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## Information Technology as a Force Multiplier for Military: Bangladesh Circumstances

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### ABSTRACT

Information systems have been developed through management. Developments of computers have tremendously enhanced the power of processing. The definition of IT is not clear to most of the people. Hence it is important to know the basic definition of IT. A mosaic of technologies, products and techniques have combined to provide new electronics dimensions to information management. This mosaic is known by the name IT. IT encompasses: information sciences, systems theory, computing, microelectronics, telecommunications, ergonomics, behavioural sciences, organisation and methods techniques.

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**KEYWORDS :** Information, Technology, Science, Transmission, Transformation, Electronics, Network, Web.

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### 1. INTRODUCTION

The power of information is not new. The concept of fighting a war with improved technology has been stepped up gradually with the subsequent development of technology. The biggest change in the conduct of future military operations is likely to come not from weapon alone but from the application of information technology (IT). The future battles will be short, intense and costly. Externally lethal, precise and destructive weapons will be employed. Computer virus, smart bomb, electronic warfare (EW) will have the capability to anticipate, detect, precludes or regret the use of lethal means. Our past experiences in war will have little value in high-tech environment. Electronic weapons, surveillance systems, communication conveniences have changed the traditional concepts of war.

Information systems have been developed through management. Developments of computers have tremendously enhanced the power of processing. Development of communication technology on the other hand have reduced the time, extended the area, and provided versatility in its dissemination. As organisations grow, they face new challenges and forced to adapt to the changing environment, therefore, need for more efficient information systems become crucial. We need maximum output with minimum input. IT provides that opportunity and in army it acts as a force multiplier.

Development in IT sector is taking place exponentially. Therefore, to keep pace with this rapid development army should integrate IT with its day-to-day activities without delay. If the army is not prepared to accept the ongoing technological advancement we will only be able to react. And by the time we have responded we will be even further behind the next wave of change and very quickly left in the dust of accelerated change. The key to successful adaptation to change will be a continuous transformation process that constantly redesigns the army to be an optimum force under any circumstances. In light of above, this article intends to address the issues related to the use of IT as a force multiplier with some emphasis on development of information systems.

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### 2. IT AND FORCE MULTIPLIER RELATIONSHIP

The definition of IT is not clear to most of the people. Hence it is important to know the basic definition of IT. A mosaic of technologies, products and techniques have combined to provide new electronics dimensions to information management. This mosaic is known by the name IT. Now a days IT is also called Information and Communication Technology (ICT). It is obvious that IT concerns the uses of systems and devices that allow transfer, storage, processing and presentation of information. Obviously the computer constitutes one of the major devices in controlling information storage and transfer. Therefore computer technology forms the basis of IT.

IT encompasses: information sciences, systems theory, computing, microelectronics, telecommunications, ergonomics, behavioural sciences, organisation and methods techniques. Therefore, IT has got inherent capability to act as force multiplier.

### 3. IT AS A FORCE MULTIPLIER

In mathematics multiplier means ‘a quantity by which another is to be multiplied’. In economics multiplier is „a factor by which an increase in income, employment, etc., is a multiple of the change in investment or government expenditure producing it.” In physics „an instrument used for multiplying or increasing by repetitive reinforcement the intensity of a force, current, etc, to an appreciable or measurable value.” The pulley is one of the four simple machines used to do work and act as force multiplier.

The meaning of force multiplier in respect to IT can be expressed in terms of qualitative, quantitative, tangible and intangible factors. Any thing enhancing the ability and efficiency can also be termed as force multiplier. Office automation, career planning, database management, Internet, Network, war gaming, simulators, satellite, Global Positioning System (GPS), Remotely Piloted vehicle (RPV), surveillances devices, refueling of aircraft on the air etc are some of examples of IT which act as a force multiplier. In terms of deterrence and destruction Nuclear, Biological and Chemical warfare act as force multiplier. Unprecedented development in IT sector has given birth of new form of warfare, which is known as Information warfare (IW). IW has the capability to act as a super force multiplier to alter conventional superiority and gain absolute information dominance.

