greatest military leaders in ancient times, including Julius Caesar, Sun Tzu, Hannibal, Scipio Africanus, Attila the Hun, Gaius Marius, and others, had one important thing in common: they were all superior critical thinkers.[43] Intellectual ability to critically think, analyze, interpret, and evaluation to strategic, operational, and tactical problems of all kinds is more essential in today's context.[44] Educating commanders on geopolitical, social, historical and cultural perspective of the current geostrategic and security environment is essential because it prepares commanders to deal with the numerous complexities involved in the COE.[45] All the great leaders like Grant, Lee, Sherman, and Patton were ardent readers of military history.[46] As Michael Howard has suggested:

> War is not only the most demanding profession physically, but also intellectually. It is that latter aspect that military professionals must cultivate.[48]

Developing Special Skills Such as Creativity, Judgment, Charisma, and Cultural Awareness. Developing special skills such as creativity, judgment, charisma, and flexibility through training and experience is essential for a military commander to operate successfully in COE.[48] In addition, cultural awareness or cultural competence is the new competency a military commander need in the COE.[49] Brigadier General David Fraser, the former commander of the International Security Assistance Force (ISAF) multinational Brigade in Kandahar, Afghanistan admitted

> I underestimated one factor- culture. I was looking at the wrong map- I needed to look at the tribal map not the geographic map. The tribal map is over 2000 years old. Where ever we go in the world we must take into account-culture.[50]

He further added that deep understanding of socio-political, cultural and historical context of the Afghan conflict could provide better operational advantages rather than relying on pure military solution of the conflict. These skills improve an individual's ability to cope with the ambiguities of the COE. At the same time commanders must learn to act independently amid uncertainty, complexity, and ambiguity.[51] Commanders need to lead by setting an example in the COE because the role modeling has an extremely important influence on a person's reaction in complex situations. Situational understanding of the commanders is essential to make timely decisions, to maintain the initiative and to achieve decisive results in uncertainty and complexity. Commanders need to use experience, apply judgment, and use various analytic tools to gain the necessary situational understanding.[52] The more commanders understand the operational environment, the more effectively they can employ forces.[53]

Adaptive Leadership and Mission Command. Commanders should develop and practice adaptive leadership and mission command to cope with the fluid, dynamic and complex COE. Adaptive leadership allows leaders to respond

quickly and intelligently to constant changes.[54] Full spectrum operations demand the ability to transition from major combat to humanitarian assistance, and everything in between, repeatedly and rapidly.[55] Adaptive leaders learn important lessons, including new skills that allow them to navigate in the challenging operating environment.[56] At the same time the complexity of the COE demands the mission command approach to be adopted by commanders.[57] Mission command provides a methodology to create a more thorough understanding of the operational environment and of the problems to be addressed.[58] Mission command emphasis on the initiative necessary for success in the COE. For example, General Petrous, Commander 101 Airborne Division exhibited the attributes of adaptive leadership in the Iraq War-2003 and contributed significantly to the operational success of US forces in Iraq. After major land offensive was over in April 2003, the 101 Airborne Division was operating in the city of Mosul to restore law and order. The operational environment of Mosul rapidly shifted from a conventional war scenario to a counter insurgency scenario. There was also a dire need to restore water, sanitation and electricity system of the city which collapsed during war. Petraeus adapted to the fluid and dynamic situation of Mosul and transformed his role from major combat to humanitarian assistance. The 101 Airborne Division set up a civil-military operation center to restore the basic services and institutions. By end of the May 2015, almost 90% of the water, sanitation and electricity services were restored.[59] It was the adaptive leadership of General Petrous which drove the division to adapt to the changing situation and shift its role from major combat to humanitarian assistance. General Petrous adaptive leadership not only changed the situation in Mosul, but in subsequent days his thought and ideas of adaptive leadership changed the US way of war.[60]

Conclusion

In conclusion, it can be stated traditional perception about security and security environment has been transformed in recent years; specially warfare has been shifted from interstate paradigm to intrastate paradigm. Numerous new elements of the operational environment such as unpredictable elements of failed and failing states, complex cultural and demographic issues, technological ascendency, cyberspace and social media have significantly influenced and shaped the COE. Political, ideological, and technical landscape of COE is evolving at an exponentially increasing rate every day. To fight, win and survive in such evolving and fluid COE, militaries need to develop a deep understanding of the nature of changes and should continue to adapt to the changes to remain relevant in such COE. Military leaders being the most important element in the battlefield need to be educated on the political, strategic, historical, and cultural framework of a more complex world, as well as need to develop a thorough understanding of the nature of the war they are likely to face in near future.

Unfamiliar threats and their unpredictable ways of warfare, complex physical environments, complex demographic issues coupled with diverse cultural-ethnic dimensions, the preeminence of technology and cyberspace are a few salient characteristics of the COE. Numerous diverse actors are interconnected with a complex set of interest which has made the COE fluid, chaotic and unpredictable. The physical environment of the COE is congested, contested, constrained and cluttered that limit and restrict military capabilities of modern militaries. Complex demography, critical ethnic and cultural issues add complexity to the COE where the population is central to the outcome of the military operation. Moreover, technology poses both opportunities and challenges for belligerents in COE. Anticipated future trends favor the decreased emphasis on traditional large-scale land operations and increased frequency and intensity of conflict in space and cyberspace; even in future perhaps these newer domains may become preeminent for a given operation.

To cope with the rapidly changing and evolving COE, the military forces need to continuously adapt its doctrine, education, training, and command approach. Doctrine should recognize the strategic, operational and tactical level challenges of the COE and provide the required guidance on how to cope with the challenges of COE. Militaries need to adapt doctrine and integrate the newest domains of space and cyberspace with operations in the traditional domain of land. Intellectual ability to critically think, analyze, interpret, and evaluation to strategic, operational, and tactical problems of all kinds is more essential in today's context. Cultural awareness or cultural competence is the new competency a military commander need in the COE. Deep understanding of socio-political, cultural and historical context of any conflict would provide better operational advantages rather than relying on pure military solution of the conflict. Commanders should develop and practice adaptive leadership and mission command to cope with the fluid, dynamic and complex COE. Finally, today militaries need thinking leaders as Thucydides, Greek historian aptly remarked:

> The Nation that makes a great distinction between its scholars and its warriors will have its thinking done by cowards and its fighting done by fools.

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Brief Biography

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NEWLY COMMISSIONED OFFICERS OF FOUR YEARS TRAINING SYSTEM: AN APPROACH TOWARDS EFFECTIVE GROOMING

Major Muhammad Tanvirul Islam, psc, G+, Arty

Introduction

Grooming of junior officers means strengthening the building block of the army.[1] Military academy transforms an adolescent into a potential military officer. Newly commissioned officers get their basic shape in the academy but their grooming starts thereafter. An officer still remains in a crude form with regards to the level of required professional competence for undertaking future assignments.[2] It is the unit where they are groomed up and get the opportunity to apply their theoretical knowledge acquired from military academy on practical ground. After joining, Officers undergo a brief regimentation programme for two months where they learn the rudimentary regimental affairs. Subsequently, their grooming process continues as they remain in the unit and participate in all regimental affairs.

Bangladesh Military Academy (BMA) is following a training system which creates a very basic military and academic platform for the future military leaders.[3] From 75 BMA Long Course onward, this training system took a new shape where the total duration was made four years. Officer Cadets (OC) need to stay in BMA for three years till their commission. After a brief regimentation period, officers of honours and engineering curriculum fall back to BMA and Military Institute of Science and Technology (MIST) respectively for the different duration to complete academic studies. On completion, they are likely to be busy to undergo mandatory military courses. At the same time, presumably, conceiving the basic lessons of regimental affairs with that service length and rank are likely to be difficult.

The recent change in the training system of BMA is time demanding, and newly commissioned officers are likely to be more confident. But, there is a need for the systematic and progressive development of junior officers in the unit for attaining required proficiency level.[4] In fact, this is the crucial time for them to create their professional foundation. But, non-availability of officers in the unit for a long time is raising questions about their effective grooming up. Therefore, there is a necessity to find out the modalities to ensure effective grooming of officers of four years training system.

Aim

The aim of this paper is to critically analyze the modalities to ensure the effective grooming of newly commissioned of four years training system.

PRESENT SYSTEM OF FOUR YEARS TRAINING AND OPPORTUNITIES OF GROOMING UP OF NEWLY COMMISSIONED OFFICERS

Overview of Four Years Training System

Pre-Commission Training - Character and Military Aspect. Character and military training are the two most important aspects of three-dimensional training of BMA. Off the 200 total weightage of the cadets training, the character is given with 100 weightage whereas military training is given with 70 weightage **(FGD)**. More than **37%** BMA Platoon Commanders opined that the new training system has contributed positively to the character aspects of OCs.

Pre-Commission Training in BMA - Honours Curriculum. Academic training is one of the main distinguishing factors of the new training system of BMA than previous system **(FGD)**. OCs of each course is divided into two academic groups: Honours curriculum under BUP and engineering curriculum under MIST. Around 68-70% of the total OCs follows honours curriculum.[5]

Pre-Commission Training in BMA - Engineering Curriculum. OCs of 75 BMA Long Course completed six semesters during pre-commission training. However, few major changes were made from 77 BMA Long Course onward due to poor result of the cadets, concern of MIST about the quality education, fear amongst the cadets about poor results and subsequent probability of relegation.[6] Accordingly, from 77 Long Course onwards, OCs will complete four semesters in three years in BMA.[7]

PCAT in BMA - Honours Curriculum. Newly commissioned officers of honours curriculum will have PCAT in BMA for one year for 75 BMA Long Course. According to the Decision Meeting of 02 January 2017, this duration will be of six months.[8] Survey shows, 44.4% BMA Platoon Commanders agree that this duration is lengthy.

PCAT in MIST- Engineering Curriculum. Newly commissioned officers of engineering curriculum will have PCAT in MIST for one year for 75 BMA Long Course. According to the Decision Meeting of 02 January 2017, this tenure will be of two years**.**[9]

Opportunities for Grooming of Newly Commissioned Officers

Regimentation Period for Newly Commissioned Officers. As per present policy, honours curriculum officers will proceed for PCAT after completion of two months regimentation. On the other hand, engineering curriculum officers will leave the unit just after one-month regimentation. However, they will avail the leftover one-month regimentation on return from MIST after one or two years**.**[10]

Opportunities for Grooming of Honours Curriculum Officers. Regimentation introduces an officer with the unit but learning of the regimental system commences

thereafter. Initial grooming up of newly commissioned officers start as they participate in different regimental affairs remaining with the troops closely.[11] Two months regimentation immediately after commission and departure from unit for a longer period reduces the opportunity of grooming of newly commissioned officer to a great extent.[12]

Opportunities for Grooming of Engineers Curriculum Officers. Grooming up opportunities are inadequate and difficult for the engineering curriculum officers.[13] One month regimentation period is too short a duration for learning the basic regimental system. At the same time, one-month leftover regimentation remains an impediment in their perception as their course mates from honours curriculum is likely to be in a better shape.[14]

IMPACT OF FOUR YEARS TRAINING SYSTEM ON GROOMING OF NEWLY COMMISSIONED OFFICERS

Inadequate Exposure to Regimental System

Lack of Understanding of Unit Environment. Understanding of the unit environment requires the uninterrupted involvement of unit affairs for a considerable period.[15] The only military environment that newly commissioned officers are exposed to is BMA environment. As such, they have hardly any idea of an actual military life of units with troops.[16]

Lack of Understanding of Unit Tradition. Unit tradition is one of the major tools of motivating and inspiring the soldiers for a dedicated service.[17] 58.3% officers of the formation and **51.1%** officers of 75 BMA Long Course opined that newly commissioned officers of four years training system will have a poor understanding of unit tradition.

Lack of Understanding of Regimental Cohesion. Cohesion is the affiliation between the leaders and the led in the military and it is reflected by group pride, solidarity, loyalty and teamwork.[18] Synergic effort of every individual contributes to the success of a unit. Development of this regimental cohesion is one of the primary responsibilities of the officers.[19]

Lack of Technical Proficiency. An equipment-shy young officer cannot deal with soldiers confidently. In order to earn their confidence, he must be efficient in handling all small-arms and other basic equipment available in the unit.[20] At the same time, it becomes inconvenient with increased service length to learn the basic technical lessons from under commands.

Inadequate Exposure to Regimental Staff Work

Lack of Understanding of Staff Work as Adjutant and Quarter Master. Junior officers learn basic administrative and training matters by acting as staff officers.[21]

Though HC officers are likely to have this opportunity after PCAT, EC officers will be seriously affected.[22]

Poor Understanding of Regimental Chain of Command. Newly commissioned officers are exposed to the chain of command which they have observed in BMA. The chain of command of units and formations are different than that of BMA.[23] However, young officers need to stay in the unit to observe this to get oriented with a chain of command.

Poor Understanding of Functioning of Unit. Newly commissioned officers have hardly any idea about the functioning of the unit once they arrive in the unit. During regimentation, they become oriented with different appointments and their responsibilities. In fact, understanding of the basic functioning of unit commences after regimentation once they participate in different unit activities**.**[24]

Inadequate Understanding of Peacetime and Wartime Role of Unit. Units remain committed in different training and administrative activities throughout the year. Young officers learn these activities by observing and following other officers of the unit at the very initial stage, particularly after the regimentation period**.**[25] For the newly commissioned officers, this opportunity is less.

Poor Leadership Attributes

Lack of Opportunity in Leading Troops. BMA equips newly commissioned officers with required tactical and technical knowledge along with the essential leadership traits for leading troops**.**[26] As they lack the experience of dealing with the soldiers, they need a certain period of time to get acclimatized with the unit environment and to pick up the art of troops handling by observing others.[27]

Lack of Opportunity in Understanding Troops' Psychology. Non- exposure to troops in BMA keeps newly commissioned officers in a disadvantageous position once they join units.[28] Mixing with the troops on and off parade can overcome this shortcoming and enhance the understanding of troops' psychology which ultimately contributes to mastering leadership attributes.[29]

Lack of Organizing Capability. The professional assignments, almost at all levels, necessitate an officer to organize tactical, training and administrative events of varying magnitude.[30] The absence in the unit has become an impediment in developing organizing capability of newly commissioned officers**.**[31]

Lack of Confidence. Adequate theoretical and practical knowledge of unit affairs, staff work and troops handling instill confidence in newly commissioned officers**.**[32] The inadequate opportunity of above-mentioned factors keeps a newly commissioned officer in a disadvantageous position to build confidence as an officer.

Improper Personal Conduct and Discipline. Understanding of the status of officer influences on personal conduct and discipline as it adds responsibilities**.**[33] Officers undergoing PCAT in BMA are demonstrating a poor standard of personal conduct and discipline. Their punctuality, respect to senior officers, customs and etiquettes has become a matter of concern.[34]

EXPECTED BENEFITS OF ENSURING PRESENCE OF NEWLY COMMISSIONED OFFICERS IN THE UNIT IN THEIR EFFECTIVE GROOMING

Optimum Understanding of Regimental System

Workable Understanding of Unit Environment. Acclimatization with the unit environment, which is absolutely new, is one of the major challenges of the newly commissioned officers **(FGD)**. The early one can understand the overall environment; the better will be the performance as well as grooming.[35] During regimentation, newly commissioned officers remain busy with acclimatization whereas an actual understanding of the unit environment commences thereafter**.**[36]

Understanding of Unit Tradition. Military customs, culture, and traditions are essentially certain practices and methods of functioning or doing things that have been developed and refined over a period of time and are followed in a unit**.**[37] Observing unit traditions continuously during the initial grooming helps young officers to understand it and inspires to inculcate the regimental feelings in them**.**[38]

Sound Understanding of Regimental Cohesion. Unit cohesion costs almost nothing, yet it has been historically proven to be the single most valuable and effective method for building highly capable military units**.**[39] In order to understand the cohesion and be a part of cohesive sub-unit/unit, young officers need to be with their troops and sub-unit for a considerable period.

Workable Technical Proficiency. Technical efficiency of a young officer is essential to sharpen the operational efficiency of the sub-unit**.**[40] Normally, young officers learn about the unit equipment, especially in armoured and artillery regiments, in the unit being with the experienced operator/crew. Time after the regimentation period is most suitable for enhancing technical proficiency of a newly commissioned officer.[41]

Confidence in Regimental Staff Work

Better Understanding of Regimental Staff Work. Long time exposure to the regimental system will provide better opportunity to grasp the art of a staff officer.[42] Moreover, detachment from the unit to an academic environment reduces the achieved understanding of staff functioning. Survey shows, 54.7%, and 54.3% officers opined that

newly commissioned officers will perform better as Adjutant and Quarter Master respectively if they remain available in the unit after commission for six months.

Understanding of Regimental Chain of Command. The regimental chain of command structure provides a source of order, process and solidarity to unit members**.**[43] Presence of newly commissioned officers in the unit after commission enables them to understand regimental chain of command better.

Understanding of Functioning of Unit. Rashed (2016) reveals in his research that Shortage of the mid-level officer in the units of BD Army provides a platform to enhance the creativity of the junior officers. Presence of newly commissioned officer for a longer duration in the unit will enable them to develop above mentioned qualities for understanding of smooth functioning of units.[44]

Adequate Understanding of Peacetime and Wartime Role of Unit. Participation in various unit training, collective training and knowledge on various policies and operation plan enhance understanding of peacetime and wartime role of a unit**.**[45] Availability of newly commissioned officers in the unit after commission will give them adequate understanding of the role of unit.

Sound Leadership Attributes

Better Opportunity in Leading Troops. Regimentation and post-regimentation period is the best time for an officer to mix with the troops intimately to earn their trust**.**[46] Ensuring more time in the regiment with troops will give better opportunity to the newly commissioned officer in leading their troops.[47]

Opportunity in Understanding Troops' Psychology. Field Marshal Montgomery said, "*The beginning of leadership is a battle for the hearts and minds of men*". Officers who understand their troops' psychology better will be superior leader for sure**.**[48] Ensuring presence of newly commissioned officers in the unit will provide more opportunity to understand the psychology of the soldiers of their parent unit.

Development of Organizing Capability. Brigadier General Mefta says, "BD Army has never failed in organizing any event irrespective of its level and magnitude." Junior officers are playing the pivotal role in this regards as they are working in the grass root level along with the troops. Ensuring presence in the unit will enable newly commissioned officers to master this art of organizing events from their seniors and expert soldiers**.**[49]

Confidence Enhancement. An officer is believed to be confident leader once he has personal skill and mastery in the art of handling troops in the field**.**[50] The more an officer remains with troops, the more he conceives the art of handling troops which eliminate troops-shyness from him.[51]

Improved Personal Conduct and Discipline. Officers, once understand their status as well as responsibilities vested on them, are likely to demonstrate rational conduct**.**[52] As per present system, newly commissioned officers cannot identify them as cadet; at the same time they did not have any exposure as responsible officer**.**[53]

MEASURES TO ENSURE EFFECTIVE GROOMING OF NEWLY COMMISSIONED OFFICERS BY ENSURING THEIR PRESENCE IN THE UNIT

Post-Commission Efforts

Adjustment of Credit Hours in BMA for Engineering Curriculum. The initial four year training system had been changed to address few issues like academic relegation, poor academic performance of engineering curriculum OCs and so on.[54] These two factors will be discussed in the subsequent paragraphs.

Effect of Modification on Academic Result. The academic result of the OCs of modified system is not at all encouraging**.**[55] Comparison shows, the average Cumulative Grade Point Average (CGPA) of 77 Long Course (in modified syllabus) in CE and EECE department is slightly higher than that of 75 Long Course. Conversely, CGPA of CSE and ME department is less and equal respectively.

Introduction of Course System in MIST. The provision of academic relegation has been practically eliminated with the introduction of course system in engineering curriculum from 2018.[56] As per this system, OCs failing in any course/subject will be able to clear it in the next semester through referred examination. Hence, one of the main concerns for which the system had been modified before has been addressed by the system automatically.

Findings/Comments. It has been found from the comparison that reduction of credit hours in BMA has not assisted in improving the academic results of the OCs**.** Introduction of course system has eliminated the possibility of level drop and subsequent academic relegation. Again, modification of the system has affected the grooming of newly commissioned officers. Henceforth, the credit hours of engineering curriculum OCs can be increased to more six months. It is likely to have negligible impacts on the academic performance of the OCs in BMA.[57]

Adjustment of Credit Hours for Honours Curriculum. Due to the modification, additional academic pressure has been created to the honours curriculum OCs during their BMA training. Comparison shows, in all the departments, the average CGPA of 77 Long Course is less than that of 75 Long Course**.** Details of survey result are given in.

Commencement of PCAT. Newly commissioned officers should stay in the unit for longer period continuously for their better understanding of regimental system and better grooming up.[58] Survey shows, **57.4%** BMA Platoon Commanders and **42.1%** officers of formation opined that PCAT of newly commissioned officers should commence after one year of unit service.

