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Editorial

This volume marks a new milestone for Prime University Journal. Not only does the journal take a new look but also is proved to be a continuous process of excellence. In the wake of the new publication arrangement, a strict and fair procedure have been made to strengthen the credibility of the research works of the academic authors. In an attempt to facilitate the commtuication of new knowledge and to stimulate new ideas, Prime University Journal will pay special attention to view the areas that received little attention or yet not received sufficient attentions of the researchers. In concrete term, we encourage discussion and academic tradition and offer a platform to express controversial and dissenting opinions to promote research that covers Science and Technology, Business and Economics, Law and Humanities including Literature and the Arts. Our platform of different research tradition will not only enrich methodology in the study of contemporary knowledge area but also will set a more balanced research agenda. This mission will be successful with more contribution of the researchers of different field.

I like to thank our editorial board members, members of the both journal committee and Centre for Research, HRD and Publication, internal and external referees, contributors and readers. With the expansion of these machineries, Prime University Journal ISSN-1995-5332 has been firmly established as one of the worthy refereed academic journal with international standing. With the aforementioned plans and arrangements, the journal is ready to embark on a new journey towards the challenging and intending world of research.

Prof. Dr. M. A. Jalil
Editor
Prime University Journal

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An Efficient Image Codec at Low Bit Rate for Mobile Communication

M. Abdus Samad¹
M. Akter²

Abstract

Said and Pearlman claimed in their paper that the Set Partitioning in Hierarchical Trees (SPIHT) approach for still image compression is a conceptually simple and computationally efficient zerotree coding technique. The algorithm relies on a very efficient scanning cum bit-allocation scheme for quantizing the coefficients obtained by a wavelet decomposition of an image. In the present paper, a crucial modification of SPIHT named Modified Set Partitioning in Hierarchical Trees (MSPIHT) algorithm has been proposed for low bit rate applications. As a result, an efficient, robust image-coding algorithm suitable at low bit-rate transmission is achieved. Additionally, the simulation results depicts this proposed method is suitable for mobile communication due to achieving its efficiency, good visual quality of reconstructed image at low bit rate compare to original SPIHT and Classified Zerotree Wavelet (CZW) algorithm.

Keywords—Absolute Zerotree, CZW, M-SPIHT, Number of Error Bits, SPIHT.

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I. Introduction

In recent years, wavelet based embedded image coder is quite attractive in modern applications. Wavelet transform, bit plane coding and other techniques make embedded image coders practical, which not only provide efficient compression performance, distortion scalability, resolution scalability, but also other attractive features such as region of interest and random access.

The efficiency of a wavelet-based compression scheme relies on the efficiency of specifying to the decoder which coefficients to quantize before which others, and of the corresponding bit allocation. Shapiro [8] introduced the Embedded Zerotree Wavelet (EZW) scheme where the zerotree enables efficient prediction of significance information of the wavelet coefficients. Following this work, Said and Pearlman [9] developed an alternate scheme, called set partitioning in hierarchical trees (SPIHT) based on the same basic concepts. It was more effective in transmission of significance information to the decoder. Both the schemes relied on partial magnitude ordering of the wavelet coefficients, followed by progressive refinement, and produced embedded bitstreams. The transmission of ordering information is achieved by a subset partitioning approach that is duplicated at the decoder. The refinement is based on ordered bit plane transmission of the magnitudes of the coefficients previously ascertained as significant.

Xiong et al [13] has developed a very efficient space-frequency quantization scheme that uses a rate distortion criterion to jointly optimize zerotree quantization and scalar frequency quantization. Knipe et. al. [2] proposed vector quantization based SPIHT named VSPIHT. Later, Mukherjee and Mitra [5] studied broadly VSPIHT using successive refinement Voronoi lattice vector quantization yielding good quality of the reconstructed image in terms of Peak Signal to Noise Ratio (PSNR). However, the higher complexity of the Vector Quantizer (VQ) design is needed and more memory space in system is

required to store the codebook for the cost of the quality of the output image. Embedded Block Coding With Optimal Truncation (EBCOT) proposed by Taubman [12] are such successful examples of embedded image coders. EBCOT, with the best coding performance and other rich features, now serves as the entropy coder for the state-of-the-art image coding standard JPEG2000.