Information Warfare: Transmission, transformation, storage and acquiring are the four characteristics of information while interrupt, deny, exploit, destroy and protect are the five characteristics of IW. Commonly accepted forms of IW are: Command and Control warfare, Intelligence Based warfare, Electronic Warfare (EW), Psychological Operations, Hacker Warfare, Economic Information Warfare, Cyber Warfare, Media Warfare etc. In this connection the power of Information War in psychological dimension is shown both during conflict and during peace at annex A. In the age of IW we need to have our information infrastructure and develop our information system so that we are in the same platform with the developed world.

**Information System Development:** To enhance efficiency of the manager by optimum utilization of all IT resources available to him he needs to develop information system. We can also term this as application of IT. Depending upon the scope of utility, information systems are classified. The recognised information systems are asfollowing:

- a. **Transaction Processing System:** Transaction Processing System (TPS) is the most fundamental type of computer-based system. It involves routine entries and record keeping of transactions in the computerized databases. Maintenance of property ledgers, preparation of result sheet, library transactions are few examples of TPS. The system itself does not make decision, but its designed output may help decision-making. Our depots and workshops are now badly in need of such systems.
- b. **Management Information System:** Management Information System (MIS) assists managers in decision-making. This type of systems are characterized by pre-designated input, pre-conceived situations and known decision options. A TPS may well be developed in to an MIS. If the central ledger system of Station Supply Depot is upgraded to monitor stock situation and generate suggestions on further issue and demand, it turns into an MIS. In a military battle scenario finding out the decision point in the thick of battle MIS can be very useful tool.
- c. **Decision Support System:** Decision Support System (DSS) assists managers who take decisions, which are not structured. Such decisions are taken in absence of rules and guidelines, and involve consideration of intangible and not known or unexpected with knowledge and experience. At the strategic and operational level such considerations may be necessary. It is the most difficult and at times impossible type of system to develop. Despite all difficulties we should try to develop DSS in our army in long term plan. Before that we need to ascertain what we have in our army in regards to IT.

### 4. IT AND BANGLADESH ARMY – AN OVERVIEW

**Modern armies of the world**, taking advantage of commercially available IT have achieved revolutionary results in developing information systems particularly in resources management and personnel administration. Open architecture hardware, readily available software and a new generation of young IT professionals provide a vast scope to explore the technology in all sectors of our day-to day affairs. In the present day context of army application of IT within office environment has the best potentials. But the potentials of the technology can only be exploited by developing databases over which TPS and MIS can be developed. Integrated TPS and MIS between units and headquarters through computer networks can act as force multiplier and change the situation of voluminous correspondence.

**Communication Infrastructure of Military:** Need for army’s own telecommunications network has been felt and discussed since long. GRAMMEN Telephone has taken the unused bandwidth of Bangladesh Railway’s optical fibre network on lease. Bangladesh Air Force has developed its own microwave network. Mean while Bangladesh Telephone and Telegraph Board (BTTB) has finalized its plan for a nation-wide optical fibre network, unfortunately without integrating any of the defence forces. Construction of a separate optical fibre network exclusively for army will not be a cost effective investment in the present economic condition of the country. Under this situation, army is left with the options to develop a separate microwave network, or establish a network using VSATs at all the cantonments, or share bandwidth of others laid GRAMMEN Telephone, Bangladesh Air Force or BTTB. For the time being, army has chosen the third option and recently under taken two initiatives to share microwave bandwidth with Air Force and optical bandwidth with BTTB. Both this projects are in the process of implementation and would take a few years.

#### **Present Users of Computers as a Force Multiplier**

**Personnel Administration Directorate:** Manual system used to take three months by 20 clerks for the result of 5000 candidates. By the use of OMR directorate can scrutinise the results of 3000 candidates by 4 clerks daily. Use of OMR technology has multiplied the system by 10 times in terms of manpower only.