Review of Existing Regimentation System. Regimentation is the occasion which provides opportunity to learn the language of soldiers through which the young officers can interact better with their subordinates.[59] Few additional events like officers mess/field mess customs, do's/don'ts during family gathering, call on with senior officers and so on should be incorporated in the regimentation period so as to enable them to learn and apply those during PCAT.[60]

Modification in Conduct of PCAT. At present, PCAT is conducted in BMA and MIST for the honours and engineering curriculum officers respectively. The fact is that BMA is not designed and equipped for training officers so such number.[61] Conversely, MIST principally focuses on academic aspects only; thereby military aspects remain less focused for the newly commissioned officers.[62] Few of the modification aspects are discussed subsequently.

Participation in Summer and Winter Training. Summer Training and Winter Training play a vital role in imparting and evaluating professional knowledge of individual soldiers along with the unit. As such, newly Commissioned officers can learn maximum tactical and technical knowledge during these two exercises.[63]

Participation in Major Unit Events. Regular communication with companies/batteries/squadrons by the newly commissioned officers increase interpersonal relationship with troops and grow confidence in leading them.[64] Most of the Commanding Officers opined that necessary arrangement should be made to ensure their participation in major unit events.

Inclusion of Military Subjects in the Syllabus. BMA has arranged classes on great military leaders, military history, military rules, customs and etiquettes and so on. Conversely, no such arrangement was made in MIST. Thereby, different mode of conduct of PCAT is likely to contribute in diversified grooming of HC and EC officers. Therefore, few core military lessons can be included in the curriculum of both the groups as 2/3 credit course.

Post-PCAT Effort

Compulsory Unit Service for a Minimum Duration. On completion of PCAT, officers are to forget many of the things they had learned in the unit beforehand. Therefore, they need to be re-oriented with the regimental system.[65] Most of the Commanding Officers

opined that officers should stay in the unit for six months so as to reorient themselves with the regimental system which will also contribute in their grooming. However, career planning of the officers should be taken into consideration.

Arrangement of Refresher Programme. An exhaustive "Refresher Programme" as the purpose is to reorient them with the regimental system should be arranged after PCAT.[66] Officers should be given the opportunity to learn basic regimentation lessons as well as staff jobs as on job training. Thus, they are likely to achieve the required confidence in discharging their duties.

Holistic Approach of Units. A change in any system is likely to have some weaknesses which need to be addressed over the time. Change in cadets training is likely to contribute positively in training future military leaders. A holistic approach by units can minimize the shortcomings of this system.[67] Units should employ it's all available means and resources to train and orient these officers within very short time so as to groom them properly.

Conclusion

BD Army has been developing and expanding progressively since its inception. As part of the overall development, training and capacity building of officers have also been kept updated. As a follow up, four-year training system has been introduced in BMA. Since introduction, the training system has been contributing in educating OCs to enhance their knowledge and confidence. Non availability of newly commissioned officers in the unit for a long time after commission for PCAT is seriously affecting their initial grooming. Consequently, the organization is likely to be affected badly if the grooming of young officers is not taken care of. As the training system is newly introduced, the adverse effect of this obscurity is yet to be fully understood by many.

Newly commissioned officers get their first hand exposure to the real military environment in the unit. The grooming up process commences with the regimentation programme, but the development of their professionalism largely depends upon subsequent learnings from the unit through their active participation in various unit affairs. The researcher carried out a comprehensive study on the impacts of non-availability of newly commissioned officers in the unit in their initial grooming up. The qualitative and quantitative analysis showed that newly commissioned officers will have inadequate exposure to regimental system, regimental staff work and poor leadership attributes. Cumulative effects of above mentioned effects will have short-term and long-term negative impacts on the organization. All participants unanimously agreed that engineering curriculum officers are likely to be affected more. However, honours curriculum officers will also be affected in case of any change in their curriculum.

The researcher made an attempt to identify the expected benefits of ensuring presence of newly commissioned officers in the unit in their grooming up process. It has been

found that newly commissioned officers will have better exposure to the regimental system, regimental affairs as well as better leadership attributes provided they remain available in the unit and participate actively in the regimental affairs. Moreover, it will minimize the negative effects on the organization. Hence, statistically and analytically it has been proved that ensuring presence of newly commissioned officers in the unit after commission will contribute in their effective grooming.

The researcher has suggested some ways to ensure presence of newly commissioned officers in the unit in order to facilitate their effective grooming. Researcher suggested for a two-pronged effort by the authority in this regard. In post-commission effort, adjustment of credit hours in BMA for both curriculums, revised commencement schedule of PCAT, review of regimentation programme and modification of conduct of PCAT has been suggested. In post-PCAT effort, minimum duration to be stayed in unit, arrangement of refresher programme and appropriate approach of units has been suggested.

Recommendations

Following recommendations are made basing on the findings of the research:-

A Board of Officers (B of O) may be formed under Army Training and Doctrine Command (ARTDOC) to identify the necessary adjustment of credit hours of BMA and that of PCAT. The board should also find out required modifications for the commencement of PCAT after six months (minimum) from the date of commission. Appropriate representative from BUP and MIST should be the part of B of O in this regard.

AHQ Military Training Directorate may carry out study regarding the duration and programme of regimentation taking all pros and cons into consideration. The study should be carried out in consultation with Military Secretariat Branch in order to complement the career planning of the officers.

MIST and BMA should review the existing PCAT syllabus for engineering and Honours curriculum in order to make it complementary for military grooming up. Basic military subjects like great captain presentation, war studies, military history, military rules and regulations and so on as a part of PCAT syllabus having appropriate credit hours.

Further research can be conducted on the career planning of the newly commissioned officers.

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Brief Biography

Major Muhammad Tanvirul Islam, psc, G+, Artillery was born on 06 July 1984 at Bogura. He passed Secondary School Certificate from Cantonment Board High School Jahangirabad, Bogura and Higher Secondary Certificate Examinations from Government Azizul Huq College Bogura. He was commissioned from Bangladesh Military Academy (BMA) with 52 BMA Long Course in the Regiment of Artillery on 29 June 2005.

He has a diverse experience of service in Artillery Regiment and in the training institutions of Bangladesh Army. In pursuance of his unit career, he gained experience of serving in 5 Air Defence Regiment Artillery. He held all the regimental appointments under different capacity. In instructional capacity, he served as an Instructor Class B at School of Artillery, Halishahar. He also had the unique experience of serving in Bangladesh Military Academy as a Platoon and Term Commander.

Apart from the mandatory courses for his professional career, he attended Officers' Gunnery Staff Course (Air Defence) from School of Artillery, Halishahar, Air Defence Fire Control Radar from China and Air Defence Staff Course (ADSC) from Pakistan. He has graduated from DSCSC, Mirpur, Dhaka. He has participated in United Nations Peacekeeping Mission in Mali as a contingent member. He is married and blessed with two daughters.

CAPABILITY ENHANCEMENT OF JUNIOR OFFICERS THROUGH MISSION COMMAND: ASYMMETRIC WARFARE PERSPECTIVE

Major Md Shafayet Jamil, psc, G+, Arty

Introduction

Analysis of ongoing conflicts in Afghanistan and Iraq show that asymmetric warfare (AW) is characterized by highly fluid situation where the conventional forces are likely to operate in small detachments or teams led by the junior leaders. The success in AW depends on the commanders' capability to operate independently. Case study shows that the ability of the team leaders to make independent decisions coupled with a sound understanding of their Under Command (UC) and effective leadership traits are few vital factors for the success of the operations. This entails well-organized peace time training on independent decision making for the team leaders along with their day to day activities which are likely to influence their groom-up for such operations.

According to the pre-hypothesis survey and also from the researcher's personal experiences of unit service, the junior officers are not fully capable of performing independent responsibilities. The unit environment of Bangladesh Army is as such that the junior officers work under direct supervision of mid-level officers. Sometimes over supervision by mid-level officers also curtail their creativity and initiative. As such the junior officers are not in practice of dealing with tactical situations independently. Presently, only few of them, who are serving in various security organizations, get the opportunity to make independent decisions while performing their duties. However, bulk of them is not tested regarding their ability to operate as independent commander. The leadership traits of junior officers are also in question due to their performance in IPFT which has influenced senior leadership to reintroduce the previous system of IPFT.[1]

Mission Command (MC) is a command approach that is based upon the exercise of local initiative within the framework of command intent.[2] The appropriate delegation of authority is the prime factor that allows junior leaders to plan and execute various responsibilities by understanding the local operational environment. To operate effectively in all forms of warfare including AW, the western armies have adopted MC as their command philosophy.[3]

In this paper, an attempt has been made to assess the feasibility of MC as a correct method to enhance the capabilities of junior officers to operate in AW. Initially the paper will identify the expected qualities of junior officers to operate in asymmetric warfare. Then an analysis of present capabilities will be discussed and finally the contributions of MC to enhance the present capabilities will be determined.

Aim

The aim of the paper is to assess the feasibility of MC as a correct method to enhance the capabilities of junior officers to operate in asymmetric warfare.

CAPABILITIES REQUIRED FOR JUNIOR OFFICERS TO OPERATE IN AW

A number of interviews were conducted among the senior officers of Bangladesh Army to determine the capabilities required to fight in AW. Also a detailed survey was conducted among the mid-level officers (who are the direct superior commanders of junior officers) to decide the capabilities expected from junior officers to fight in AW. The findings from various sources in this regard are discussed in subsequent paragraphs.

Physical Capability to Bear the Stress

Leaders, regardless of their rank or position, are soldiers. Effective performance on the battlefield cannot be obtained unless one is physically fit.[4] To counter asymmetric threat the junior officers have to be physically fit and mentally robust.[5] In the FGD-1, physical fitness was identified as one of the critical capabilities of junior officers to operate in AW. During the survey, 98% officers agreed that good physical fitness is essential for junior officers to operate in AW.

Sound Knowledge on Minor Operations

The junior officers need to have sufficient knowledge on minor operations including special operations.[6] In AW, the inferior forces are likely to use terrain and demography in their favour in such a way that the superior forces often need to conduct special operations. In FGD-1 it was revealed that the junior officers should possess adequate knowledge on minor and special operations to defeat the enemy. The survey conducted on mid-level officers shows that 89% officers opined for the possession of sound knowledge on minor operations as a prerequisite for junior officers. The details are shown below:

i. Capability to Assess Threat

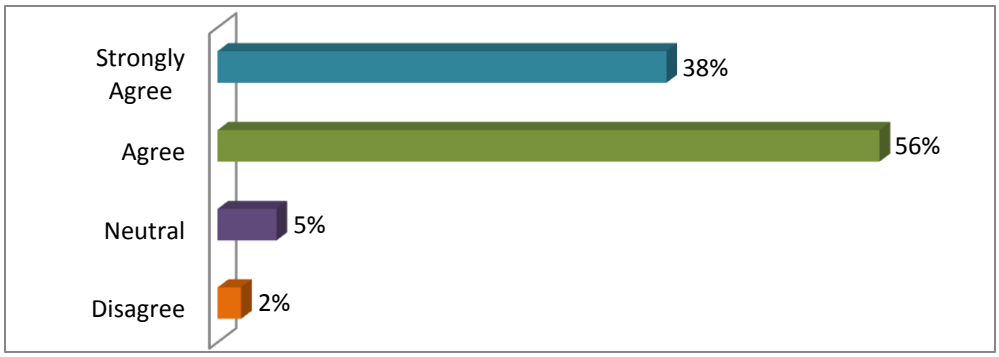
Already it is discussed that one of the significant characteristics of the AW is the **use of innovative non-traditional procedure**. Therefore a junior officer has to be imaginative and creative to assess the potential threats from the asymmetric warriors.[7] Same opinion was also reflected in FGD-1. While conducting survey on mid-level officers, 85% opined that the junior officers should be capable of assessing the enemy correctly.

ii. Technical and Tactical Proficiency

In any form of war, effective leaders are thoroughly familiar with the operations, training, and technical aspects of their assignments.[8] They know that demonstrating technical and tactical competence inspires confidence.[9] While conducting survey on mid-level officers,

94% officers agreed that technical and tactical proficiency as a key capability for junior officers. Details are shown below:-

Figure 1: Response Showing Technical and Tactical Proficiency as a Requirement for Junior Officers

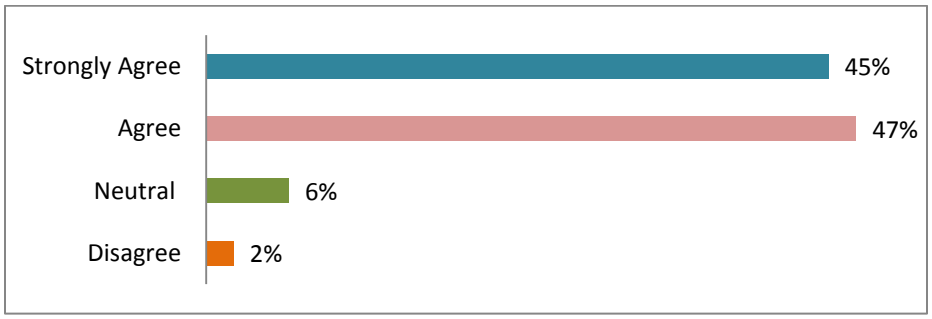


Source: Survey Conducted by Researcher

iii. Capability to Make Sound and Timely Decisions

AW demands rapid judgment of situation, sound decisions, and timely initiation of actions to accomplish those decisions.[10] In FGD-1, the participants also identified this capability as an important requirement for the war. In the survey on mid-level officers, 47% officers opined that the junior officers should be capable of making sound and timely decision to operate effectively in AW. The detail of survey is shown below:-

Figure 2: Response Showing Capability to Make Sound and Timely Decisions as a Requirement for Junior Officers



Source: Survey Conducted by Researcher

EVALUATION OF PRESENT CAPABILITIES OF JUNIOR OFFICERS

Before analyzing the existing capabilities of the junior officers, it is important to discuss the influencing factors of their capabilities. The two most important factors are the unit environment and the training system of the junior officers. The capability building of the junior officers starts from the training in Bangladesh Military Academy (BMA) which ultimately gets shape once they join their units. The training process of the junior officers continues in the units which are augmented by the inclusion of many institutional training. As such, their capabilities are the resemblance of their unit environment and the training curriculum.

Table 1: Analysis of Training Received by Junior Officers

		Training on conducting independent operations as a leader in BMA	Training in Basic Course to Lead groups of soldiers	Training on Decision-Making Process in the Unit
N	Valid	124	124	124
	Missing	4	4	4
Median		2.000	2.000	2.000
Mode		2.0	2.0	2.0
Std. Deviation		.4662	.4828	.4850
Range		1.0	1.0	1.0
Legend		1 = Yes, 2 = No		

SPSS Analysis basing on Junior Officers' Survey

Level of Professionalism

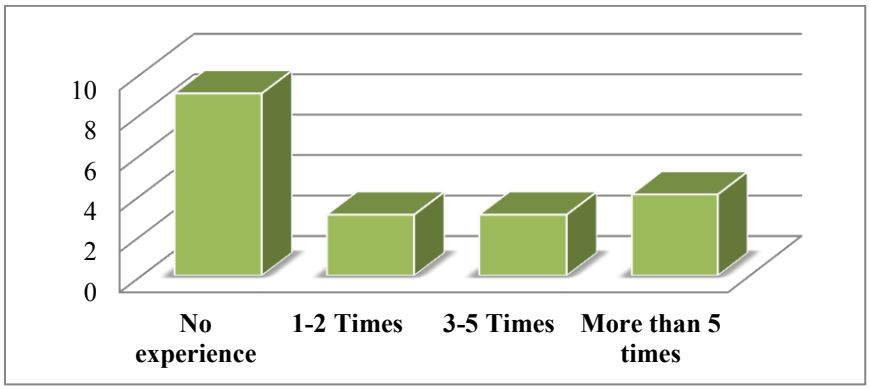
Professionalism is built on the basic leadership tenets of knowing self, knowing human nature, knowing own job, and knowing own unit. The socio-economic changes, influences of social media, materialistic attitude, and many other issues severely affect the professionalism of junior officers.[11] During FGD-1, it was revealed that the level of professionalism of junior officers is in declining state. A survey conducted on mid-level officers shows that 71% officers opined about lack of professionalism in junior officers.

Less Experiences as Independent Commander

In present peaceful environment of the country, junior officers are not getting adequate scope to gain operational experiences.[12] The peace treaty accord of Chottogram Hill Tracts has also limited the scope of military operation in the hilly districts. Other than few operations in aid to civil administration, the army does not get involved in any routine operational activities. Though it is a blessing for a country, yet the operational capability of the army remains untested. A survey on junior officers shows that 50%

officers do not have any experience of conducting any minor tactical operation in Chattagram Hill Tracts or any other places of Bangladesh.

Figure 3: Experiences of Junior Officers in Conducting Minor Tactical Operations



Source: Survey conducted by researcher

Tactical Decision Making Capability

In asymmetric war, time is an important factor which decides the out-come of the engagement. Timely decisions allow one forces to act more quickly than adversaries and enemies can cope with. However, at present day context, junior officers are not capable of independent decision making.[13] Lack of training in various courses as well as in the units is the main reason for this shortcoming.[14]

Level of Self-Confidence

The last five years' reports received by BMA on junior officers' performance show that they are found lack in confidence once dealing with the troops.[15] The problem of lack of confidence in junior officers lies with the training system. The junior officers have very less exposure as independent commander during their elementary training in BMA or during Basic Courses.[16] This has restrained their confidence building which is reflected in their performances in the units.

Lack of Mutual Trust with Under-command

The effects of social media, aloofness and priority on personal commitments have created a distance between the junior officers and their UC which creates lack of mutual trust among each other.[17] However the success of any military operation depends on a common understanding among all members and strong mutual trust between leaders and led.[18] This entails peace time joint training, bonding and affiliation between the commanders and under-command.

IMPLEMENTING MC PHILOSOPHY TO ENHANCE THE CAPABILITIES OF JUNIOR OFFICERS TO FIGHT IN AW

MC is the most pragmatic approach that combines all the attributes which will allow junior officers to accomplish all responsibilities likely to be vested on them in AW. In this chapter, an endeavour was made to prove that MC allows the junior officers to enhance their capabilities to operate in AW. Also the likely challenges in implementing MC in Bangladesh Army were highlighted.

Implementation of MC in Various Armies

General Helmuth von Moltke was the first Prussian leader to introduce the term *Auftragstaktik,* the origin of the phrase 'MC'. He tested this concept of command in three successive wars and finally decided it as the command philosophy of Prussian Army.[19] Since then many armies adopted this command philosophy to accomplish their missions in various situations; both in peace and war.

MC in United States Army

To better prepare the US military to meet future challenges, Chairman of the Joint Chiefs of Staff General Martin Dempsey published his **MC White Paper** in 2012. In it, General Dempsey provided guidance highlighting the importance of MC in the execution of operations at all levels of war, as well as the requirement to train and educate leaders on its proper implementation. The exercise of MC has a close relation with capability enhancement of leaders at all levels. Junior leaders' development activities will be significantly benefited if MC is executed.

MC in British Army

The British Army's command philosophy is MC. This philosophy is founded on the clear expression of intent by commanders, and the freedom of subordinates to act to achieve that intent. MC in British Army comprises one guiding principle and five further principles. The fundamental guiding principle of MC is the absolute responsibility to act to achieve the superior commander's intent. Other principles are unity of effort, freedom of action, trust, mutual understanding and timely and effective decision making.

Possible Contributions of MC in Capability Enhancement of Junior Officers of Bangladesh Army

Increases Self Confidence

In FGD-1 it was revealed that the practice of MC in the organization will allow the junior officers to take timely decisions in the absence of clear and detail orders from the superior. Though there is a chance of taking wrong decision yet this is likely to increase the confidence level of junior officers and develop them as effective leaders.[20]

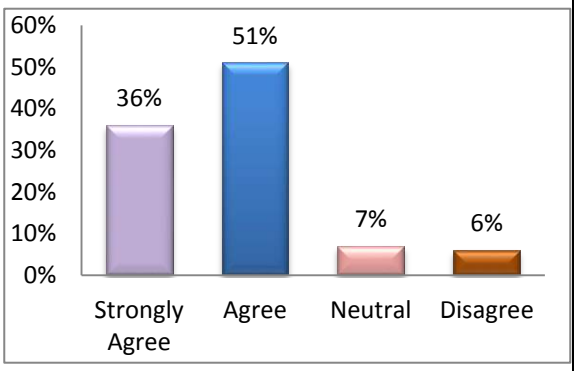
Enhance Decision-Making Capabilities

Throughout the operations, unexpected opportunities and threats rapidly present themselves. To explore the opportunities and to reduce vulnerabilities, military operations require decision-making at the point of action. MC allows junior officers to practice independent decision making from the beginning of their service career. In FGD-1, the participants also opined that MC will have positive contribution on decision making capability of junior officers.