Sprljana et. al. [7] initiated an implementation of wavelet packet decomposition combined with SPIHT compression algorithm called wavelet packet decomposition SPIHT (WP-SPIHT). In the paper, the problem arising from the application of zerotree based algorithm (such as EZW, SPIHT) to wavelet coefficients was analyzed as well as the parent-child relationships for wavelet packet providing complete tree structure for SPIHT was established. Very recently, Reaz et. al. [6] and Alder et. al. [1] introduced another modification of SPIHT algorithm changing in the core execution module of SPIHT algorithm. The existing biorthogonal 9/7 filter bank was used to construct the wavelet coefficients for developing MSPIHT algorithm.

Taylor and Dey [11] proposed an Adaptive Image Compression for Wireless Communication to describe the effect of varying parameter of image compression algorithm on energy consumption, bandwidth and latency focusing on the JPEG algorithm. They chose two parameter of JPEG algorithm to vary; these were the quantization values and Virtual Block size (VBS). Lee and Dey [4] proposed an energy Efficient Wavelet Image Transform Algorithm (EEWITA), consisting of techniques to eliminated computation of certain high-pass coefficients of an image. As the high-pass coefficients were not required to computation to compress an image, EEWITA is an energy saving efficient algorithm.

In this paper, a low bit rate image coder of modified SPIHT algorithm without arithmetic coder has been demonstrated for mobile communication. In this work, the modifications of the SPIHT

compressor have been presented combining the sorting and refinement phase. With the elimination of List of Significant Pixels (LSP) and List of insignificant pixels (LIP) lists, the memory requirement has been reduced tremendously. This paper is organized as follows. Section II discusses the original SPIHT algorithm and its modification. Section III shows the experimental verification of the MSPIHT algorithm along with its PSNR comparisons, CPU time verification and visual quality of the reconstructed images. Based on the results of the previous section's discussion, section IV concludes this paper.

II. Coding Methodology

The SPIHT algorithm is very efficient in transmission of ordering information, essentially involves a scalar quantization operation. The essence of the set partitioning is to first classify the elemental coding units based on their magnitude and then to quantize them in a successive refinement framework. The elemental coding units are scalar wavelet coefficients.

A. Wavelet Transformed Images

While embedded zerotree like algorithms are applied, a wavelet transform is performed on the image. This result is a multi-scale representation. The transform reduces the correlation between neighboring pixels. The energy of the original image is concentrated in the lowest frequency band of the transformed image. Additionally, self-similarities between different scales which result from the recursive application of the wavelet transform step to the low frequency band can be observed. Consequently, based upon these facts good compression performance can be achieved if those coefficients are first transmitted which represent most of the image energy.

B. Bitplane Coding

The overall encoding procedure is basically a kind of bitplane coding. Thereby the bits of the coefficients constitute a bitplane. In general, a bitplane encoder starts coding with the most significant bit of each coefficient. When all those bits are coded, the next bitplane is considered until the least significant bits are reached. Within a bitplane the bits of the coefficients with largest magnitude come first. The coefficients are shown in decreasing order from left to right. Each coefficient is represented with eight bits, where the least significant bit is in front. As a consequence, such a bitplane coding scheme encodes the important information in terms of compression efficiency first. On the other hand, the ordering information, which can scatter the compression effect, has to be stored in the system memory or transmitted via channel.