**East Bengal Regimental Centre Record:** A feasibility study has been done at East Bengal Regimental Centre to introduce Personnel Information Management System (PIMS). The pilot project is already under study. Under this project 25 persons with the help of two servers and 15 workstations can handle approximately 104000 sheet rolls, which used to be handled by 376 persons. Use of PIMS technology has multiplied the system by 15 times in terms of manpower only.

**Network, Web Page, Customised Software Users:** The organisations, institutions that are using MIS and TPS are appended below:

- a. **Network.** The dial up network is based on existing telephone communication of military exchange. The local network telephone cable is of copper wire as such the speed of data transfer is very slow. Army Signal Brigade took a step to establish network within the army. All the divisions had its own log in identification. Initially Army tried with the existing set up by using hired lines of BTB. But due to bandwidth limitations it could not be succeeded. Again with the nation wide dialing the network could be established but it incurred heavy budget.
- b. **Web Page.** Bangladesh Army has already launched its web page. Major information of army is available in the web page. Amongst the institution Military Institute of Science and Technology also launched its web page.
- c. **Use of Customised Software.** Few organisations are using customised software to manage their routine activities. This can be upgraded to MIS. Presently the civilian programmers develop these softwares.

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## 5. SCOPE OF UTILISATION OF IT AS A FORCE MULTIPLIER

The technological advancement has brought a rapid revolution for the countries that could exploit both IW and IT in their day-to-day military affairs. IW will be the most complex type of warfare in the 21<sup>st</sup> century, and it will decide who will win and who will lose the war. IT is likely to influence the battlefield at operational and strategic level most but certainly it will have its implication at tactical level also. This will encompass employment of digitised surveillance devices, RPVs, drones, use of satellite imagery, enhanced orientation by GPS, computerised up dating of battle maps and networking. Employment of such system will ensure faster and reliable passage of information, enhanced mobility in a transparent battlefield, employment of right quantum of force at right time and in right manner and avoid over punishment. This will afford better identification and locating of enemy and ultimately accurate engagement and annihilation. Apparently this may sounds very ambitious to talk about IW in our perspective. But „low aim is a crime” and we should also have our aim and intension high. What is not possible today tomorrow it will be. IT efficiently employed by army in peacetime can also act as great force multiplier during war.

**IT for Enhancement of Peacetime Administration:** There is no doubt that IT in some form or the other is being utilised these days by the army. But the extent of such utilisation is much below any acceptable level. For example, the regiments might be utilising computers for jobs such as data management, management of funds, pay and allowances, management of armaments and equipment, career planning and manpower management etc. More utilisation of computer for the purposes mentioned above is unlikely to take us anywhere closer to optimum level of utilisation of IT, unless these are properly co-ordinated and connected through efficient networkingsystem.

**IT in Operations of War:** In warfare technology was always a force multiplier and would remain to be so<sup>1</sup>. Development of appropriate IT suiting specific requirement of operations of war will enhance efficiency of Bangladesh Army to a great extent. This can be applied in different ways to derive benefit both in offensive and defensive operation, battle beyond international Boundary (IB), battle in forward zone, in logistics etc.