Train and Fight as a Team

One of the principles of MC is to build team through mutual trust which is essentially required to operate in AW.[21] In FGD-1 the participants also opined that by exercising MC, the team building capacity of junior officers can be enhanced. The survey result shows that 87% officers agreed with the positive contribution of MC in inculcating team building capability in junior officers. Detail of survey with statistical analysis is given below:-

Table 2: Correlation between Implementation of MC and Capability to Train and Fight as a Team



Correlation Test	Value
Phi	.364
Cramer's V	.257
Pearson's R	.167
Spearman Correlation	.196
N of Valid Cases	144

Source: SPSS Analysis

Capability to Act on Mission Orders

'Mission Order' helps junior officers to improve their leadership capabilities by working with minimum orders and directives through formulating and executing own plans to accomplish the mission in the right way.[22] The Case Study-1 shows that exercising MC increases the efficiency level of the junior officers which helps them to work on mission order.

Capability to Accept Prudent Risk

Risk is an inherent part of any military operation. However, it is the leadership responsibility to assesses and manages risk. MC encourages junior officers to assess and

accept disciplined risk implicit to mission accomplishment. The Case Study-1 also revealed that the junior officers were able to take prudent risk since they were given

Requirements for Implementation of MC in Bangladesh Army

Delegation of Responsibility

The practice of MC should be enforced immediately in the units. By appropriate delegation of responsibility during the peace time, the junior officers can be trained for war time assignments. During various training exercises, the junior officers may be tasked for both planning and conduct of the exercises.[23] Formations may form monitoring committees to supervise the implementation program and advise regarding the legal matters related to MC.

Change in Mentality

The mind setup of command echelon has to be changed to authorize junior officers with added responsibility. The junior officers may have to make independent decisions which may be wrong. However the senior leaders should be ready to accept those mistakes. A motivational campaign may be conducted in formations to synthesize and amplify the procedures of MC.

Evaluation of Training System for Junior Officers

The training system for the officers has to be evaluated to groom them up, to take independent responsibilities which is a prime ingredient of MC. This evaluation of training has to be started from the basic military training in Bangladesh Military Academy.

Publication of Service Pamphlets on MC

To give clear idea about the implementation of MC, adequate service pamphlets need to be published. Army Training and Doctrine Command (ARTDOC) should finalize and publish Draft Command and Leadership pamphlet as soon as possible. This pamphlet should contain details of MC at execution level.

Conclusion

The paper was initiated with the attempt to determine the expected capabilities of junior officers to fight in AW. Physical capability to withstand the stress, capability to assess threats and technical and tactical proficiency are the prime requirements to operate in AW. Capability to build team, creating shared understanding, exercising disciplined initiative and capability to accept prudent risk are some of the expected capabilities of junior officers to fight in AW. After determining the expected capabilities, the present capabilities of junior officers of Bangladesh Army were analyzed in the paper. The worth mentioning capabilities are the workable knowledge on conventional warfare, capability to accomplish administrative tasks and elementary training on minor and special operations. However, some opined that the junior officers possess low level of professionalism, less experiences as independent commander, less capability to make decisions independently, lack in self-confidence, less capability to create mutual trust

among their subordinates and unwilling to accept any risk while accomplishing their tasks. All these brought out an important finding that presently the junior officers do not possess all the capabilities required to operate in AW.

Thereafter an endeavor was taken to envisage a single method to solve the deficiencies in the capabilities of junior officers to operate in AW. It was found that MC is a tool which allows to systematically overcoming the existing deficiencies in the capabilities of junior officers. The modern armies have adopted this concept after making necessary modifications those fit their own national, social, and military characteristics. Bangladesh Army also needs to do necessary modification to adopt the concept of MC. Future complex battlefield environment, threat of AW, doctrine of blending conventional with unconventional warfare all these suggest that it is the prime time to adopt MC. For adopting MC, the first and foremost requirement is mutual trust among the officers of different levels and change in mindset of CE. Organizational reform is not much needed because the present command structure is suitable to execute MC. It is imperative to formulate an integrated and elaborate/descriptive manual of MC for BD Army. Avoiding micromanagement, zero error syndromes, maintaining flexible approach and delegation of authority to work are some of the basic requirements to exercise MC.

Recommendations

Bangladesh Army should adopt MC as its command philosophy as soon as possible. Army Headquarters, General Staff Branch should formulate a policy instructing all formations to exercise MC at all tiers of CE. The policy should include instructions on delegation of authority to the junior officers and NCOs, individual's responsibility in the units, chain of command etcetera. For further advancement, a detailed implementation plan needs to be formulated by ARTDOC, which should include both short term and long term plans.

Short Term Plans

- Finalizing Draft "Command and Leadership Pamphlet" including detail procedures to exercise MC at various levels in the Army.
- A motivational campaign should be conducted in formations with immediate effect to synthesize and amplify the procedures of MC.

Long Term Plans

- Gradual and sequential lessons on MC have to be incorporated in all courses of officers starting from the Basic Military Training in Bangladesh Military Academy.
- Once the junior officers are ready to take independent responsibilities then JCOs and NCOs have to be trained on MC.
- A monitoring and supervising committee may be formed at formation level to implement MC following correct procedures.

Notes and References

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Brief Biography

Major Md Shafayet Jamil, psc, G+, Artillery was born on 10 February 1984 in Kishoreganj. He was commissioned from Bangladesh Military Academy (BMA) with 51BMA Long Course in the Corps of Artillery on 22 December 2004. He joined 38 Air Defence Regiment on 05 January 2005 served there upto 10 October 2008. Thereafter, he was posted to Special Security Force as Assistant Director. He has participated in United Nations Peacekeeping Mission with Bangladesh Headquarters Support and Signal Company-7, in Democratic Republic Congo. He also commanded 56 Independent Medium Air Defence Battery Artillery. Apart from regimental appointments, he has served as Instructor Gunnery, Instructor Class- B in Artillery Centre and School. In addition to mandatory courses in his professional career, he attended Officers' Gunnery Staff Course in both home and abroad. He has graduated from DSCSC, Mirpur, Dhaka. In his personal life he is married and blessed with two daughters.

SUSTAINED MILITARY KNOWLEDGE Vis-A-Vis PRESENT TRAINING SYSTEM

Major Shameem Ibne Moin, psc, AC

Introduction

Bangladesh Army is the ultimate protector of the sovereignty, and much of its efficiency depends on the quality of its officers. This is becoming more pressing with each passing day because the world is again shifting to militarism. Gradually, era of the strategic patience is coming to an end, and military means is overtaking diplomacy in many parts of the world including South-East Asia as the primary means of resolving issues. The recent Rohingya crisis is the proof of that. Keeping that in view, Bangladesh Army puts great emphasis to train its officers in various training institutions and the formations, so that they can lead their troops effectively during the time of crisis.

Despite all the attempts, it's still felt that the officers of Bangladesh Army, especially the mid-level officers (MLO) with 10-14 years of service length, do not develop an insight on military tactics- the core building block of military knowledge. They often struggle with the basics and incorrectly apply the lessons on ground. The lessons learnt in the courses are not practiced subsequently. Again, hardly the officers study the past wars and campaigns. This is not a very good sign because how the officers can think of anything original or innovative if they do not know what has happened in the past? Similarly, the geo-political awareness doesn't get attention as well. All these indicators prove that the MLO are falling short of attaining the desired level of military knowledge. Therefore, there is a need to evaluate the state of their knowledge level and take necessary steps to improve it.

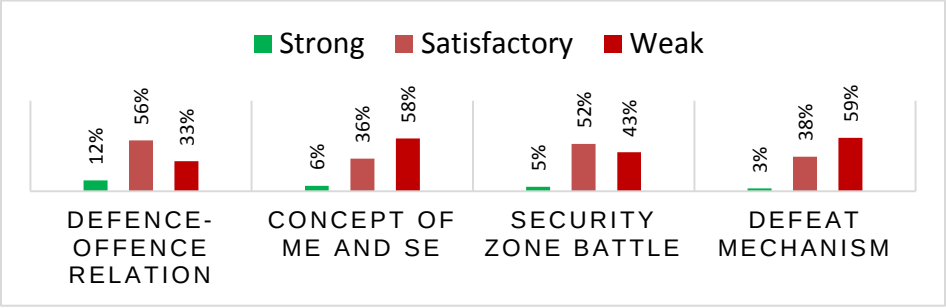
Present State of Military Knowledge of the MLOs

Military Tactics

i. Defensive Operation

In the foreseeable future, Bangladesh Army is likely to begin any conflict with a defensive posture before making a transition to any offensive. As such, the importance of possessing supreme skill on defensive form of warfare cannot be overstressed. Yet, during the survey, the MLOs admitted that they are weak on various aspects of defensive warfare. The details are given below:

Figure 1: Response by MLOs on Knowledge on Defensive

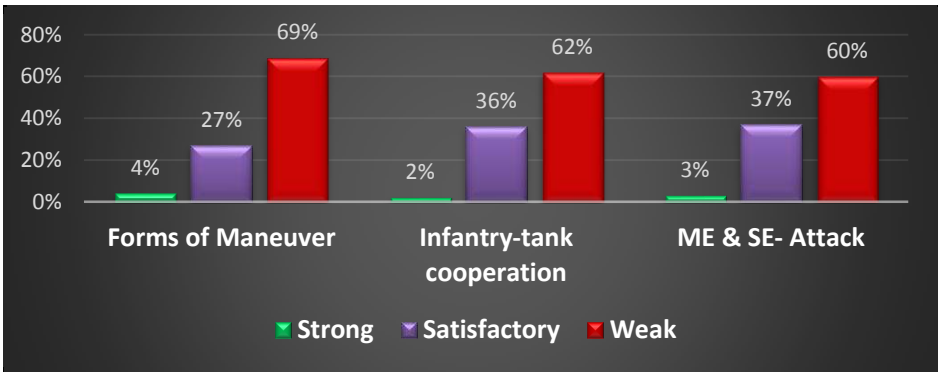


Source: Researcher's construct based on survey result

ii. Offensive

The doctrine of Bangladesh Army is dominated by defence. Yet, to anticipate the plans of the attacking forces in future wars and planning for own counter-offensive, understanding the forms of maneuver is essential. However, the fact has come up during the survey that more than half of the MLOs of Bangladesh Army is weak in this department. The statistics on some of the relevant parameters is given below:

Figure 2: Response on Knowledge on Offensive

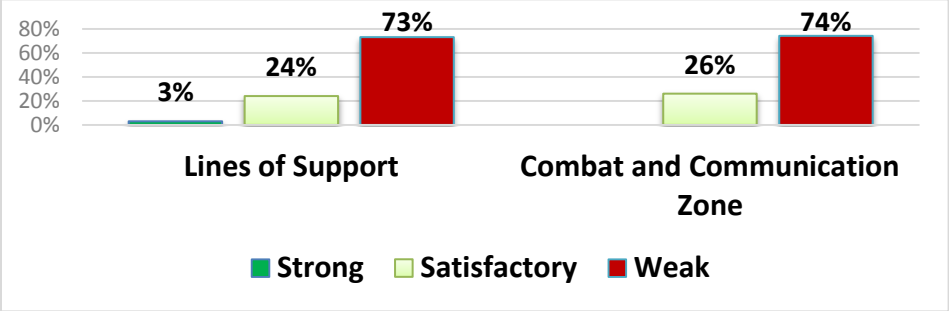


Source: Researcher's construct based on survey result

iii. Logistics

Logistics is termed as the balancing factor of war. Many operations in the past have failed as the associated logistics was overlooked. Therefore, basic logistics terms such as line of support or logistics frameworks such as combat and communication zone should be clear to the MLOs. However, the survey result given below shows that the MLOs in general are weak in logistics as well.

Figure 3: Response on Knowledge on Logistics

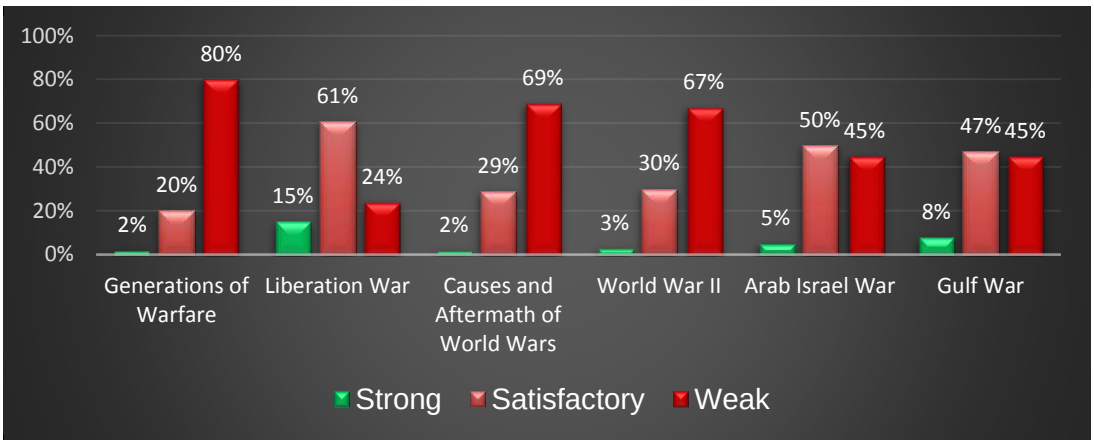


Source: Researcher's construct based on survey result

Military History

Preparation for war is an expensive and burdensome business, yet there is one important part of it that costs little- study.[1] Tactical knowledge without the grip on military history cannot be properly utilized. As such, history will always remain relevant.[2] Yet, 90% MLOs opined that military history does not get the same level of attention as tactics. In addition, the survey shows that the MLOs in general have satisfactory familiarity with the Liberation War of 1971; however, some of the most famous wars and battles are not very well known to them. The survey result is shown below:

Figure 4: Response on Level of Knowledge on Military History



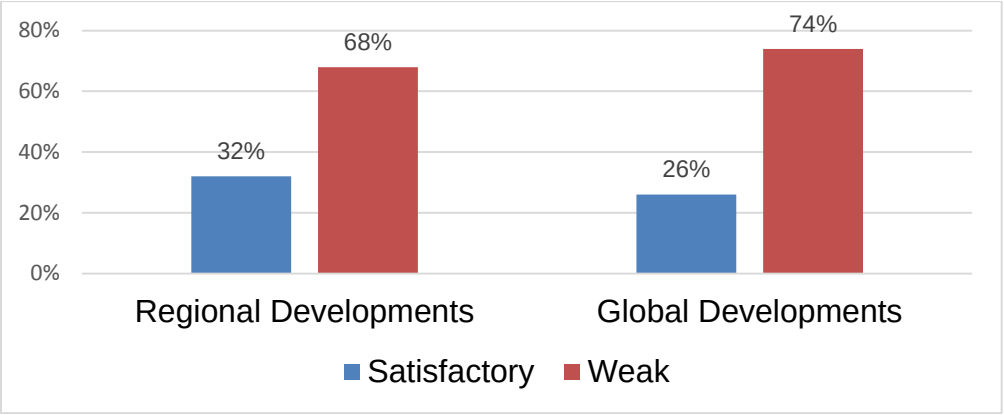
Source: Researcher's construct based on survey result

Awareness of the Geo-political Scenario

The recent Rohingya crisis led Bangladesh and Myanmar to the verge of an armed conflict, which was narrowly avoided by a patient diplomatic maneuver by the former. In this case, Bangladesh had confidence on its foreign partners and believed that, in any emergency, it will receive the whole hearted support from them. However, during the

Rohingya crisis, that overly optimistic perception fell like a house of cards. The harsh truth has struck every one of the country including the military that the reality is not favorable to Bangladesh. However, the current geo-political awareness including the threat perception among the MLOs is not encouraging. In addition, according to the **FGD-1**, the MLOs are reluctant to know the development of the neighboring militaries.

Figure 5: Response by COs on the Level of Geo-political Awareness of the MLOs



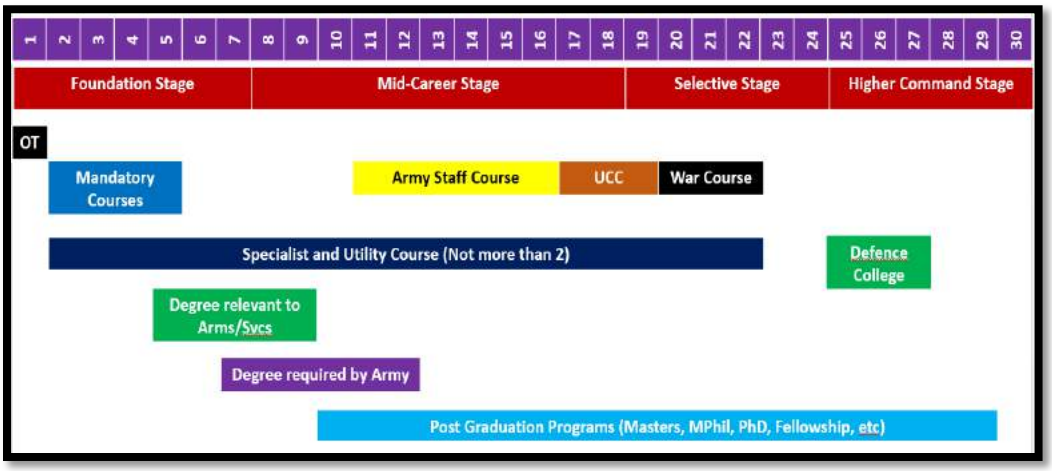
Source: Researcher's construct based on survey result

Reasons behind Inadequate Military Knowledge of the MLO

Non-Progressive Training Modality

All training must culminate in to "train as you will fight." In order to do that, training is made progressive in Bangladesh Army. However, it is found that most of the officers study only to earn better grades in courses.[3] This tendency may become disastrous because it might take away the focus of training from "learning" to "attaining a grade" by adopting any means fair or unfair. In most cases accord to FGP-2 a major of Bangladesh Army resort to a deliberate study only for staff-college entrance examination. That is also the first time he goes through the military history package deliberately.

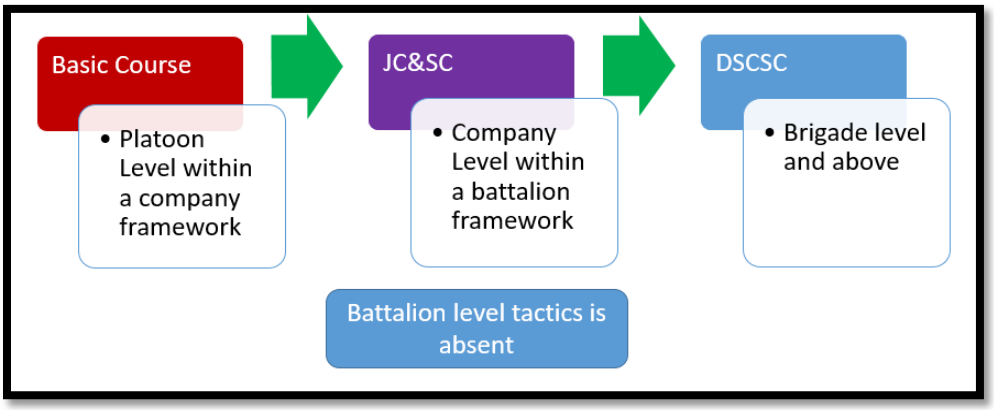
Figure 6: Year-wise Planning of Professional Training and Education of Officers



Source: Draft Training Doctrine 2011, Bangladesh Army

Figure 6 shows that the gap in between JC&SC and ASC is 6-7 years which remains unutilized. Moreover, there is no **Mid-Career Course (MCC)** for the MLOs, which is also a big barrier.[4] All these hinders render the education less progressive. One more point that needs attention is, JC&SC and DSCSC impart lessons on company and brigade level tactics respectively, but the battalion level tactics is not taught institutionally. Therefore, a student officer struggles to catch up with brigade level tactics and above in DSCSC.