C. SPIHT Coder

For completeness, we briefly introduce the SPIHT coding algorithm in this section. More details of SPIHT can be referred to [9]. Fig. 1 illustrates the wavelet tree structure of a typical three-scale pyramidal decomposition of an image. The image is generated by three stages of Two Dimensional Discrete Wavelet Transform (2D DWT). The notations LL, HL, LH, and HH, denote the output channels from the i th stage. The parent-offspring dependency for tree structures is also demonstrated. Each node has either four offspring or no offspring. The nodes with no offspring are located on Layer 3, (i.e., the bands HLL, LHL and HHH and some of them are located on the highest layer (one of them indicated by the \square in Fig. 1). Fig. 1 describes an example of the SPIHT tree structure in a typical three-scale pyramidal decomposition of an image. The arrows are oriented from the parent node to its offspring.

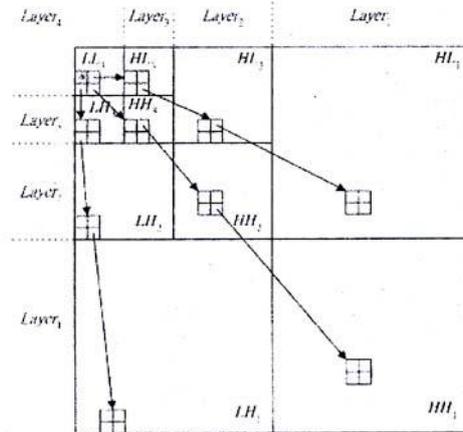


Fig. 1 Examples of the SPIHT tree structure

The main idea is based on partitioning of sets, which consists of coefficients or representatives of Whole subtrees. The coefficients of a wavelet transformed image are classified in three sets:

1. The list LIP of insignificant pixels which contains the coordinates L of those coefficients which are insignificant with respect to the current threshold.
2. The list LSP of significant pixels which contains the coordinates of those coefficients which are significant with respect to threshold, and
3. The list LIS of insignificant sets which contains the coordinates of the roots of insignificant sub-trees. During the compression procedure, the sets of coefficients in LIS are refined and if coefficients become significant they are moved from LIP to LSP.

We call a node (i.e., transformed coefficient) $C(i, j)$ at a coarse scale a parent. All nodes at the next finer scale with the same spatial location, and of similar orientation are called children, this set denoted $O(i, j)$. More precisely $O(i, j) = \{C(2i, 2j), C(2i, 2j+1), C(2i+1, 2j), C(2i+1, 2j+1)\}$ except the nodes at the highest layer ($Layer_1$ in Fig. 1) and the lowest layer ($Layer_4$, in Fig. 1). All nodes at all finer scales with

the same spatial location, and of similar orientation are called descendant, denoted $D(i, j)$. A set $L(i, j)$ is defined as $L(i, j) = D(i, j) - O(i, j)$, and the set H is the group of coordinates of all the tree roots (nodes in the highest layer). We also refer to a node or a set as significant if the result of the significant test by (1)

$$S_n(X(i, j)) = \begin{cases} 1 & \text{if } \max_{C(k, l) \in X(i, j)} \{|C(k, l)|\} \geq 2^n \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

where $X(i, j)$ represents $C(i, j)$, $D(i, j)$, or $L(i, j)$. This equation indicates that if the coefficient with maximum magnitude in a set is significant, then the significant test results in 1.

If $D(i, j)$ is significant, then it is partitioned into $O(i, j)$ and $L(i, j)$ if $L(i, j)$ exists. If not, it is a zerotree of type A. If $L(i, j)$ is significant then it is partitioned into $\{D(2i, 2i), D(2i, 2j+1), D(2i+1, 2i), D(2i+1, 2j+1)\}$ except the coordinates in the highest layer. Otherwise, it is a zerotree of type B. If we encounter a zerotree, we code such tree as a zerotree symbol, and avoid coding all its nodes. The nodes are scanned by the order of importance. It is performed so that no child is scanned before its parent. Therefore, one starts scanning the nodes $C(i, j)$ for $(i, j) \in H$ and the sets $D(i, j)$ for $(i, j) \in H$. The result of significant test for a node or for a set is coded. In addition, for each node $C(i, j)$, if it is significant, its sign bit is also coded.