- a. **Battle Beyond IB.** There is a great need for increased awareness of enemy’s state of preparedness and activities beyond the IB. Developments beyond the IB need to be monitored constantly even during peace time. This will be done by all available means such as satellite, RPVs, aerial reconnaissance etc. Any change in terrain condition, obstacle system, enemy’s state of preparedness, weaponry etc concerning the commander likely to face enemy in that particular area must be fed to him at the earliest. This is only possible in a highly developed network system.
  - b. **Battle in Forward Zone.** Like many enemy activities such as, breaching of own obstacle systems, presence of reconnaissance petrol etc can be precisely located and information can be fed to concerned forces. This will enable in discerning clearly enemy’s pattern of movement and thus cause maximum attrition to enemy.
  - c. **IT in Logistics.** The computer is the best aid to solve logistic problem and to make sound logistic plan. Computer can perform the task of managing logistic information and aid the decision making process. Besides, computer acts as the best solution for effective and efficient management of man and material for any modern army in relation to existing military functioning system, which is difficult to manage, and subjected to human errors. We all are aware of the Scenario Determined Computer Assisted Logistics Planning (SDCALP) system, which has proved the effectiveness of computer’s use in the Gulf War. To be able to implement this process effectively the need for sharing the data between the various logistic installations are necessary. Here we feel the need for networking between our services and its link with higher and lower formations.
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## 6. SUGGESTED MEASURES FOR INTEGRATION OF IT

**ICT Vision:** The requirement of our army to be able to fight in the future battlefield is that, a squadron commander /company commander seating in his tank / armoured personnel carrier should be able to view on a display the deployment and activities of his whole squadron / company. Similarly as we go up, the regimental commander should not only be able to view what is going on within his own regiment, he should be able to view the progress at his neighbouring regiment and of course at brigade and division front. If the AHQ has an access to a satellite imagery, which concerns a troop leader in the forward zone, the troop leader should also have access to it at the fastest.

Things may not be as simple as stated in the preceding paragraph. But that is the actual requirement if we are to meet the future challenges squarely. Now to achieve these, what gadgets, hardware and software we need, that is up to the specialists to find out. What will be the cost involvement, whether we can afford in one go or in phases, if in phases how long it is going to take - these are some questions which needs to be addressed at the decision makers level. What is important is, a vision concerning the extent of integration of IT must be set and all resources should be mastered in a consolidated plan to achieve the set target. A suggested ICT Vision –2018 for Bangladesh Army. Basing on the vision some specific measures are suggested below for speedy incorporation and effective exploitation of IT for enhancement of efficiency as follows:

a. **Goal Setting:** At present IT in different form is being utilised by our army. But unless we have a specific goal set for our forces, we are unlikely to make considerable progress in this regard. We have to be very sure as to the level up to which our forces should utilise and exploit IT. This has to be in conformity with over all national strategy and the finance that can be made available for the purpose. The goal once set may require periodical review to ascertain whether that meets our current requirements.. A suggested plan basing on the ICT vision-2018 are appended below:

(1) **Short Term Plan:** In short-term policy emphasis should be given to policy and IT infrastructure development including establishment of LAN within units and use of customised software. This will confine within the yearly plan basing on budget. I would suggest making LAN within the higher establishments like division (div), brigade (bde) HQ up to unit level. In fact these are the basis of our IT infrastructure. Short-term plan will terminate to enhance midterm plan.

(2) **Mid Term Plan:** In mid term plan I would suggest to make a policy for 5 years basis. Within this 5 years plan the communication infrastructure will get the main priority. As discussed earlier we do not have own long distance communication means except radio. Here I shall prefer for own fibre optic line to be laid all over the cantonments. This can serve dual purpose that is normal telephone connectivity and mailing / Internet service. This will even save our huge budget, which we are paying to BTTB. This will even enhance our security. In case of war the microwave towers will be one of the first target of enemy. But this conceal wires will be more reliable. Second priority will be to integrate the garrisons with VSAT. It is not too costly;<sup>2</sup> we can even establish our integrated Internet service with our budget within a year. Next priority will be introduction of MIS.