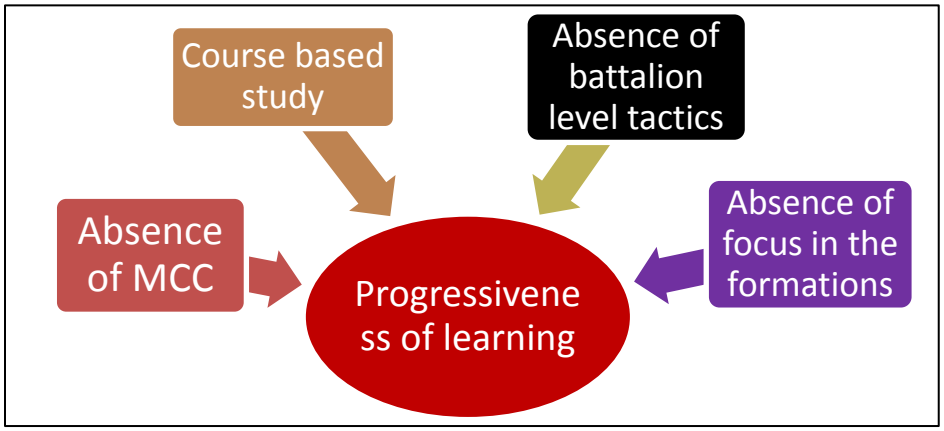
Figure 7: Progression of Education from Basic Course to ASC



Source: Researcher's Construct

Ultimately, the factors discussed above hinders the progressiveness of the system. The learning becomes fragmented and divided in wide space and time. Due to lack of practice and continuity, the officers cannot attain and retain desired level of military knowledge.

Figure 8: Factors Affecting Progressiveness of Learning



Source: Researcher's Construct

Lack of Sustenance in the Current Training System

Sustenance is one of the principles of training of Bangladesh Army.[5] However, the steps designed to sustain the acquired knowledge are not adequate. Physical fitness or firing skill get much importance in the formations, but the same is not true in case of practicing tactics or holding discussions on historical examples.

Figure 9: Principles of Training of Bangladesh Army

Source: Draft Training Doctrine 2011, Bangladesh Army

A case study on 33 Infantry Division shows that activities on tactical aspects are quite low. Only in year 2018, the formation has increased the number of such activities. The details are shown below:

Table 1: Planning of Tactical Activities - 33 Infantry Division

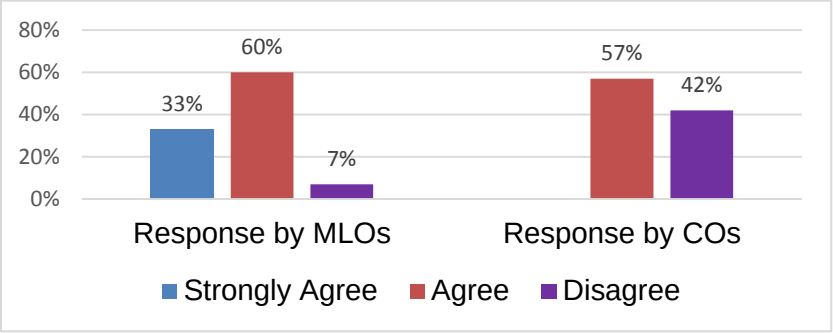
Events	Events Quantity by Year		
	2016	2017	2018
Workshop on unit admin	-	-	1
Seminar on How best young officers can influence under-commands through their individual leadership traits	-	-	1
Seminar on "How to make training more interesting and innovative at unit level"	-	-	1
Brain Storming Session - Defensive Operation	-	-	1
Brain Storming Session -Offensive Operation	-	-	1
Model Discussion on Defence	1	1	1
Model Discussion on Attack	1	1	1
Tactical Exercise Without Troops	1	1	1

Source: Formation Training Directives 2016, 2017 and 2018, 33 Infantry Division

Absence of Focus and Incentives in the Formations and Units

Lack of attention and incentive in the formations is a strong reason for which the officers don't get the zeal to study military subjects. For example, Bangladesh Army has introduced a quiz competition few years before, and the researcher has observed in 33 Infantry Division that the junior and mid-level officers worked very hard to memorize the quiz book. Again, in the same formation in another occasion, the junior officers took huge effort to participate in a body building competition. In both the cases, the formation provided lucrative incentives: a trophy in the first case and tickets to Bangkok in the second. Therefore, the officers were also motivated. Unfortunately, studying military subjects doesn't get so much attention.[6] Again, those who are good at it, do not get desired recognition.[7] As a result, the units hardly take any extra effort to educate their officers. Total 93% of the MLOs and 57% COs have admitted that the formations don't provide enough incentives in this regard. The details area shown below:-

Figure 10: Response on Incentives in Formation Level Training



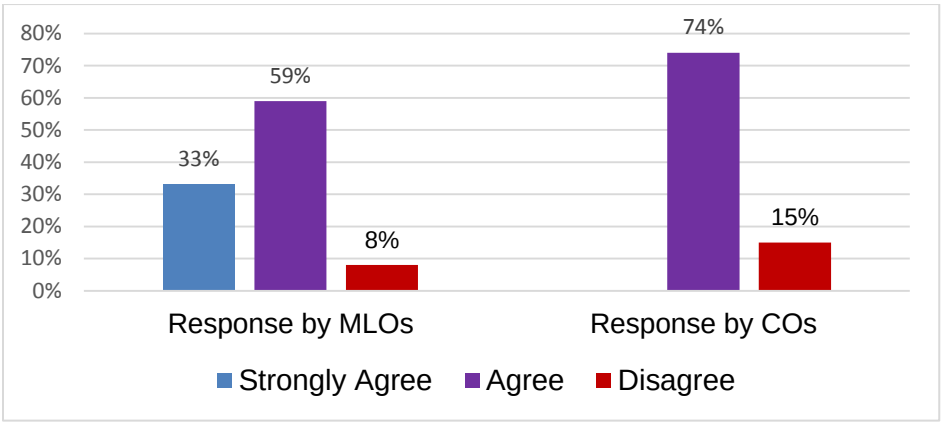
Source: Researcher's construct basing on survey results

Negative Impacts of Inadequate Military Knowledge of the MLO

Drained Mental Faculty

Lack of desired tactical and historical knowledge including geo-political awareness may stifle original thinking and cramp ingenuity.[8] Since the MLO in general don't share satisfactory tactical and historical knowledge, they don't prefer to live on them. Instead, they prefer to engage in unproductive activities. Professional discussions hardly get space in MLO community. As such, the problem-solving has become format oriented, rigid, minor SD dominated, with set phrases and stereotyped deductions. Total 92% MLO and 74% COs have agreed that lack of military knowledge results stereotypes and drained mental faculty of the MLO.

Figure 11: Response on Drained Mental Faculty as an Impact



Source: Researcher's construct basing on survey result

Poor Training of the Under-commands

One of the prime responsibilities of the MLO is training their subordinate junior officers and ORs.[9] In this context, due to lack of desired military knowledge, the MLO cannot properly disseminate that knowledge to their under-commands. The training and the teaching become repetitive, monotonous and formatted. As a test case, the tactical subjects of Unit Training (UT) of a particular squadron of Unit XX was examined. There it is seen that the subjects of 2016 and 2017 are identical, whereas only few new subjects were included in 2018. This is an indicator of the monotony and lack of innovativeness in the training curriculum.

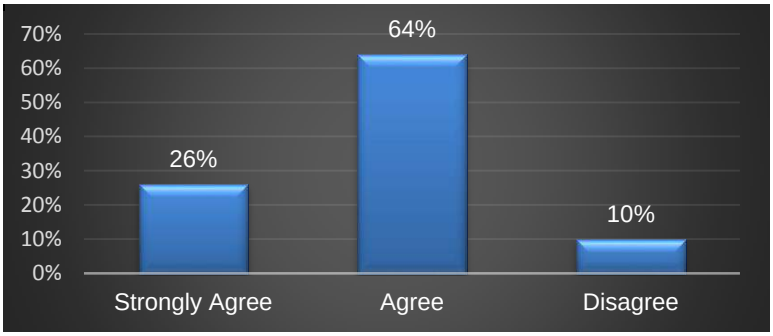
Table 2: Subjects of Unit Training of a Squadron of Unit XX

Subjects of Training Cycle	2016	2017	2018	Remarks
Occupying the tank firing positions	√	√		Repetitive subjects
Fire control order and target identification	√	√		
Infantry-armour marrying up in defence	√	√		
Moving to dispersal area from cantonment	√	√		
Occupation of tank hide	√	√		
Occupying battalion counter penetration positions	√	√		
Subjects of Training Cycle	**2016**	**2017**	**2018**	**Remarks**
Launching counter attack	√	√		
Launching spoiling attack	√			
Armour formation, troop tactical movement, firing positions			√	Newly included
Move order and contact report			√	
Tank abandonment drill			√	
Tactical Redeployment			√	

Source: Researcher's construct basing on test case

Unpreparedness for War. Regardless of the likeliness of war, the MLO must remain prepared to face any challenge at all times**.** Apparently, the potential adversaries of Bangladesh Army holds superior numbers. To offset that, Bangladesh Army needs to have upper-hand in professional competency which includes tactical mastery, historical insight and consistent geo-political awareness. As such, it is evident that weaknesses in these departments may hinder war preparedness of Bangladesh Army. During the survey, this view has been shared by 90% respondents.

Figure 12: Response on Unpreparedness for War as an Impact



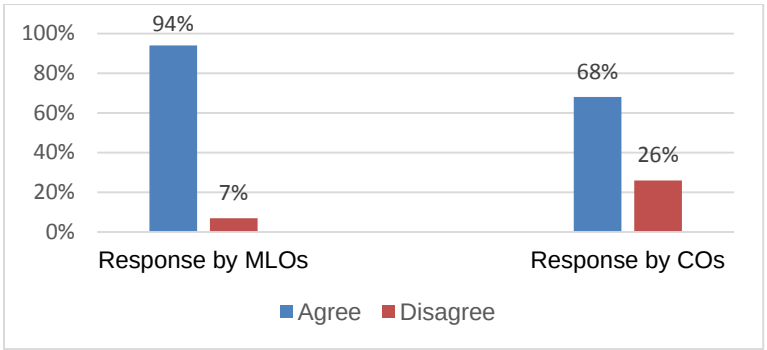
Source: Researcher's construct basing on survey result

Ways to Improve

Specialized Training Competitions

Competitions should be increased by reducing generalized competitions. Currently, one of the main focuses of the units is games and sports. Such events dominate the entire dynamics now a days**.** Instead, competitions similar to recently introduced quiz competitions can be arranged on tactics, military history or geo-political scenarios. That's how the officers skilled in these aspects will be recognized**.**[10] During the survey, 99% MLOs have supported this view. The details are given below:

Figure 13: Response on Specialized Training Competitions in the Formations



Source: Researcher's construct basing on survey result

Proficiency Cadres for the Officers

Every formation may conduct a cadre for the majors and captains named "Officer's Proficiency and Enhancement Cadre". Basing on the availability, the units may nominate officers for the training. This training may be run for one month every year on following subjects:

Knowing the Enemy.
Inter Arms Training.

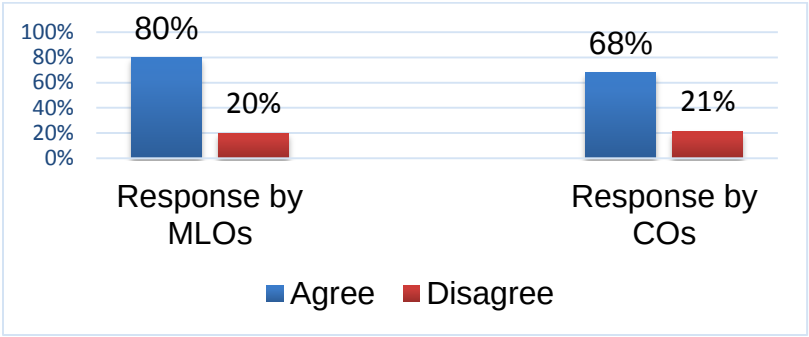
Operational Role of the Conducting Formation.
Historical Subjects.

This suggestion have been agreed by 98% respondents during the survey.

Conducting Yearly Examinations

Arguably, one of the most effective ways to ensure study is examination. Therefore, yearly examinations can be incorporated so that the MLOs and the junior officers take interest to read instead of wasting time in social networking. This examination can follow the model of promotion examinations currently in practice. Total 80% MLOs have opined that this method may be useful in this regard. The syllabus may be quite brief and declared at the beginning of every training year. The details of the survey are given below:

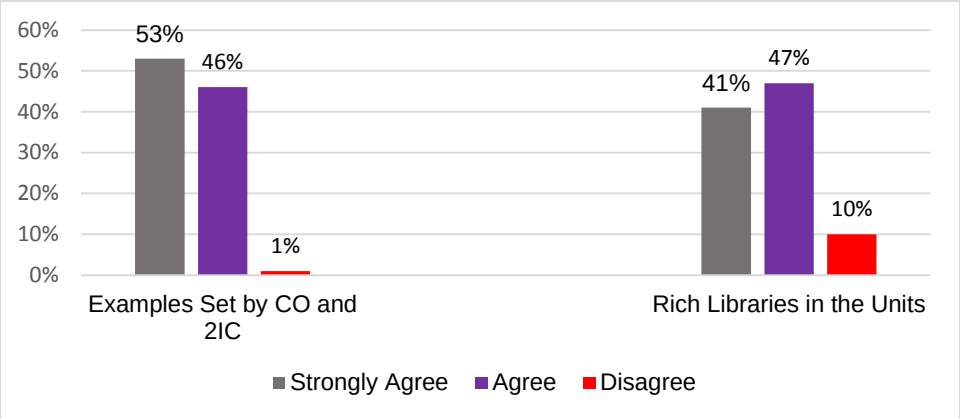
Figure 14: Response on Conducting Yearly Examinations



Source: Researcher's construct basing on survey result

Supportive Environment in the Units. Commanders and individuals have a significant role to play in the non-structured training domain.[11] The army and the formations may undertake many attempts to make a change; however, it's the units which can really implement the attempts. The COs and 2ICs of the units should discuss military history and geo- politics with junior officers in formal or informal forums. The seniors can provide guidelines to the juniors about their likely career progression, and how to take preparation for their career progression.[12] This will encourage the juniors to study at their own interest. 99% of the respondents agreed with this view during the survey. In addition, the units should maintain rich libraries in the units. This will encourage the armed forces personnel to visit the libraries more often than what is observed at present. This proposition is supported by 88% MLOs during the survey.

Figure 15: Response on Ways Forward at Unit Level



Source: Researcher's construct basing on survey result

Changing Mindset

One of the most effective ways would be to come out from the course biased study by changing the mindset.[13] The resultant consciousness will encourage them to make a habit of studying outside the course curriculum also. In that manner, they can build up their knowledge level, which will otherwise help them to perform in the courses as well. following steps may help the MLOs in this regard:

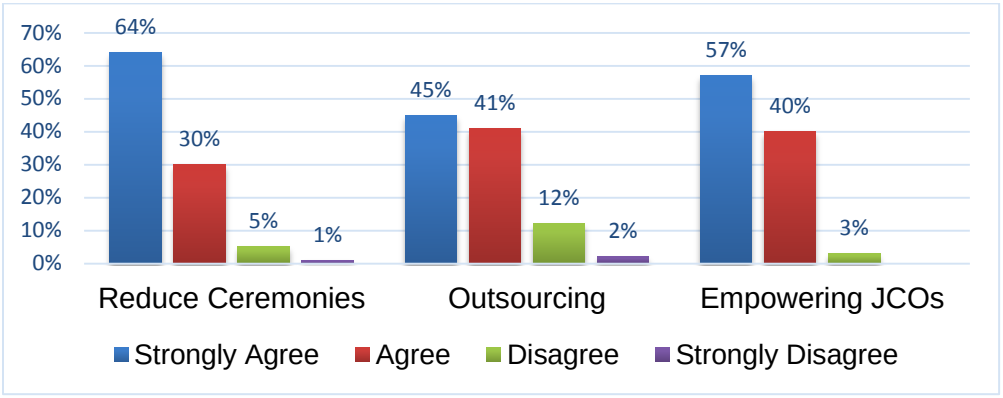
Understanding the necessity of military knowledge in the present context.
Understanding the changing face of warfare.
Relating the application of newly procured armaments to the lessons learnt in the courses.
Relating the realities of Bangladesh with the contents of the precis.

Measures to Offset the Added Pressure

Over commitment and shortage of officers have been identified as barriers in the learning process of the MLOs. As such, it can be reasonably assumed that, to accommodate new measures, some of the less professional functions of the formations have to be reduced first. The Commanding Officers of various units also have strongly voiced about reduction of the less-professional or ceremonial activities before incorporating any new training events for the MLOs (Unstructured Feedbacks from the Commanding Officers). In this regard, few such measures along with their approval percentage of different units are proposed below:-

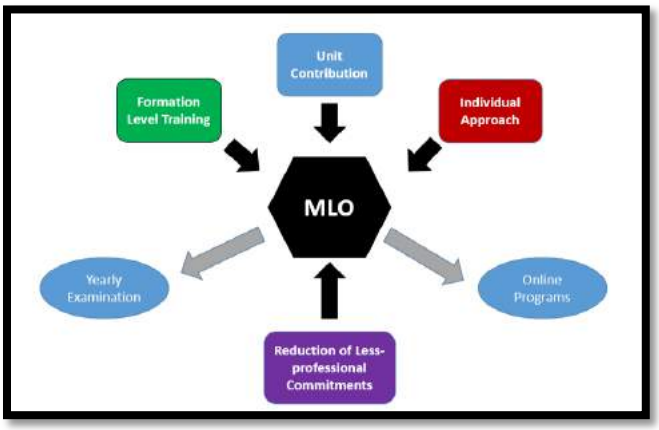
a. Ceremonial activities to be reduced.
b. Outsourcing while arranging ceremonial activities
c. Junior leaders may be empowered to reduce the work load of the MLOs.

Figure 16: Response on Measures Suggested to Offset the Added Pressure



Source: Researcher's construct basing on survey result

Figure 17: Roadmap for Knowledge Enrichment of the MLO



Source: Researcher's construct basing on Proposed Measures

Conclusion

The operational environment is becoming increasingly complex every day in the whole world including South-East Asia, where the trend of resorting to militarism is on the rise. The recent Rohingyaa crisis is a bright example of that. Moreover, the potential adversaries of Bangladesh Army are stronger in armaments. To offset such an advantage, therefore, the officers need to retain superior skills in the professional sphere which includes a high standard of tactical, military historical knowledge and geo-political awareness. To enhance that capability, the authority of this organization places considerable effort. Yet, it is felt that the level of military knowledge of the MLO is not

on the desired level. As such, determining the existing state of military knowledge of the MLOs, reasons and impacts of the predicaments, and ways forward have become the call of the day.

During the research, lack of progressiveness was found to be the most significant reason behind the inadequate military knowledge the MLO. Course biased study, absence of mid-career course, absence of institutional training on battalion level tactics, absence of focus in the formations, etcetera hinder the continuation of learning of the MLOs. Nevertheless, he striking finding of the research is that the MLOs are not completely responsible for this. Most of the reasons are associated with the limitations of the system. It is evident that the MLOs do not have any control over the excessive commitments, shortage of officers and similar obstacles, which curtail their time and enthusiasm to carry out professional studies. Moreover, due to lack of recognition and focus in the formations, earning good grades in the courses has become the principle purpose of study. Under that kind of environment, it is not unusual that the MLOs fall short of the desired expectation.

What makes the topic meaningful is its existing and potential negative impacts both on the organization and the individuals. From personal experience, the researcher sorted out few negative impacts, which were validated through surveys and interviews. During the data collection, few other negative impacts were identified too. From the mean of the survey agreements, "lack of strategic insight" was found to be the widely accepted negative impact. In addition, "drained mental faculty of the MLOs" and "unpreparedness for war" were also found to be almost equally damaging. These impacts indicate that both in the peacetime and wartime, Bangladesh Army is apt to stumble due to lack of proper military knowledge held by the MLOs. It is imperative, therefore, to take necessary measures to improve in this regard.

At the end, the researcher proposed for a two folded solution. Firstly, few training activities can be adopted by the formations to utilize the gaps in between the courses. Secondly, the units may also create a conducive environment for the MLOs. However, the decisive finding that has come up is, before introducing any new training event, the formations must reduce some of the less-professional activities to make room. Only in that way, the MLOs will be able to take the benefits with positive interest. Considering the increasing importance of a potent military, that has become the call of the day for Bangladesh Army.

Recommendations

Basing on the findings of the research, the following recommendations are made:

Military Directorate, Army Headquarters in consultation with Army Training and Doctrine Command (ARTDOC) may introduce yearly examinations following the model of promotion examinations currently in practice. The examinations may be held in the formations on a syllabus (subjects covering

tactics, military history and geo-political developments) declared at the start of the training year. Similar to IPFT, the result (only pass/fail, no specific grading) of the examinations may be included in the Officer's Performance Report (OPR).

The formations may conduct cadres for the majors and captains taking required number of officers from the units. This cadre may be run once or twice a year by particular unit/units for a duration of one month on following subjects:

Knowing the Enemy.
Inter Arms Training.
Operational Role of the Conducting Formation.
Historical Subjects.

The COs and 2ICs of the units may hold brain storming sessions on tactics, military history and geo- politics with subordinate officers in formal or informal forums. The seniors can provide guidelines to the juniors about their likely career progression, and how to take preparation for the courses. MT Directorate may issue a letter to reemphasize this practice in the units.