The process begins with setting LSP as an empty list, adding the coordinates $(i, j) \in H$ to the LIP, adding those with descendants to the LIS as type A entries, and outputting the maximal value of n . The value of n can be obtained by using (2)

$$n = \left\lceil \log_2 \max_{(i, j)} \{|C(i, j)|\} \right\rceil \quad (2)$$

Then the following two passes, the sorting pass and refinement pass, are used for every n value. In the sorting pass, we scan each $C(i, j)$ in the LIP and each $D(i, j)$ or $L(i, j)$ in the LIS, extract significant

nodes. and put them into the end of the LSP. In the refinement pass, however. another bit of precision is added to the magnitudes of nodes in the LSP. We decrease by one, i.e., cut the threshold in half, and use these two passes for each in the order of the sorting pass first until the bit budget is exhausted.

The algorithm addressed above does not consider the statistical dependence between adjacent nodes and between adjacent sets. To increase the coding efficiency, the significance values of 2×2 adjacent nodes (the nodes with the same parent) were grouped and coded as a single symbol by the arithmetic coding algorithm. In general, the decoder duplicates the execution path of the encoder as it was also the case in Shapiro's algorithm. To ensure this behavior, the coder sends the result of a binary decision to the decoder before a branch is taken in the algorithm. Thus, all decisions of the decoder are based on the received bits. The name of the algorithm is composed of the words *ser* and *parlirioizing*. The sets $O(i, j)$, $D(i, j)$ and $L(i, j)$ were already mentioned. Another advantage of SPIHT in comparison to EZW algorithm is that the complete outcome of the encoder is binary. Therefore, the compression rate can be achieved exactly and arithmetic encoders for binary alphabets can be applied to further increase the compression efficiency.

D. Modified SPIHT Coder

In SPIHT, the usage of three temporary lists is a powerful way to improve the codec's efficiency. But they are quite memory consuming. It is a major drawback for SPIHT algorithm. In addition, during coding we often insert or delete the elements in the lists. These frequent operations will greatly increase the coding time with the expanding of the lists. In order to realize the implementation of SPIHT algorithm, a successful low-memory solution must be provided. In this algorithm, the sorting and refinement phase are combined as one scan pass. Below we present. two new concepts [7], called *Number of error bits* and *absolute zerotree*, to modify the original SPIHT algorithm.

1) Number of Error bits: During SPIHT Coding, only the most significant bits in *transform coefficients* are outputted for later decoding. Thus, the last several bits (i.e., the least significant bits) will be omitted. We call this omitted part of bits as *truncating error*.

We can define *number of error bits* (denoted by ue) before encoding to indicate the number of bits that would be omitted finally. In practical implementation, as soon as $C(i,j)$ is found as significant coefficient or insignificant coefficient, its first $(n+1-\mu_e)$ bits are immediately outputted. And its coordinates are no longer stored into the LSP or the LIP. These two lists can be thrown away.

2) *Absolute Zerotree*: After wavelet decomposition, most of the significant coefficients are concentrated in low-pass subbands. And the magnitudes of *transform coefficients* decrease rapidly with the decline of the pyramid level. Through extensive experiments, we found that the coefficients in many sets are so small that these trees will always be zerotrees before the expected compression ratio is reached. In SPIHT coding, the coordinates of these zerotree roots are stored in the LIS and will never be removed. It results in the rapid expansion of the LIS.

The introduction of *absolute zerotree* is a simple solution to this problem. We have defined to indicate the number of truncating error bits. For a zerotree, if the magnitudes of all its descendants are lower than 2^h , it becomes an *absolute zerotree* and will never be significant in the last wavelet planes. Their coordinates need not be stored in the LIS. Obviously, the length of the LIS is shortened. And because we do not scan among *absolute zerotree* any longer, the coding time is also greatly reduced.

The new notation *Zero* indicates whether a set is an absolute zerotree. As shown in (3), the value 0 means that the set is an absolute zerotree and vice versa.

$$Zero(X(i, j)) = \begin{cases} 0 & \text{if } \max_{C(k,l) \in X(i,j)} \{C(k,l)\} \geq 2^h \\ 1 & \text{otherwise} \end{cases} \quad (3)$$

where $X(i, j)$ represents $C(i, j)$, $D(i, j)$, or $L(i, j)$.