(3) **Long Term Plan** Long-term plan will be mainly 10 years basis where our objective should be to introduce DSS. With in this plan WAN to be established and with that WAN war game simulator centre to be established.

b. **Budgetary Realities:** The material requirement at various levels will have to be ascertained. These need to be designed by experts. For this budget to allocated judiciously. I propose to have additional 1% allotment for IT from the army budget for development of IT. Army is earning good amount of foreign currency from overseas mission. From that fund some money can also be utilised for development of IT project. On the other hand maximum expenditure of our Army budget is mainly for pay and allowances, rations, clothing, pension, Military Engineering Services (MES) and training.<sup>3</sup> As per the survey conducted by 46 Infantry Brigade for reduction of manpower they could reduce manpower approx 20000. If that could be implemented a big amount of saving in terms of budget can be utilised for IT development.

c. **Role of Commanders:** Commanders at various levels are going to play a vital role in the whole process. Their attitude towards IT and its application is of prime importance. Our young officers in general are quite enthusiastic and are going to be the forerunners in the campaign. But unless there is sufficient support and patronisation from commanders at all level, such a programme is unlikely to make much headway. To start with commanders at all level should be well conversant with the network environment. They should ensure that our offices make maximum use of facilities such e-mail, fax etc. If we are to successfully utilise battle worthy IT based systems, we should be conversant with all basic IT facilities at our disposal for normal peacetimejob.

d. **Requirement of Organisational Change:** One of the prime influences of information revolution is that it is weakening the hierarchies and strengthening the networks. Experts opine that military being a hierarchical organisation is not in a position to exploit the potential of networking to a great extent. They argue that in a hierarchy, information flows vertically down and up the channel of command. Contrarily, in a network the

flow is multidirectional<sup>4</sup>. Contrary to the military norm of information on need to know basis, the dictum in the network is “any type of information, to any where and any time”.

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## 7. CONCLUSIONS

There is a relationship between IT and force multiplier. IT basically concerns the uses of systems and devices, which allow the transfer, storage, processing, and preservation of information. Computer plays a pivotal role in this whole process. Interconnected information sources through some media and the terminal equipments constitute the whole system. Utilising the available resources many units, school of instructions, installations of Bangladesh Army are establishing LAN, databases, scrutinising results, maintaining inventory. Some progress has also been made in software development. Though these developments mostly took place in the initiative of local commanders but integration of these individual effort are likely to produce better results in the future.

IT is likely to influence the battlefield at operational and strategic level most but certainly it will have its implication at tactical level also. It will be pretty difficult and costly to take IT up to tactical level. There is no doubt about the potentiality of IT as a force multiplier. Modern countries are exploiting IT to its fullest extent. The problem with third world countries is the procurement of costly equipments and to keep pace with the extremely rapid change in computer technology. So it may not be possible for country like us to develop IT to that extent which can give real time information and assist to develop a DSS but we can always develop and use it for peacetime administration. At present mostly computers are used as a substitute to typewriters with its additional storage capacity. It's optimum utilisation is possible if used for data management, management of armament and equipment, career planning etc.

It is very important to conceive a vision concerning the extent of integration of IT. Side by side a workable goal has be set to integrate all resources in a consolidated plan to achieve the desired target. ICT vision 2018 as proposed in this paper calls for incorporation of IT to be done in phases. Short Term Plan to include local IT infrastructure, establishment of LAN and use of customised software. In Mid Term plan wide area IT Infrastructure and introduction of MIS to be done. Long Term Plan to include establishment of WAN, war game simulator centre and introduction of DSS.

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## 8. RECOMMENDATIONS:

A Board of Officers should be formed at army level, which will revise the IT policy and publish the IT policy. The board would proceed with the system development under following suggested terms of reference:

- a. Determine the IT infrastructures.
- b. Reduction of non-bayonet strength berealized.
- c. Determine the IT gadgets to be introduced in army.
- d. Determine the requirement of customised software for army.

Incorporation of IT as a force multiplier to be done in phases:

- a. Short Term Plan to include local IT infrastructure, establishment of LAN and use of customised software.
- b. Mid Term Plan to include wide area IT Infrastructure and introduction of MIS.
- c. Long Term Plan to include establishment of WAN, establishment of war game simulator centre and introduction of DSS.

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