Military Training Directorate, Army Headquarters may instruct the formations to arrange specialized competitions on tactical aspects, military history and geo-political awareness. Such competitions may follow the modas-operandi of recently introduced quiz competition.

Before introducing any new measure to improve the military knowledge of the MLO, the formations must reduce some workload from the units. For this, following can be done:

Outsourcing to arrange various ceremonial activities.
Empowering the JCOs.

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Brief Biography

Major Shameem Ibne Moin, **psc, AC** was born on 21 October 1985 at Dhaka. He was commissioned from Bangladesh Military Academy (BMA) with 53 BMA Long Course in Armoued Corps on 20 December 2005. Apart from the armoured units, he has served in Armoured Corps Center and School (ACC&S) as an Instructor and in Armed Forces Divison (AFD) as both Grade 3 and Grade 2 level Staff Officer. Besides, he has briefly served in Presidential Guard Regiment (PGR). He has participated in the UN Peacekeeping Mission in Democratic Republic of Congo. He has graduated from DSCSC, Mirpur, Dhaka. He is married and blessed with a daughter.

TRANSFORMATION FROM BUYER'S TO BUILDER'S NAVY: A STRATEGIC CHOICE FOR BANGLADESH

Commander K M Nazrul Islam, psc, BN (E)

Introduction

In Bengal the history of shipbuilding can be traced back to in the ancient times. European traveler Fredrick records in his account that in the middle of the 15th century, one of the world's leading names in the construction of ocean-going ships was Chittagong.[1]

Hence, Bangladesh has a long heritage of shipbuilding. A recession in the field of shipbuilding was quite evident which lasted nearly a decade from 2008 to 2015. However, in consequence to the success of KSY and Dockyard Engineering Works Narayanganj (DEW), Chittagong Dry Dock Limited (CDDL) was also handed over to BN on 23 December 2015 by the honorable Prime Minister of the People's Republic of Bangladesh. In this purview, it is imperative to study challenges and options for BN in the transition process of becoming a builder Navy.

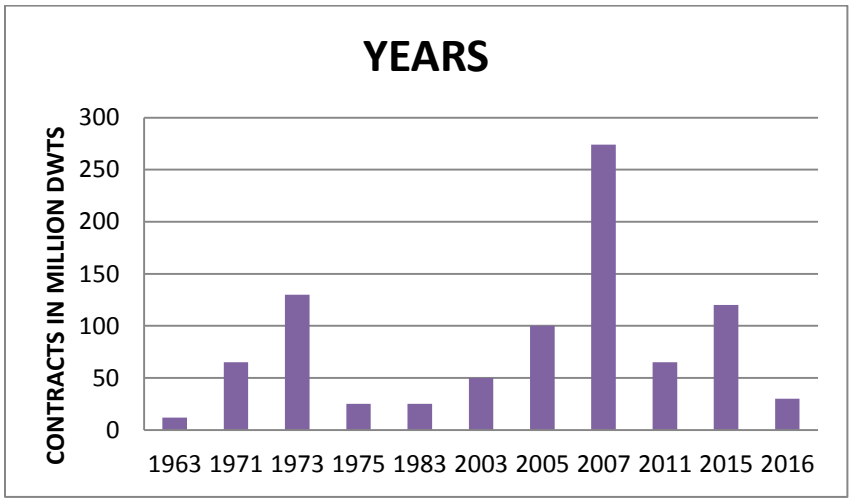
Dependence on foreign procurement has serious implications on national security and economy as well. BN may face tremendous problem if any nation denies to supply platform, critical spares or any necessary equipment during crisis. Hence, achieving self-sufficiency is a must for Bangladesh to combat any challenges during tension or war time. In the global politics, nobody is a permanent friend, nobody is a permanent enemy, and everybody has his own self-interest.[2] Moreover, many nations consider Shipbuilding as a strategic choice. Hence, it needs to be studied whether the war shipbuilding by BN will be a strategic choice for Bangladesh or not.

PRESENT TREND OF SHIPBUILDING

Global Shipbuilding Market

Shipbuilding Contracts. The big players of shipbuilding industry are more interested for building vessels of more than 25,000 DWT. According to a leading global economic data analysis agency, the order for new ships across the world will rise to around $650.83 billion in the year 2026.[3] The state of shipbuilding contracts is appended below:-

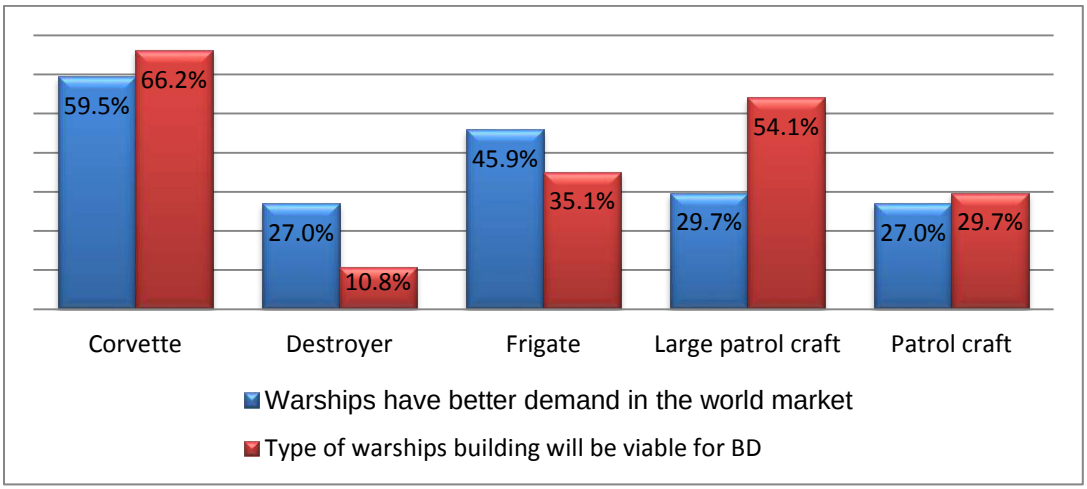
Figure 1: State (Number) of Shipbuilding Contracts



Source: Researcher's construct based on study report of Dr Martin Stopford

Respondents Perception on Warship Demand. According to the perception of the respondents about the world demand and the viability of Bangladesh to build those warships are in line. The following figure shows that, most of the respondents thought Corvette and frigates have huge demand in world market and Bangladesh has the viability of building those ships. A significant percent of the respondents thought large patrol craft has 29% demands in the world market and 54.15 respondents consider that Bangladesh is viable to build those. These types of ships have internal demand also.

Figure 2: Respondents Perception on Warship Demand



Source: Researcher's construct based on survey Data and SPSS Analysis

CAPACITY ANALYSIS OF BN SHIPYARDS

For the efficient management, all three public shipyards namely KSY, DEW and CDDL were handed over to BN in 1999, 2006 and 2015 respectively. The country has stepped to the glorious path of a builder navy in 2013 with the launching of BNS Padma- first ever made warship by Bangladesh. The whole world came to know with a new Bangladesh as a warship building nation with that identity.

SWOT Analysis for Bangladesh Navy Shipyards

SWOT analysis of BN shipyards is appended below for comprehensive understanding of her position to transform into a builder navy:-

Table 1: SWOT Analysis

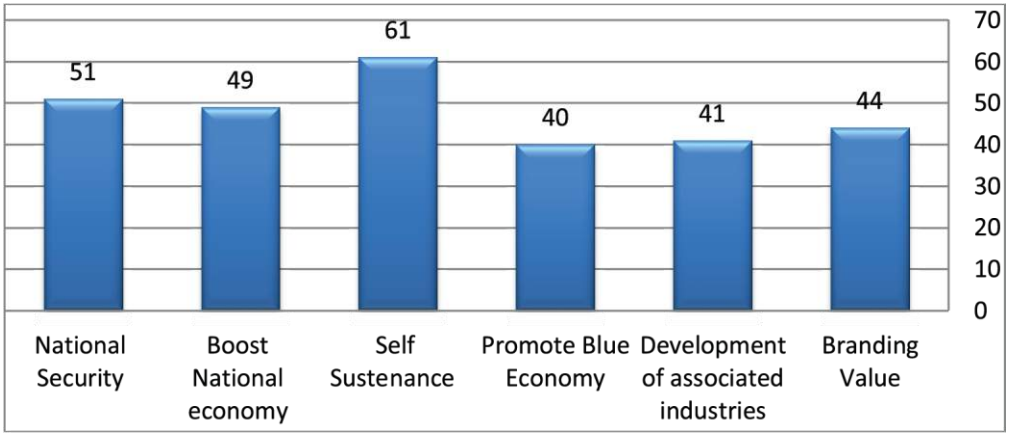
STRENGTHS	WEAKNESSES
• Cheap and available labour. • The production capability is about 3000-5,000 tons per year. • Experience in medium type warship building. • Skilled manpower in both merchant ship and warship building.	• Space limitation for new construction. Due to Rupsha Bridge KSY can't build ship with a height of more than 20m. • Lack in marketing. • CDDL can build ship with 09 m draft, KSY with 04 m draft and 1000-ton displacement. • Lack in Research & Development cell.
OPPORTUNITIES	**THREATS**
• Creating employment chance. • Development of delicate men. • Exporting ship within the world market.	• Competitive market. • Old Side Track. • Financing.

Source: Author's self-construct

BUILDER NAVY- A STRATEGIC CHOICE FOR BANGLADESH

Bangladesh Navy is already in the transformation process of becoming a builder navy from buyer navy. The study respondents mentioned that if should be a strategic choice for Bangladesh for the following reasons:-

Figure 3: Shipbuilding a Strategic Choice



Source: Researcher's construct Based on Survey Data

Employment. Shipbuilding can employ huge people. It can be a strategic choice for Bangladesh to develop shipbuilding industries as a whole and warship building in particular (Zaman, 2018).[4] Western marine Shipyard is an employment source of 3,500 manpower, DEW 550, KSY 1450 and CDDL 421 including skilled, semi-skilled labors. At present Bangladesh has an employment of about 1.5 lac of workers engaged in shipbuilding.

Financial Aspects. Warship building in local shipyards has got numerous advantages. A comparative study is shown below to understand the advantages:-

Table 2: Comparison of Expenditure- Local vs Foreign Shipyard

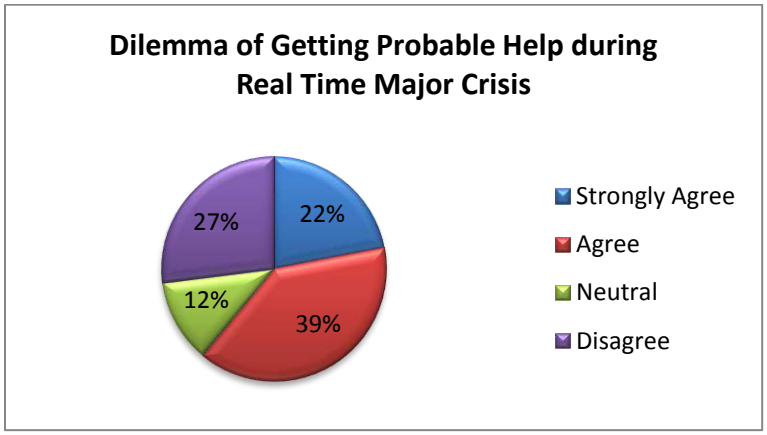
Description	Constructed in overseas ships (BNS DURJOY and NIRMUL)	Locally constructed ships (BNS DURGOM and NISHAN)	Remarks
LC Opening Charge	BDT 21,79,52,000.00	Not applicable	Extra Expenditures
Collection Charge	BDT 1,36,22,000.00	Not applicable	
Swift Charge	BDT 3,000.00	Not applicable	
TA/DA for overseas Training purpose	Huge amount	Not applicable	Extra Expenditures
TA/DA for Handing Over Ceremony in overseas	Huge amount	In country small amount	
VAT and Tax	Government does not get any VAT and Tax from supplier	3% VAT amounting taka 237942468.90 deposited to government treasury	Better for government economy
Solving Discrepancies	48 months	18 months	Ship remain non-operational due to various problems

Source: Researcher Construct Basing on Data Collection during Visit to DGDP and interviewing DDTS, NHQ

National Security

The respondents were asked about their thoughts on recent Rohingya crisis and role of few friendly nations. In response, 84% of the respondents agreed the situation while 15% gave neutral response and only 1% didn't agree. The experts have also identified warship building as a prime requirement for achieving self-reliance to ensure national security.

Figure 4: Dilemma of Getting Probable Help During Crisis



Source: Researcher's construct Based on Survey Data

A chi-square test is carried out with responses of the respondents who think transformation is strategic choice and with the responses of serious dilemma of getting probable help during real time major crisis. The test is found significant.

Table 3: Responses on Probability of Getting Help during Crisis

Strategic Choice	Serious dilemma of getting probable help during real time major crisis		Total
	Positive response	Negative response	
Yes	57	6	63
No	5	6	11
Total	62	12	74

Source: Researcher's construct Based on Survey Data using SPSS Software

The Pearson Chi-square result from the SPSS showed that the positive and negative both the two responses on serious dilemma of getting probable help during real time major crisis are significantly related.

Table 4: Pearson Chi- Square Test to Show Relationship between Responses

Chi-Square Tests					
	Value	df	Asymp. Sig.(2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.971[a]	1	.000		
Continuity Correction[b]	10.854	1	.001		
Likelihood Ratio	10.815	1	.001		
Fisher's Exact Test				.002	.002
Linear-by-Linear Association	13.782	1	.000		
N of Valid Cases	74				

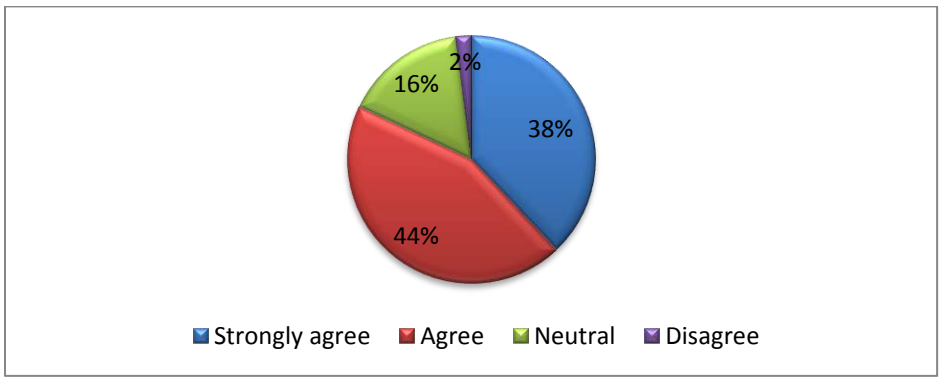
a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.78.
b. Computed only for a 2x2 table

Source: Researcher's construct Based on Survey Data using SPSS Software

Self –Sustenance

Crisis Moment Help. Among the respondents 38% strongly agree that in real time crisis we may not get support from friendly nation while 44% just agree and 16% remained neutral. Only 2% respondents disagree and said that we may get some support from the friendly countries like India and China during real time crisis.

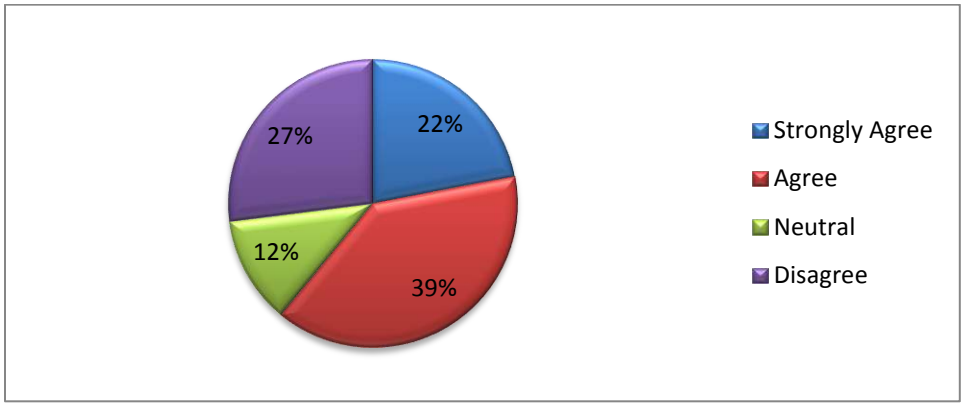
Figure 5: Respondent Opinion on Crisis Moment Assistance



Source: Researcher's construct Based on Survey Data

Perception on negative impacts of dependency on foreign nations on the procurement of warships showed mixed result. More than 61% respondent thought that this dependency has negative connotation while 27% were disagree with this comment and 12% were neutral.

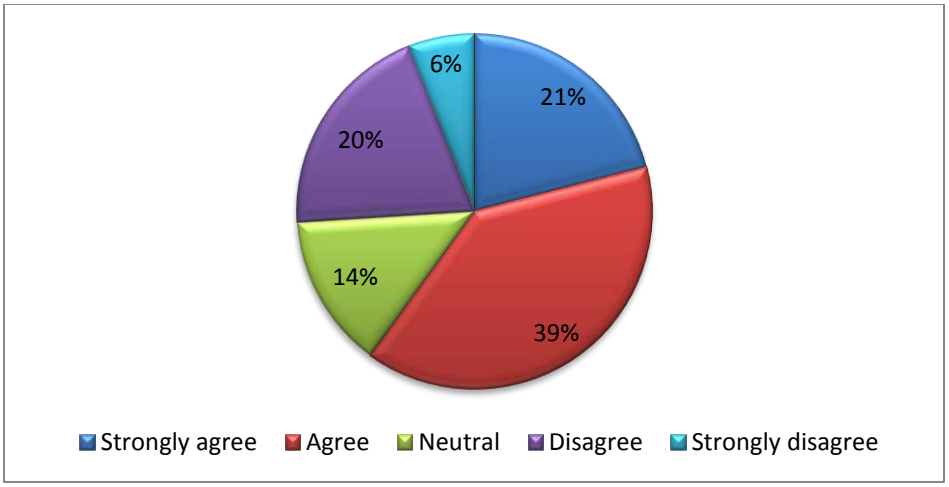
Figure 6: Respondent Opinion on Foreign Dependency on Shipbuilding



Source: Researcher's construct Based on Survey Data

Respondents are also concern about the warranty claim of the procured warships. The respondent's perceptions on lengthy procedure for foreign procured warships are appended below:-

Figure 7: Respondent Opinion on Lengthy Procedure



Source: Researcher's construct Based on Survey Data

Respondents Response on Strategic Choice

A Chi-Square test is carried out with responses of the respondents who think transformation is strategic choice with the responses of the people who think negative impacts of dependency on foreign nations on the procurement of warships found not significant.

Table 5: Responses on Negative Impacts of Dependency on Foreign Nations

Strategic Choice	Responses of the people who think negative impacts of dependency on foreign nations		Total
	Positive response	Negative response	
Yes	41	22	63
No	4	7	11
Total	45	29	74

Source: Researcher's construct Based on Survey Data using SPSS Software

The Fisher's Exact Test (Since one cell has less than 5) result from the SPSS showed that two responses are not significantly related.

Table 6: Pearson Chi- Square Tests to Show Relationship between Responses

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.240[a]	1	.072		
Continuity Correction[b]	2.147	1	.143		
Likelihood Ratio	3.162	1	.075		
Fisher's Exact Test				.097	.073
Linear-by-Linear Association	3.197	1	.074		
N of Valid Cases	74				
a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.31. b. Computed only for a 2x2 table					

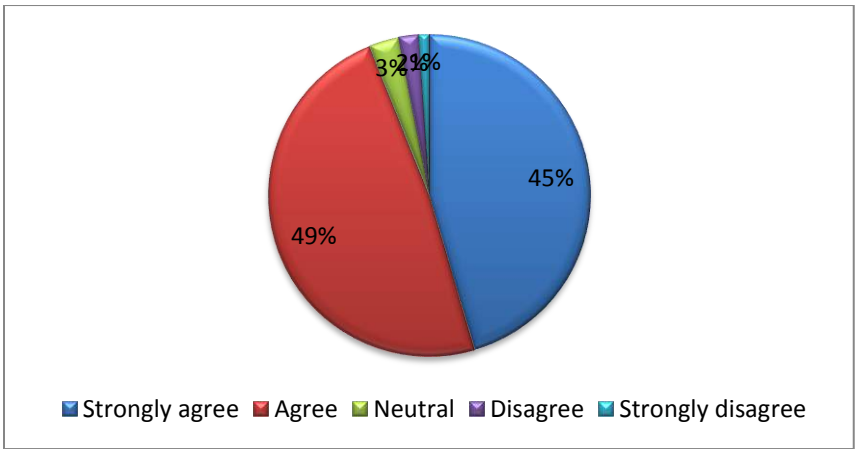
Source: Researcher's construct Based on Survey Data using SPSS Software

Brand Value

Powerful, smart and positive branding of Bangladesh is needed to boost its standing in the global arena. *Indigenous warship building has a great brand value in the global*

economy. Among the respondents' more than 90 percent are agree with the thought that after RMG warship building could be the next "Branding" for Bangladesh. Only three percent of the respondents didn't agree with this though because of different challenges while rest 3 percent were neutral.

Figure 8: Respondent Opinion on Branding Bangladesh

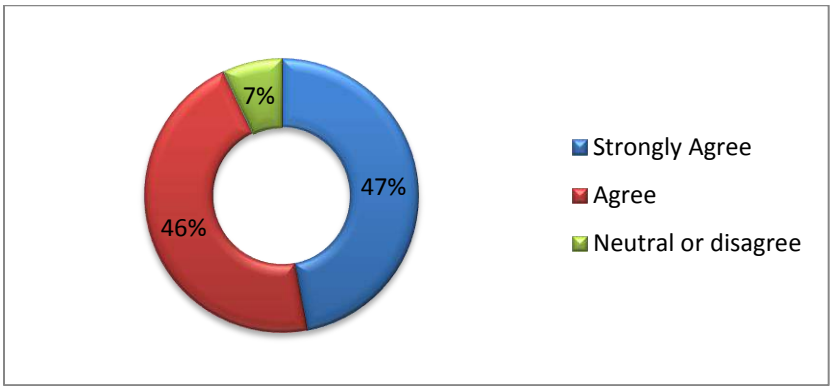


Source: Researcher's construct Based on Survey Data

Generating Revenue

Shipbuilding is one of the most potential revenue generating sectors. Ninety three percent of the respondents think after RMG sector BD needs to develop a potential sector for earning revenues to fulfill her vision 2041. Only 7% respondents provide different response.

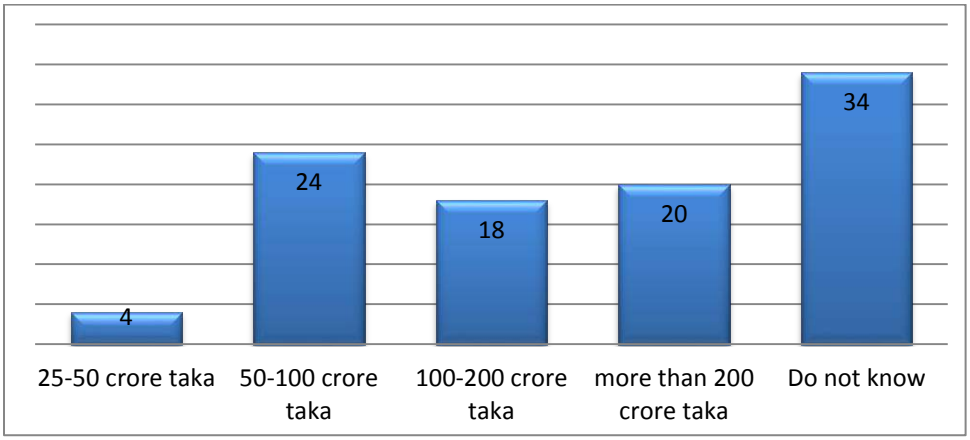
Figure 9: Respondent Opinion on Revenue Generation



Source: Researcher's construct Based on Survey Data

Respondents also think that, profit margin in a fiscal year BN shipyard may earn more than 200 crore taka once BN turns into a builder navy.

Figure 10: Respondent Opinion on Revenue Generation



Source: Researcher's construct Based on Survey Data

Responders Respondents on Potentials of a Builder Navy

The respondents also provide very positive responses in the relevant opinions. Following table showed the summary of those responses:-

Table 7: Pearson Chi- Square Tests to Show Relationship between Responses

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Shipbuilding industry can be effective in solving unemployment problem of BD*	38%	53%	5%	3%	1%
Increase export potentials, employment of PRO, lobbyist and utilization of BD foreign embassies in different countries can be considered*	24%	61%	14%	-	1%
BD shipyards should participate in various international defense expo's*	23%	68%	8%	1%	

* Significant and 0.05 level.

Source: Researcher's construct Based on Survey Data using SPSS Software

Hypothesis Test

Our Null hypothesis (H_0) was "Transformation from buyers to builder's navy is not a strategic choice for Bangladesh", while the alternative hypothesis was (H_A) Transformation from buyers to builder's navy will be a strategic choice for Bangladesh. This hypothesis was validated with the following four aspects:

a. By statistically and analytically finding out the trend of warship building in BN and existing opportunities in the world.

b. By statistically and analytically finding out the negative impacts of dependency on foreign nations on the procurement of warships.

c. By statistically and analytically finding out the necessity of transforming into a builder Navy.

d. By statistically and analytically finding out pragmatic measures to become a Builder Navy.

From the above analysis our findings are:

Table 8: Hypothesis Validation Test

Validation Area	Conclusion From the Perception Survey
By statistically and analytically finding out the trend of warship building in BN and existing opportunities in the world.	Statistical model of revenue and year is statistically significant and increasing over time.
By statistically and analytically finding out the negative impacts of dependency on foreign nations on the procurement of warships.	Perception of the respondent is statistically significant (Chi – square test)
By statistically and analytically finding out the necessity of transforming into a builder Navy.	Perception of the respondent is not statistically significant (Fisher's Exact test)
By statistically and analytically finding out pragmatic measures to become a Builder Navy.	Perception of the respondent is statistically significant (Fisher's Exact test)

Source: Researcher's construct Based on Survey Data using SPSS Software

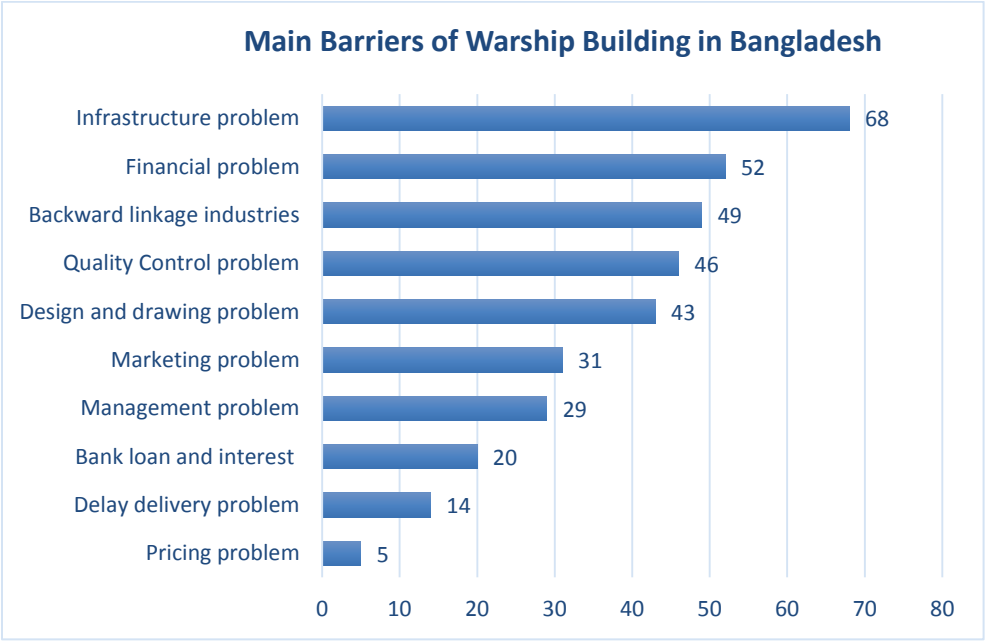
So, three out of four validations we found are statistically significant. So, we can say that, we fail to reject our null hypothesis and hence Transformation from buyers to builder's navy will be a strategic choice for Bangladesh is significant from the perception survey.

CHALLENGES AND WAYS AHEAD IN TRANSFORMING TO A BUILDER NAVY

Main Barriers of Warship Building in Bangladesh

The researcher carried out survey on the hindrances to warship building. Among the respondents' majority persons think infrastructure, financial problem, backward linkage industries, design and marketing are the main barriers of warship building in Bangladesh. The resourse personels of shipbuilding sector have also identified same problems as main bariers of warshipbuilding in Bangladesh.

Figure 11: Main Barriers of Warship Building in Bangladesh



Source: Researcher's construct Based on Survey Data

Infrastructure Problem. Among the respondents' 68 percent mentioned that infrastructure problem is the main barrier for warship building in Bangladesh. Bangladesh has got numbers of shipyards which are yet to develop the capability of warship building. BN administered shipyards are also not fully equipped to undertake larger platforms.[5]

Financial Problem. It has been observed that financial problems are the second (52 percent) barrier of warship building in Bangladesh. Shipbuilding itself is a highly capital intensive industry and warship requires even higher monetary support. Many of the local shipyards are not interested in building larger ships and also warships due to lack of

adequate working capital, high interest rate on industrial loan and high import LC margin.[6]

Lack of Backward Linkage Industries. From the respondents' 49 percent mentioned lack of backward linkage industries as one of the main barriers of Bangladesh. Unfortunately, in comparison to many warshipbuilding nation India, Korea, Malaysia, Singapore, Indonesia, Malaysia, Brazil; Bangladesh lacks in classified marine equipment's.

Lack of Design Capability in Shipyards. Design and drawing is the most critical and sophisticated part of shipbuilding. Specially warship requires a proven design and drawing. Bangladesh do lack in developing design inedpendently.

Marketing Problem. Marketing has been identified by many expets and senior leaderships of Bangladeshi Shipyards. Specially, BN administered shipyards do lack in marketing strategy in the global arena.[7] Appropriate marketing strategy to be adopted to gain more success, profit and exploit export potentials from shipbuilding.

Supply Chain Management in Shipbuilding. Major items required for any shipbuilding are design, construction materials, equipment, etc. In addition to these military vessels need military hardware. None of the shipyard in the world produces any of these. So, for constructing a ship, a shipyard first need at least one established supply chain for all of these (in most cases you need multiple options for supplier). All of the Bangladeshi shipyards seriously lag in this.[8]

Low Productivity. Bangladesh is lagging behind in the productivity of the workers in comparison to many other countries. A drawn comparison of the cost and productivity of few shipbuilding countries and Bangladesh reveals that India and China, are the nearest comparators, are 2.5 times away and Korea is 04 times away in terms of labor cost alone.

Table 9: A Comparative Productivity Cost

Country	Weighted Labor Rate	Weighted Productivity	Weighted Average Output Cost
Bangladesh	0.5	1.0	0.50
India	1.5	1.2	1.25
China	1.5	1.4	1.07
Korea	6.0	3.0	2.00
Singapore	4.0	2.0	2.00
Germany	15.0	5.0	3.00

Source: Shipbuilding in Bangladesh (CPA, 2018)

Ways Ahead to Overcome the Challenges

Every new venture always face some challenges but proper vision, strategic decisions and willingness can over come those. From the discussion it is clear that transformation from buyers to builders navy has some strong berriers but those are managable. Some recommendations from the respondents are given below to overcome the barriers.

Figure 12: Ways to Overcome Barriers of Warship Building in Bangladesh

Source: Researcher's construct Based on Survey Data

Transfer of Technology. Among the respondents, 83% recommend to transfer the technology with othership building nations. Most of the navies are building warships in a collaborative approach through joint venture. Bangladesh may venture joint collaboration to build warship locally with some western shipyards in order to gain proficiency in warship building.

Research and Development. Bangladesh shipbuilding industries do lack in research and development. The technology is continuously changing and shipbuil;ding market is also quite unstable sometimes. Appropriate R & D will help to understand the limitations, market demand and technologicla upgradation in this field.[9]

Government Support. Patronisation from government is also very important. More than fifty percent of the respondents mentioned about it. Actually, all the recommendations can be implemented if Government patronise.[10] Government should increase the budget for infrastructure and establish backward linkage industries.

Management of BN Shipyards. The main weaknesses are logistics chain and financial solvency. Right now BN is operating 3 in number commercial shipyard / dockyard. The

experience / efficiency / infrastructure are not shared. Rather they are competing with one another in many cases. To solve this problem, all the three yards may be brought under one umbrella of a group of company.[11]

Aspiration vis-à-vis Development Strategy. The success of warship building in Bangladesh will depend on many factors which are listed below:-

a. Adequate Finance for infrastructure building

b. 3 to 4 years time to build up adequate infrastructure

c. Find a logistics supplier with complete "design and material" package (that means the company will supply the desing and all the materials) and the same company have to be ready to transfer technology (TOT).

d. The first project should be at least for 3 ships (better 6 ships) divided in 3 batches. The first batch will be constructed in the suppliers country where the Bangaldeshi people learn. The second batch will be build in Bangldesh where the supplier will assist. The 3rd batch will be build independently by the Bangldeshi people.

e. Experienced people in shipbuilding will have to be placed at right place.

Conclusion

Shipbuilding is an important and strategic industry and it has one of the highest multiplier effects among all industries.he researcher tried to validate the hypothesis systematically through various chapters. In Chapter II, various potentials of shipbuilding were discussed. In Chapter III, present capacity of BN administered shipyards were discussed. Subsequently, the strategic aspects of shipbuilding were widely discussed in chapter IV. The likely challenges in the transformation process have been discussed in Chapter V. Thereby, it can be deduced that transition from buyer's Navy to Builder's Navy will be a strategic choice for BN. Thus, step of validating the hypothesis as mentioned in Chapter I is accomplished. All steps of validating hypothesis are completed and **hypothesis is accepted**.

Having proven the hypothesis, researcher has discussed ways ahead to facilitate process. Researcher proposed for a two-folded solution by the organization. Firstly, set up a plan and strategic framework needs to be done like government support, exploring suitable partner, probable buyers, marketing strategy, etc. Then infrastructure development along with Research and Development section to be developed. Few important measures to ensure effective capacity building have also been proposed. The suggested ways to transform buyer's to builder's Navy was properly validated through survey results, FGD and interviewing senior officers.

Recommendations

Basing on the findings of the research, the following recommendations are made:-

a. A Board of Officers under Material Branch may be formed to identify the potentials of shipbuilding and scope of capacity enhancement. Researchers proposed measures may be considered by the board for further study.

b. All the three yards may be brought under one umbrella of a group of company. Each of the shipyards will have their independent management (just like present one) but only the Board of Directors will be same for all the yards. If this can be done, then the yards will act as sister concerns to one another and share resources.

c. Government may formulate policy for all types of shipbuilding including warship and allocate adequate budget to facilitate the expansion and development of the sector. Government, through Bangladesh Bank, should reduce the L/C charges further to 1%. Import duties for domestic shipbuilding to be adjusted and brought down so that relative advantage of building ship locally with imported quality items over importing the whole ship is clearly visible.

d. To support the shipbuilding industry some of the basic infrastructures like design house, modern laboratories, cavitation tunnel, towing tank, etc. need to be set up.BN may set up one design house for all three BN shipyards.

e. Considering the market potentials, BN should build warships of sizes frigates, corvettes and merchant ships like oil tanker, cargo vessels of medium sizes. BN should apply appropriate marketing policy to exploit the market potentials.

f. Fostering joint venture, FDI and Domestic Demand is a must to transform into a builder navy. All BN shipyards may explore opportunities of technology transfer and joint venture deal with friendly countries through extensive engagement for warship building.

g. Continuous research on this sector is of utmost importance. Strong research and development work to be undertaken by BN shipyards to keep pace with the changing technology.

Further research can be carried out on the following issues as found out by the researcher:

a. For further validation of the hypothesis, a larger sample may be taken. Suitable statistical tests may be carried out on the data to retest the validity.

b. Research may be conducted to find out the export potentials of warship building, scope of cooperation among major shipyards of BN, and modes of joint venture shipbuilding.

Notes and References

1. See Chittagong Port Authority Annual Report, 2018
2. An Interview with Professor Rasheduz Zaman, University of Dhaka, at DSCSC Library on 04 September 2018
3. See Chittagong Port Authority Annual Report, 2018
4. An Interview with Professor Rasheduz Zaman, University of Dhaka, at DSCSC Library on 04 Sep 2018
5. An Interview with Cdre M Monirul Islam,(E), psc, Dean NAME,MIST at MIST on 29 Aug 2018
6. An Interview with Cdr Fida Hasan, (E),psc, BN, DDTS at NHQ on 25 Sep 2018
7. An Interview with Cdr Abul Bashar,(E),psc, BN, DDNE at NHQ on 25 Sep 2018
8. An Interview with Cdr Fida Hasan, (E),psc, BN, DDTS at NHQ on 25 Sep 2018
9. An Interview with Cdre Anisur Rahman Mollah, (L), psc, Managing Director, KSY at KSY on 25 May 2018
10. An Interview with Capt Sajedul Karimn, (E), psc, GM, CDDL on 31 August 2018
11. An Interview with Capt Enayet Kabir,(E), psc, Director of Ship Building at at Naval Headquarters on 30 August 2018

Brief Biography

Cdr K M Nazrul Islam, psc, BN(E) was commissioned on 24 Jun 2002. He has completed his marine engineering specialization course from BNS SHAHEED MOAZZAM, Kaptai, Chattagram. He participated in 'Officers Bomb and IED course' in Bangladesh Army. He has served onboard various ships and bases of Bangladesh Navy in different capacities. Some of his appointments include Staff officer to Director technical stores at Naval Headquarters, Engineer Officer of BNS Prottoy, Durjoy, Nirmul, Tista, Khadem, Mohibullah. The officer took part in the UN mission with BNS NIRMUL as Engineer Officer in UNIFIL, Lebanon. He also attended Junior Staff Course in BNA. He has graduated from DSCSC, Mirpur, Dhaka. The officer visited India, Pakistan, Srilanka, China, Malaysia, Oman, Saudi Arabia, UAE, Lebanon, Turkey. He is married to Lt Cdr Meherun Nahar, BN(S) and blessed with a son and a daughter.

SIMULATOR BASED FLIGHT TRAINING IN BAF: IT'S EFFECTIVENESS ON OPERATIONAL READINESS

Wing Commander Md. Haroon-ur-Rashid, psc, GD(P)

Introduction

The advancement of computer and electronic technology in the present century has also made remarkable improvement in the field of aviation simulation training. The capabilities offered by simulation have created unlimited opportunities for aviation training. In fact, aviation training is now more realistic, safe, cost-effective, and flexible than ever before and can generate training environments very close to the actual situation in which aircrews can acquire and practice most of the normal, emergency and combat maneuvers.

Military aviation dealing with the combat aircrafts need more efficiency in aircraft handling as it is complex task oriented and highly demanding. Sound and effective training is the foremost requirement for achieving the operational readiness in military flying. Air Forces throughout the world are focused on ensuring high levels of operational preparedness through peace time exhaustive training. With the advancement in the flight simulation technology, military aviators also found simulator as a pragmatic and realistic solution to reduce their training cost and increase the operational readiness through rehearsal with much safety.

Recently BAF has upgraded its fleet in all three streams and acquired more sophisticated and digitized platform. But the full potential of those newly inducted system cannot be exploited without appropriate training. BAF being constraint by its budget, need to limit itself while generating the actual flying hours due to the high fuel, maintenance and other depreciating costs of aircraft. To that end, simulator based flight training may offset her portion of training requirement while maintaining the cost effectiveness vis a vis operational readiness of the pilots. As such, recently BAF has inducted the latest and upgraded simulation system in its inventory. But, merely inducting the system is not going to be effective unless proper utilization, appropriate policy and recognition is in effect. In that backdrop, the present BAF simulator based flight training need to be evaluated so as to ascertain its effectiveness in operational readiness as well as cost effective training. This research may result in specific to broad findings of simulator based training towards the operational preparedness of BAF. The evaluation will ultimately guide BAF for determining the future options too.

Aim

To determine the effectiveness of Simulator based flight training of BAF for maximizing the operational readiness while reducing training costs in today's fiscally constrained environment of BAF.

EVOLUTION OF FLIGHT SIMULATOR AND ITS NECESSITY

Evolution of Flight Simulator

The first flight simulator was used in 1910 for training which consisted of two barrel halves, one placed on a pedestal and the other which represented a swinging cockpit.[1]

Figure 1: The first simulator in 1910

Source: Author's collection

Gradually during the First World War, practices of spatial orientation were given to the pilots through flight training machines. The best-known early flight simulation device was the Link Trainer, produced by Edwin Link in Binghamton, New York, USA, which he started building in 1927.[2] At the start of the Second World War, the need arose for the training of very large numbers of pilots and almost 10,000 Link Trainers were produced to train 500,000 new pilots from allied nations.[3]

Figure 2: Link Trainer in the World War II Gallery at the National Museum of the USAF

Source: Author's collection

After the end of World War II, advances in electronics made flight simulators possible to simulate instruments and control systems and thus simulators were also introduced in civil aviation.[4] With the progress of computer technology at the end of the 70s, three-dimensional landscapes were developed and the development continues to this day. Now, the simulator landscapes are almost indistinguishable from the real world.

Necessity of Flight Simulator

Flight simulators offer unique training advantages not available in real aircraft. Aircraft are primarily for flying, and simulators are primarily for teaching. Flight simulator training is now an integral part of the processes of pilot training and professional development due to many reasons. Some of them are depicted below:

a. **Building Situational Awareness**. Despite the high level of automation of modern combat aircraft, military flying still possess heavy psychophysical load to the pilots. The growing complexity of technical systems also increases the burden on the operators. So, mastering the operator's action, a long and costly process, can be done on ground with appropriate flight simulation in a cost effective way.[5]

b. **Emergency and Procedure Training**. There are many emergencies like engine failure; spin in jet aircraft, tail rotor failure in helicopters etc. which are not feasible to practice in real aircraft. All those emergencies are possible to practice in realistic scenario in the simulator and thereby pilots become familiar with the emergency situation and its corrective action.[6]

c. **Advance Maneuver's and Weapon Delivery Training**. Practicing weapon delivery in real situation demands lot of effort and planning for many agencies. Here, flight simulator remains as a viable option to meet such demands. Again, before having considerable experience, young pilots can master their combat manuevres in flight simulator which will ensure better safety in an actual mission.[7]

d. **Safety.** The first and obvious benefit of using a flight simulator for training is the safety of the training operation itself. In this safe environment a trainee can make mistakes and errors and learn from them, perform and repeat normal and abnormal procedures which may not be considered appropriate or safe when flying with a real aircraft.[8]

e. **Cost Effective Training**. Although a flight simulator is also expensive for initial set up, but it has been proven to be the most cost-effective method for training pilots in the long run. More so, it can be operated without damaging the real aircraft and can also enjoy a long life with lesser maintenance cost.[9]

Limitations of Flight Simulator

Flight Simulators though shows many positive sides in present day aviation training however it has also some limitation which also need to be kept in mind. Some of those limitations are described below:

a. **Simulator Sickness**. Most simulators cannot accurately produce the correct amount of movement to correspond to the movement that the screen is showing to our eyes, this might cause motion sickness. The small space inside an enclosed simulator mixed with lack of full motion can also cause simulator sickness.[10]

b. **Maintenance Problem**. Simulators operation are mostly software based which are normally not available other than the manufacturing company. As the simulators get old and the software's become backdated and corrupted, it becomes difficult to maintain. At times the manufacturing company also becomes unable to troubleshoot the software.[11]

c. **High System Cost**. The initial cost of a Full Flight Simulator with its total system is higher or almost similar to the latest combat aircraft/helicopters. But the simulator cost goes quite high comparing to the price of the basic trainer aircraft. As the benefits of the simulators are also intangible, so it becomes difficult for the Air Forces with budgetary constraints to prioritize this over other equipment.

PRESENT STATE OF SIMULATOR BASED FLIGHT TRAINING IN BAF

BAF first inducted simulator back in 1983. Since then, BAF had operated some simulators like PT-6 simulator, L-39 simulator, FT-5 simulator and a helicopter simulator. However, all those simulators are phased out after their useful utilization and at present BAF is having only two serviceable simulators. One is for Yak-130 and another for Mi-171 helicopter.[12] Both the simulators are inducted recently and state of the art simulator. If the Flight Simulator Training for BAF is considered, may be divided in following categories:

a. Basic Flying Training
b. Jet/Fighter Flying Training
c. Transport Flying Training
d. Helicopter Flying Training

Basic Flying Training. BAF had an on Type simulator for the basic students of PT-6 ac which has been phased out on Dec 2017. Instructors and senior leadership also realizes the necessity of replacing the phased out simulator with a more realistic one. BAF is

actively processing to have a new advanced on type Full Flight simulator for Basic students.[13]

Jet/Fighter Flying Training. Recently BAF inducted the simulator for Yak-130 aircraft with the same contract while procuring the aircraft. This is the only jet/Fighter simulator presently available in BAF. BAF may think of inducting simulator for F-7 series fighter as BAF has a considerable number of F-7 series fighters with sufficient life.

Transport Flying Training. So, far BAF did not have any transport simulator. The reason behind not to have the simulator are likely to be the cost effectiveness and relatively smaller transport fleet.[14] However. The importance of simulator in transport aircraft is as equal to the other stream. Abroad training may be one of the temporary solutions till fighter or transport platform receive any simulator.

Helicopter Flying Training. BAF has recently inducted a Level-D Full Flight Simulator in BAF Base Bashar, Tejgaon for Mi-series helicopter on Sep 2017.[15] This simulator meets all the highest level of FFS qualification currently available in the world.

EVALUATION OF SIMULATOR BASED FLIGHT TRAINING IN BAF ON OPERATIONAL READINESS

For the first time in BAF history a level-D Full Flight Simulator (Mi-17 Series) is inducted which is already functional from Sep 2017. Recently inducted Yak-130 simulator though does not have full motion but yet a very good platform to achieve proficiency on the aircraft. Following are its few training benefits of the Yak-130 and Mi-17 Series Simulator which helps in enhancing the pilot efficiency:

a. **Cockpit Procedure Training**. The full scale cockpit replica of the Mi-171 sh helicopter and Yak-130 makes the simulators more realistic for cockpit procedure training. In these simulators, pilots can practice right from the start up. Instructors also opined that the performance on the cockpit checks and procedure of the students has improved after simulator flying.[16]

b. **Different Phases of Flying Training**. Both the simulators are also capable of training the pilots in all the phases of flying like General Flying, Instrument Flying, Night Flying, Formation Flying, Armament Flying and Navigation Flying. In Yak-130 simulator, pilots can also practice air to air interception. All this flying training provisions have created a versatile training scope for the air crews of BAF which they did not have previously.

c. **Emergency Handling Training**. Pilots can practice all types of emergencies in these simulators. The level of the emergency can also be controlled from IWS, which enables a pilot to be acquainted with different types

of emergency with actual reading.[17] Air crews can practice any emergency situation as many times necessary to gain confidence of successful handling.

d. **Different Types of Weather**. These simulators also allows the pilot to practice takeoff, flying, landing in rain, snow, haze, gusty wind, restricted visibility, wet runway and even strong wind can be added with direction and knots control. This creates a very realistic situation for a pilot to train and gain proficiency in bad weather flying.[18]

e. **Reduction of Training Period**. Training of aircrews are conducted in following a planned timeline. Simulator is placed indoor and there is no effect of weather on it. It is also capable to fly 24/7 without any limitations. It can generate bad weather conditions or change in night condition for the training of aircrews any time when necessary. Thus, aircrew training can be completed within planned time in simulator.[19]

f. **Mission Specific Training**. Presently, BAF helicopter crews are operating beyond the national boundary in United Missions. The terrain, weather characteristics and the operational environment in those countries are different than Bangladesh. In these simulators, similar conditions can be generated and aircrews can get training before deployment.[20]

g. **Training Mode and Target through IWS**. Pilots can even practice air to air missions in the Yak-130 simulator. It can produce other types of synthetic aircraft on the projector screen for the pilots to practice tracking and even firing. An instructor can choose all the weather, synthetic aircrafts, emergencies from the IWS with full authority for maximum and effective training.[21]

Reduction of Training Cost or Cost Effectiveness

Preparing an operational crew by training in real helicopter takes long time and involves huge cost. This cost includes the fuel cost, the cost of the aircraft and its maintenance. Moreover, manpower from different agencies like flight line personnel, air traffic services, meteorology department, medical squadron etc get involve for flying a sortie in the real helicopter. Considering all this, developed countries and civil aviation pilots gets a reasonable portion of training in the simulator, which incurs training cost. Civil Aviation Authority of Bangladesh (CAAB) has already made the ZFTT policy for level 'C' and 'D' simulator (Circular-03/2011, CAAB, 2014). Similarly, as the Mi-series simulator is level 'D' type, so training of the aircrews in the helicopter simulator is going to reduce the actual flying in a significant amount which is already visible in the provisionally approved syllabus of Mi-171 Sh (Mi-171 Sh Syllabus, 2018). Per hour cost of the Mi-17/171 helicopter is determined BDT 2,19,778/- and Mi-171 Sh is BDT 1,96,261/- (MOD letter, 2013) whereas, per hour simulator cost is approximately BDT 55,000/- only (assumed by calculating it's all aspect broadly). The study in Yak-130 will

also provide closely similar statistics. This shows that simulator based flight training is going to be cost effective besides its effectiveness in operational readiness.

CHALLENGES OF SIMULATOR BASED FLIGHT TRAINING IN BAF AND WAYS FORWARD

Recently BAF has procured upgraded simulator for Yak-130 simulator and first Full Flight Simulator (FFS) of Mi-17 series helicopter. As these are the new inclusion in BAF inventory, following challenges are identified by the user so far and most of which might be mitigated by proper planning and appropriate pro-active actions:

a. **Sensitivity of the Simulator**. The simulator is too much sensitive to weather like dust, humidity, moisture, etc. To protect the device from effects of those weather components, it is placed in a specialized air tight complex with 24 hours air conditioning system. Maintaining such weather condition through-out may become a challenge and costly affairs for BAF in future.

b. **Maintenance of the Simulator**. For proper maintenance of hi-tech, sophisticated soft and hard wares of the simulator devices, expert manpower is required. Currently, BAF having only few expert manpower on this simulator who are trained from abroad on the operation and maintenance of this simulator. BAF needs to plan training of more manpower on this simulator for overcoming the maintenance challenge in future.[22]

c. **Availability of Spare Parts**. It will be time consuming to make a part available in case of requirement. The HUD of the Yak-130 simulator is unserviceable for last few months which cannot be repaired also (Kalam, 2018). To overcome this challenge, BAF needs to plan in advance and prepare a healthy stock of spare parts to keep the simulator serviceable.[23]

d. **Physiological Feeling**. The simulator is static in a place and the motion of the aircraft is created by visual devices. Thus, discomfort body feelings may develop for some of the aircrews which results in vertigo, headache, vomiting tendency, etc. (Ahmed, 2018). Due to this, for Yak-130 pilot, it is prohibited to fly the actual aircraft after flying the simulator on the same day.[24]

e. **Shortage of Simulator Instructor**. Simulator instructors need additional expertise to teach the emergencies to the other crews. Currently, only four simulator instructors for this helicopter simulator are available in BAF. Some of them are also deployed in other duties. Due to the shortage of simulator instructors, the simulator is underutilized also. BAF needs to plan immediately for training more simulator instructors to overcome the challenge and utilize the simulator at its optimum capability.[25]

f. **Integration of the Simulator in the Existing Training System**.
The recognition of simulator hours and integration of this simulator in the existing training system is a challenge for BAF as the system is new. So far, no concrete policies were developed on the simulator training in BAF. A draft plan on the integration and utilization of this simulator in the training of helicopter aircrews are thought about and accordingly a training syllabus is already provisionally approved by Air HQ. Hopefully, with the passage of time, a comprehensive policy will be developed and the challenge of integration of the simulator in the BAF training system will be overcome.[26]

CONCLUSION

The evolution of simulator from its beginning till today shows a positive increase of the requirement of flight simulator. With the growing complexity of aircraft technology and its operating cost simulator is likely to be used even dominantly in future. Though it has got few limitations but its positive sides are many. Specially cost effective training with enhanced safety and situational awareness makes the simulator unique tool to enhance the professional competency of the pilots.

BAF first inducted simulator back in 1983. Most of those early simulators are phased out after their useful utilization and at present BAF is having only two serviceable simulators. One is for Yak-130 and another for Mi-17 series helicopter. BAF does not have any flight simulator presently for basic training. Senior leadership of BAF also feel the necessity of it and the induction of new simulator is on process to fulfil the requirement. For whole fighter stream, only available Yak-130 simulator cannot be sufficient though it seems very effective for the specific platform. BAF may think of inducting flight simulator for F-7 series fighter which has a sizable fleet in BAF with considerable life. On the other hand, transport flying are lacking in simulator platform due to its' meagre aircrew strength vis a vis higher cost of simulators. Abroad training may be one of the temporary solutions till fighter or transport platform receive any simulator. Recent induction of FFS for helicopter is a step forward for BAF in this domain.

Yak-130 simulator and BAF helicopter simulator of HSI provides scope for positive training to the aircrews. It is enhancing the pilot proficiency in Cockpit Procedure Training as well as in different phases of flying training. Most importantly it provides the unique emergency handling training and adverse weather flying which is not possible through real flying. It can also make a pilot proficient in different operational environment like desert or hill. Even combat missions like air to air interception mission can be practiced for the fighter pilots. In general, from the study it was found that professional competency of the pilots are enhancing through simulator based flight training which in turn contributes to the operational readiness of BAF. If effectively utilized and simulator training is maintained as per the provisionally approved syllabus of Mi-171 Sh, then each phase of training would be more cost effective besides its effectiveness in operational readiness.

Simulators are sophisticated device and maintaining those in our weather condition may become a challenge and costly affairs for BAF. For proper maintenance of these devices, expert manpower is also required. Non-availability of spare parts also makes maintenance questionable sometimes. Maintaining appropriate no of instructor, recognising and integrating the simulator in the training system would help it to be utilized in a more cost effective manner. The entire process revealed that the "Simulator based flight training" has a positive effect on aircrew flying training which ultimately contribute towards the operational readiness of BAF and minimizes the training cost as well.

RECOMMENDATIONS

Upon the findings of this research following recommendations are placed for enhancing the operational readiness of BAF through simulator based flight training:

a. BAF may expedite procurement of flight simulator for basic flying training.

b. BAF may include flight simulator for F-7 series fighter in its procurement plan.

c. BAF may send her pilots abroad for maintaining simulator currency till simulator is established on the specific type of aircraft.

d. BAF may develop a comprehensive policy for appropriate integration and utilization of the simulator in the BAF training system.

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26. Wing Commander Md Shahariar Ahmed, Chief Instructor, HSI. (Personal Communication, 2018, August 29)

Brief Biography

Wing Commander Md. Haroon-ur-Rashid, psc was commissioned in GD(P) branch of Bangladesh Air Force on November 25, 1999. He holds operational category 'B' both in Bell-212 and Mi-17 series helicopter and flew more than 3200 hours in several types of aircraft during his service career. Some of his instructional and staff appointments in the service include: Instructor Pilot of 11 Squadron, Instructor Pilot and Flight Commander (Operation) of 31 Squadron and Instructor Pilot of 9 Squadron. He has also served in United Nations Peacekeeping Mission in MONUC, MINURCAT, UNOCI and MINUSMA.

During his service career, he has undergone a number of courses both at home and abroad. Some of the notable courses he attended are: Flight Safety Officers Course; Junior Command and Staff Course and Flying Instructors' Course in Bangladesh Air Force. He has graduated from DSCSC, Mirpur, Dhaka. He has also undergone a flying course on AB-212 helicopter in K.S.A. Prior to the Air Staff Course, he served as an instructor pilot in 9 Squadron, BAF.

CYBER TERRORISM: AN EMERGING THREAT TO THE INDIAN NATIONAL SECURITY

Major Gurbhej Singh, psc Indian Army

Introduction

Terrorist threat is not new to Indian Nationhood and Indian Armed Forces are more than capable of defeating the notorious design of these terrorists. However as Karl von Clausewitz in his book Ón War' had clearly mentioned about evolution of the warfare and stated that ''*If you entrench yourself behind strong fortifications, you compel the enemy seek a solution elsewhere.*''[1] The analogy is befitting the present situation of terrorists operating in the Indian mainland. These terrorists have constantly failed to breach the security apparatus of Indian Armed Forces hence to fulfill their unconstitutional demands they have started changing their modus operandi to continue their futile struggle. However, India's first tryst with a large-scale cyber terrorism attack was in 2012, which resulted in mass exodus of over 2.5 lakhs people with NE Indian origin from major south Indian cyber cities like Bangalore, Chennai, Pune based on threating messages circulated over internet. Ransom ware attack in June 2017 also indicated that current cyber security apparatus is vulnerable to these attacks.[2] On analyzing the manifestation and evolution of cyber terrorism threat in the world, it is observed that United States (US) is facing cyber threat for over a decade now. Based on the perceived threat of cyber terrorism United States developed a comprehensive response construct to counter the threat. At present, the US's response construct is efficient, prevented any major cyber terrorist attacks, and is able to protect its critical and non-critical infrastructure.

AIM

The aim of this paper is highlight the importance of integration of civilian –military organization to counter the emerging threat of cyber terrorism to Indian Nationhood.

UNDERSTANDING DYNAMICS OF CYBER TERRORISM IN INDIAN CONTEXT

Defining Cyber Terrorism

To simplify the understanding of cyber terrorism, it can be broken into its components and these can be separately defined. Cyber terrorism consists of cyberspace and terrorism.

> **Defining Cyberspace**. "Cyberspace is that intangible place between computers where information momentarily exists on its route from one end of the global

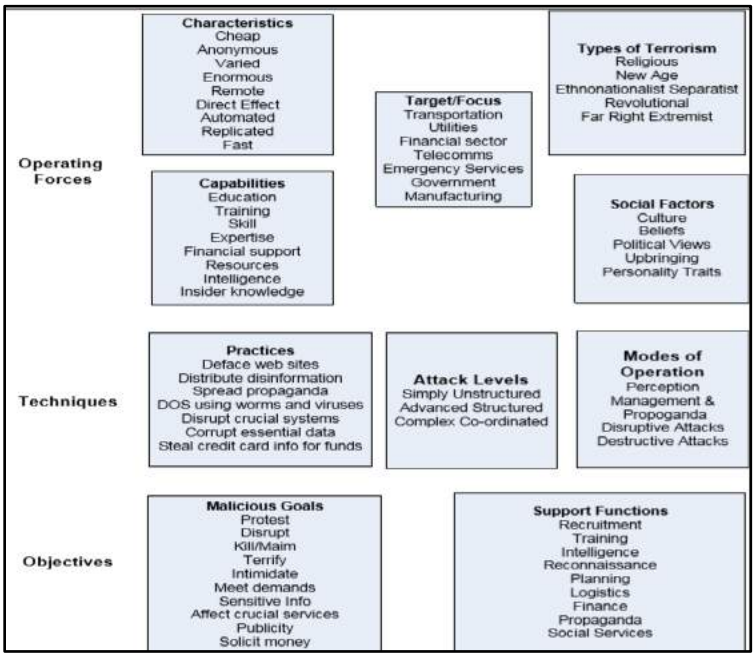
network to the other. Cyberspace is the ethereal reality, infinity of electrons speeding down copper or glass fibers at the speed of light from one point to another.

Defining Terrorism "Terrorism is an anxiety-inspiring method of repeated violent action, employed by (semi-) clandestine individual, group or state actors, for idiosyncratic, criminal or political reasons, whereby the direct targets of violence are not the main targets. The immediate human victims of violence are generally chosen randomly (targets of opportunity) or selectively (representative or symbolic targets) from a target population, and serve as message generators. Threat and violence-based communication processes between terrorist organisation, victims, and main targets are used to manipulate the main target (audience(s)), turning it into a target of terror, a target of demands, or a target of attention, depending on whether intimidation, coercion, or propaganda is primarily sought."[3]

Cyber Terrorism Elements

Framework for Cyber Terrorism. To develop a comprehensive strategy to counter the threat of cyber terrorism it is important to understand operating framework of the cyber terrorism. **N Veerasamy** in his paper 'Towards conceptual framework for cyber terrorism' gave a framework for cyber terrorism, which is shown below:-[4]

Figure 1: Cyber Terrorism Framework



Source: Paper of N. Veerasamy

Defining Critical Infrastructure

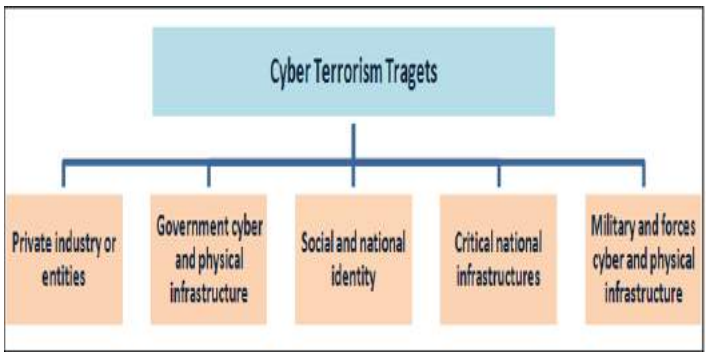
Critical Infrastructure. Infrastructure is defines as network of independent and private owned, man-made systems which assist in movement of commodities and described them as life line of a nation and infrastructure which are most essentials as critical infrastructure, it included transportation, oil and gas production, banking, emergency services, government services, electrical power and information and communication infrastructure.

India's Critical Infrastructure. With Increased reliance on internet many are heavily dependent upon internet. With Government's initiatives to promote e - governance in the country many other sectors like key sectors like banking, taxation, travel, passport, power & energy and stock markets are also brought under the realm of e-governance. To create havoc in India, these sectors are lucrative targets for the cyber terrorists to paralyze the economic, financial and security structure of the country and cause irreparable damage.

Targets for Cyber Terrorists in Indian Context

Likely Target Sectors. It is evident from previous studies that cyber terrorists will target critical infrastructure of a nation to cause destruction, to instill fear or create panic amongst the civilian population of any nation. The most of cyber terrorism attacks will be directed towards critical infrastructure of India, Likely target sectors are as depicted below-

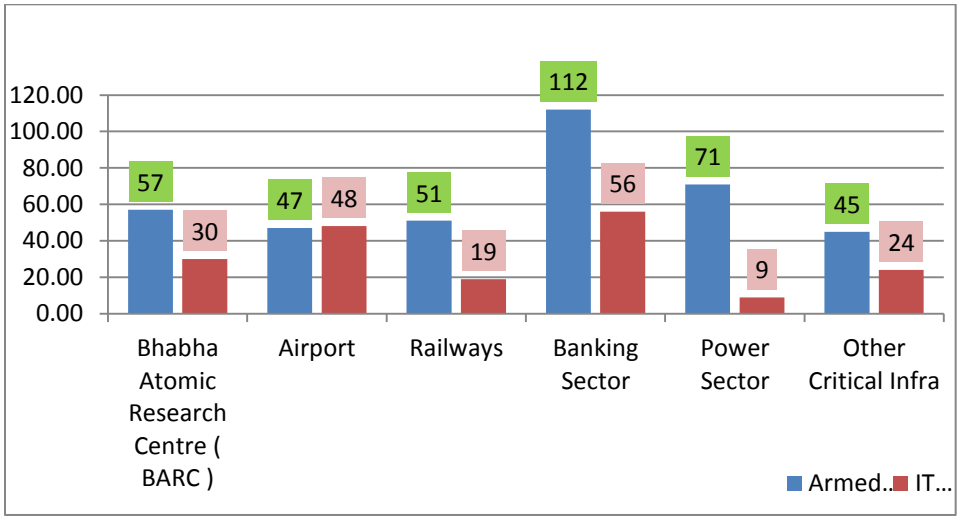
Figure 2: Likely Target Sectors



Source: Author's Construct Based on Survey Results

Most Plausible Targets. With planned digitization of India under intended flagship program of Digital India by the present government, the availability of targets to these terrorist are likely to increase in near future. Based on survey results the most likely targets for cyber terrorists are:-[5]

Chart 1: OPINION ON MOST LIKELY TARGET FOR CYBER TERRORISTS IN INDIA



Source: Author's self-construct

UNITED STATES' RESPONSE TO CYBER TERRORISM

Magnitude of Threat. Cyber threat from both state and non-state actors is the biggest security challenge for the government of US. Presently US is the leading country with respect to taking steps to counter the threat from cyber terrorism.[6]

US's Counter Cyber Terrorism Framework. The US's response to the threat of cyber terrorism can be illustrated with the help of figure 3, which apart from indicating three major phases also lay focus on legal aspects, national security, law enforcement and public private cooperation.

Figure 3: US's RESPONSE CHART

Major Steps Toward Effective Response to Cyberterrorism in the United States	
➢ The President's Commission on Critical Infrastructure Protection (PCCIP) ➢ Presidential Decision Directives (PPD) ➢ Publication of the National Strategy to Secure Cyberspace ➢ Homeland Security Act of 2002	
Legal Aspect	National Security
National Information Infrastructure Protection Act (NIIPA) Electronic Communication Privacy Act (ECPA) PATRIOT Act Federal Information Security Management Act (FISMA)	Information Analysis and Infrastructure Protection (IAIP) Directorate National Cyber Security Division National Infrastructure Protection Center (NIPC)
Law Enforcement	Public-Private Cooperation
FBI National Computer Crime Squad US Department of Justice Computer Crime & Intellectual Property Section US Secret Service	National Cyber-Forensics and Training Alliance (NCFTA) High Technology Crimes Task Force Computer Emergency Response Team/ Coordinating Center (CERT/CC) Forum of Incident Response and Security Teams (FIRST)

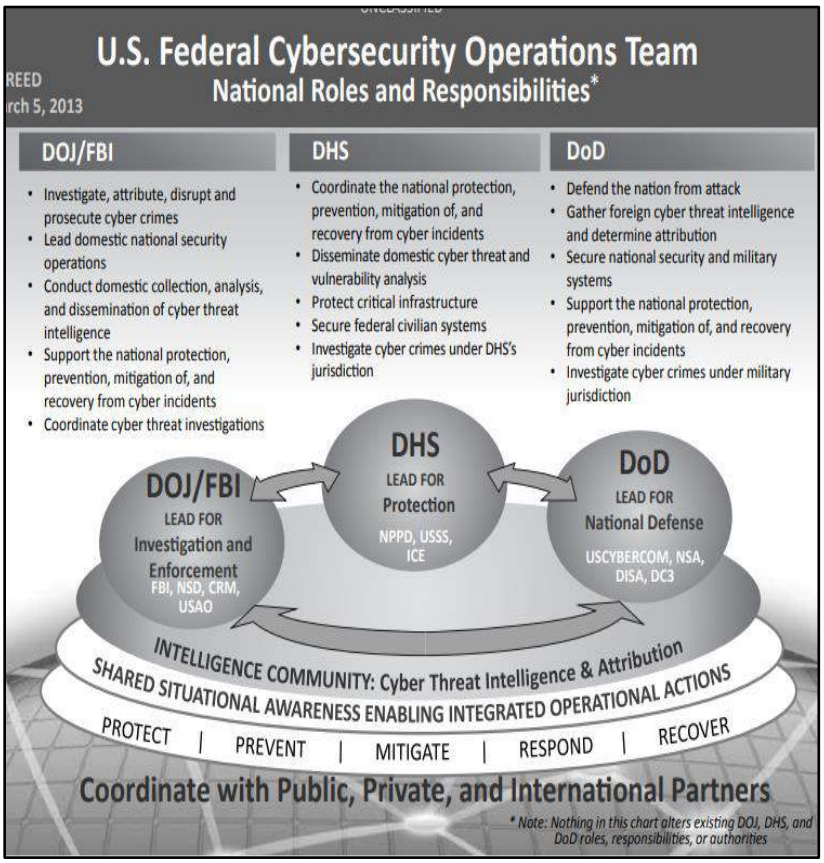
Source: Author's Construct Based on Survey Results

US's Response Construct

Unity of Effort. One of the key highlights of the US's response construct is that US government made a holistically effort to unify the federal approach to any of the cyber security threat to the nation. The present approach of the government provides the exceptional clarity and unity of effort. All these measures are still being refined to eradicate weaknesses and to adapt to changing nature of the threat.

Federal Response and Responsibilities. The White House acknowledged the need to bring all federal participants into single forum to achieve an effective cyber incident response. To achieve this Cyber Response Group (CRG) was constituted in 2014. The CRG unites the administrative, defense, law enforcement, intelligence, homeland security, diplomacy, and other elements national security to ensure unified approach to respond to rapidly emerging and ambiguous cyber threats. Figure 4 represents the inter agency division of responsibilities.[7]

Figure 4: US FEDERAL CYBER SECURITY ROLES AND RESPONSIBILITIES



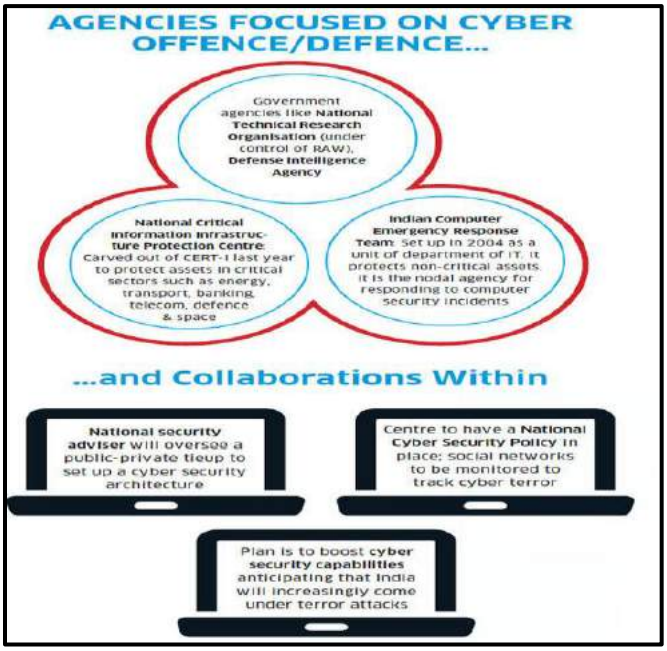
Source: Author's self-construct

NECESSITY OF INTEGRATING MILITARY AND CIVILIAN ORGANIZATIONS TO COUNTER CYBER TERRORISM IN INDIAN CONTEXT

India's Current Cyber Security Capabilities

The India's present cyber security capabilities are ranked 23 on UN Global cyber Security Index (GCI), this number is not desirable, and hence there is requirement to make the system more fool proof. The present system can be summed up as follows:-[8]

Figure 5: INDIAN AGENCIES RESPONSIBLE FOR CYBER SECURITY



Source: Author's self-construct

Shortcomings of India's Cyber Security Capabilities. On carrying out critical assessment of India's Cyber security capabilities following weakness get highlighted:

> **Lack of Unity of Command**. The response to any cyber incident is divided amongst various agencies, ministries and non-governmental organizations (NGO). It deprive Indian nation of a coherent and consistent response.
>
> **Ambiguous Role of Armed Forces**. Unlike the cyber security setup of United States as discussed in Chapter III, the role of Indian Armed Forces is not clearly mandated in the cyber security policy.

Overlapping Jurisdiction. In India's cyber security framework, various agencies have overlapping jurisdiction. For example, CERT – IN under Ministry of Communication and Information Technology (MCIT) and NTRO under Ministry of Defence work towards the common objective of protecting India's critical infrastructure.

Organization of National Information Board (NIB). The organization of NIB is too cumbersome with 21 secretary level member drawn from all organs of bureaucracy. The cumbersome organization would result in delayed response which can be fatal against cyber terrorism.

Public Private Partnership. The present setup does not have provisions to include private IT firms into cyber security gambit. As the critical infrastructure of the nation is increasing, it is very difficult for only government agencies to protect the entire critical / non-critical infrastructure of the country.

Lessons from United States Cyber Security Framework

Unity of Effort. One of the key highlight of US's response to cyber terrorism is unity of effort at national level. India also needs to ensure that at apex level there must be single agency responsible for countering cyber terrorism.

Legislation. Like US, India also needs to pass the acts in Parliament to ensure that unlawful activities related to computers should be criminalized. The work in this regards has already begun by enacting Information and Technology Act, 2000 (IT Act, 2000).

Information Sharing. Owing to speed of cyber terrorist attacks, there is requirement of having robust, networked and real time information sharing between various agencies and organizations. On lines of The Multi-State Information Sharing Analysis Center (MS-ISAC) of US, India must strengthen its present information sharing system.

Financial Allotment. Considering the nature of threat Indian government need the increase their spending on cyber security. As far as budget for cyber security is concerned, India had spent 7.76 million US dollar in 2013 as compared to 751 Million US dollars spent by the US in the same year.

Public – Private Cooperation. US have created four major organizations to enhance public – private partnership. India needs to follow the suit and ensure along with government agencies, private players are incorporated to ensure cyber security. [9]

Necessity of Integration of Efforts of Military and Civilian Organizations Fight Cyber Terrorism

Cyber Awareness. The present status of cyber awareness of Indian Army Officers is below par. Moreover, the level of expertise required to counter cyber terrorists will be quite high, hence it will not be feasible to train all officers to that level.

Present Capabilities. With the existing capabilities, neither Indian Army nor IT professionals working in various IT companies are suited to counter the threat of cyber terrorism. Hence, to ensure that shortcomings of both military and civil setup are adequately addressed, there is requirement of assigning complementing roles to each of them

Requirement of Mission Oriented Teams. On studying the US's response construct, one of the key findings is the formation of Forum of Incident Response and Security Teams (FIRST). FIRST teams consist of military, commercial, education and industry entities. The creations of FIRST teams have been successful in preventing any major cyber terrorist attack on US mainland. A professional cyber workforce should be created to counter cyber terrorists.

Composition of Mission Oriented Teams. The threat of cyber terrorism is multidimensional. It requires both facets of Indian security apparatus to work in harmony to ensure that critical infrastructure is not threated by these elements. Both military and civil IT sector have to be stakeholders in these mission oriented teams. The inclusion of military professionals and experts from IT sector will complement each other in India's fight against cyber terrorism.

Requirement of Cyber Security Specialists Due to ever evolving nature of cyber-attacks, there will be requirement of cyber specialists to defeat cyber terrorism. However, it is pertinent to understand that for Indian Armed Forces countering terrorism forms part of operations other than war (OOTW), which is not their primary mandate, so it will be difficult for Indian Armed Forces to devote maximum time and resources to train all ranks to become specialist in countering cyber terrorism. Therefore to fulfill the requirement of these specialists for protecting India's Nationhood from the menace of cyber terrorism there is need of training few specialists from Armed forces and incorporate others specialists from the IT sector.[10]

Quantitative Analysis

Survey Results. Survey result proves that neither Armed forces nor IT sector alone is cabable of defending the critical and non critical infrastcture of Indian Union. However, there is definite role that Indian Armed Forces must play to safeguard the nation from cyber terrorist attacks and on the same lines, Indian IT sector need to stand up and take responsibilty of protectecing critical infrastctutre of the nation.

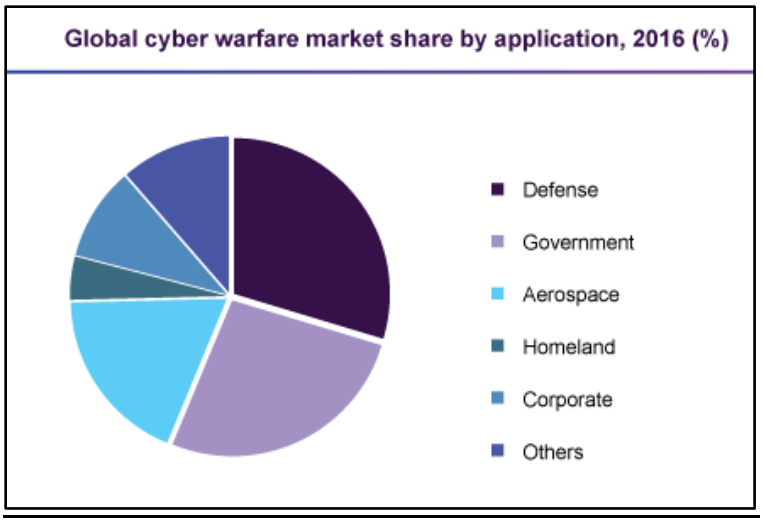
Pearson Chi Square Test On conducting **Pearson Chi Square Test** the value of P so obtained deduces that there is a significant association between integration of military and civilian organizations and effectiveness of countering cyber terrorism.[11]

Qualtative Analysis

Analysis of US's Organizational Structure. US's response construct have three main pillars of Department of Justice (DOJ), Department of Defence (DOD) and Department of Home Security (DHS). All these three departments do have separate mandate but work in cooperation with each other to counter cyber threat to US's critical/non critical infrastructure. At present, the US's response construct is efficient, prevented any major cyber terrorist attacks, and is able to protect its critical and non-critical infrastructure. The US's model can be emulated in Indian context to ensure that Ministry of Defence (MoD) and Home ministry enhance cooperation at apex level and Armed Forces and Civil agencies responsible for cyber security cooperate at operational level.

Global Response to Cyber Warfare. As per the statistics available in open source of year 2016, the major players in global cyber warfare market by application are defence,[12] government, aerospace, homeland and corporate.

Figure 15: GLOBAL CYBER WARFARE MARKET



Source: Author's self-construct

Based on findings of the research and analyzing global trends of year 2016, the importance of Civil – Military integration in countering cyber terrorism in Indian context cannot be ruled out.[13]

Road Map for Integration of Civilian – Military Organizations

Short Term. Indian Government may take the following steps in near future to counter the threat of cyber terrorism:-

> **International Alliances and Partnerships**. Establishing alliances and partnerships with friendly foreign countries will not only assist in defending against cyber threats but will also contribute towards international security and stability. Bilateral agreements signed with the United States, the UK and Republic of Korea are steps in the right direction. However, India needs to be develop alliance and partnerships with more countries especially in South Asia.[14]
>
> **Lateral Partnership with Other Organizations**. Lateral coordination and partnership by posting officers on deputation in various military and civilian organizations dealing in cyber terrorism / cyber-crimes.[15]
>
> **Cyber Courses**. Indian Armed Forces must plan to conduct short and long courses in cyber terrorism and qualified officers should be posted to various formation headquarters as per their grades/levels attained. These courses may be conducted in civilian establishment until the adequate infrastructure is created in armed forces.[16]

Long Term. Indian Government may plan take the following steps in in due course to counter the threat of cyber terrorism:-

> **Developing Cyber Culture**. Indian Government must have a vision to ensure that cyber culture is developed in citizens. The government needs to have a long-term strategy to develop this culture.[17]
>
> **Raising of Cyber Command**. To fight cyber warfare, Indian Government should start working establishing a tri-service Cyber Command, which should function directly under Integrated Headquarters of Ministry of Defense (MoD).[18]

Conclusion

Recent invasion of cyber space by terrorists to target India's critical infrastructure have indicated that cyber terrorism is an emerging threat to the Indian national security. To safeguard India's critical and non-critical infrastructure there is necessity of integration of civilian – military organizations. On analytical analyzing the framework of cyber terrorism, the likely target sectors for cyber terrorist can found out. It was evident that likely targets for the cyber terrorists in Indian context covered the entire spectrum. This brings out the important finding that to ensure that critical infrastructure is well protected all the stakeholders in cyber security need to work in cooperation.[19]

On analyzing the United States cyber security setup, which is quite successful, researcher opined that Integration of efforts of military and civilian organizations is an effective tool to fight cyber terrorism. After understanding the India's current cyber security capabilities and on carrying out quantitative and qualitative analysis, it can be deduced that Integration of efforts of military and civilian organizations is an effective tool to fight cyber terrorism in Indian context.[20]

Recommendations

The following changes are the recommended to enhance civil – military integration to counter the cyber terrorism in Indian Context.

Organizational Change. To counter the threat of cyber terrorism and ensure that both Civil – Military setup work in harmony there is requirement of separate organization at apex level. The interim organization may be planned until cyber command is raised and becomes operational.

Mission Oriented Cyber Teams. To enhance the lateral partnership, mission oriented teams compromising of Armed Forces Officers and IT experts should be created at the execution level.

Cyber Security Curriculums at School and Military Academy Level. Introduction of cyber security curriculum at school and military academy level can be the first step in developing the cyber culture in India. This will also enable future officers of Indian armed Forces and IT experts to understand the role and responsibilities of each other, thus enabling integration in later period.

Raising of Territorial Army Battalion (Cyber). Till the time cyber command is fully raised, Ministry of Defence (MOD) should consider raising of Territorial Army Battalions (Cyber) by enrolling individuals which have adequate expertise on computer programming. These battalions will also provide the experienced workforce to cyber command and will ensure that cyber commands are effective immediately after raising.

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Brief Biography

Major Gurbhej Singh, **psc of Indian Army** was born on 21 November 1986 in Punjab. He completed his schooling from Sainik School Kapurthala and passed out with 112th course of the National Defence Academy, Khadakwasla. He was commissioned to the Regiment of Artillery on 07 June 2008.

He has a diverse experience of service in units, headquarters as well as in the training institutions of Indian Army. In his Regiment service, he served in high altitude areas, deserts and counter insurgency operations. He held all the regimental appointments under different capacity. Apart from regimental appointments, he also served as an Instructor Class B at School of Artillery, Devlali and General Staff Officer Grade two in Artillery Brigade Headquarters deployed in counter insurgency operations. He has graduated from DSCSC, Mirpur, Dhaka. He is happily married and blessed with two daughters.

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The articles must be of original works or thoughts on military or security related issues of current or historical interest and previously unpublished in any form. Notes and references should be given at the end of the articles which should be in conformity with the universally accepted standard reference system.

Whilst articles of any length will be considered, the ideal is to aim for 3000-5000 words. Hard copy of the article and its abstract between 150-200 words may be submitted at any time of the year accompanied by a brief biographical note of author. A CD must be submitted containing the article, the abstract and the biographical note. There is a provision of remuneration for articles published.

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