III. Simulation and its results

This section presents an implementation of the M-SPIHT coder and its performance in terms of compression and visual quality. In this set of experiment, the SPIHT is chosen as the zero-tree based image coder and the $1\sqrt{1}$ -SPIHT developed here is then applied without arithmetic coding. This algorithm shows excellent performance without vulnerable arithmetic coding among the class of zerotree-based encoders, With proposed algorithm, SPIHT and CZW algorithm has been taken to compare the reconstructed image quality in terms of peak signal-to-noise ratio (PSNR). The descriptions of visual quality in the compressed image are evaluated based on at the different bitrate obtained M-SPIHT algorithm.

The biorthogonal 9/7 filter bank and 512×512 gray scale image with S bpp are used for the experiment. The six level decompositions are constructed by a symmetric extension at the image edge. It is important to observe that the bit rates are not entropy estimated calculated from the actual size of the compressed file. By using progressive transmission ability, the sets of distortions are obtained from the same file. The decoder reads the same file bytes of the file calculated the inverse sub-band transform and then compared the recovered image with the original. The distortion is measured by the PSNR as in (4).

$$PSNR = 10 \log_{10} \left(\frac{255^2}{MSE} \right) \quad dB \quad (4)$$

where MSE denotes the mean square-error between the original and reconstructed images.

In this work, three very popular test images have been used to measure the performance of reconstructed image in terms of PSNR. They are the $1\sqrt{1}$ landrill image, the Barbara image and the Lena image. The performance of proposed SPIHT without arithmetic coding is

compared to other popular algorithms such as arithmetic coded SPIHT and CZW. Table I compares the performance of proposed M-SPIHT algorithm versus the original SPIHT, CZW and M-SPIHT image coding with test images (a) l\landrill (b) Lena. (c) Barbara. While the results are at extremely low bit rates, the PSNR difference is almost equivalent at all the other rates.

TABLE I: Comparison in PSNR of Rate-distortion Performances

PSNR for different Bit rate in bpp					
Bit Rate	0.0061	0.0123	0.0321	0.0918	0.2474
MSPIHT	19.31	19.53	20.50	23.07	27.05
CZW	19.63	20.40	21.46	23.64	27.30
SPIHT	20.08	20.54	21.49	23.65	27.30

(a)

PSNR for different Bit rate in bpp					
Bit Rate	0.0075	0.0154	0.038	0.0879	0.1898
MSPIHT	23.16	23.33	25.96	29.09	32.38
CZW	21.18	23.44	26.23	29.25	32.47
SPIHT	21.72	23.67	26.31	29.27	32.48

(b)

PSNR for different Bit rate in bpp					
Bit Rate	0.0075	0.0154	0.038	0.0879	0.1898
MSPIHT	19.52	20.83	22.63	25.74	29.84
CZW	19.30	20.97	22.75	25.82	29.83
SPIHT	19.70	21.07	22.77	25.83	29.83

(c)

The coding results have been presented from 0.0075 bits/pixel upto 0.25 bits/pixel for these three images with varying the bit rate. This range of bit rate is quite low for image coding, but the reconstructed image quality is also impressive in terms of PSNR. PSNR comparisons are made with [9] and [6] to show the effectiveness of the MSPIHT

algorithm. This algorithm easily surpassed the binary uncoded version of SPIHT for these images. The plots for individual images have shown the efficiency of M-SPIHT algorithm.

In Fig. 2 and Fig. 3 are plotted the PSNR versus bit rate obtained of Lena and Barbara respectively for MSPIHT, CZW and entropy- coded SPIHT using arithmetic code. The PSNR of M-SPIHT without arithmetic coding is about similar to the other two algorithms. Also, in Fig. 4, the same have plotted the PSNR values for Mandrill image that are a bit less than the other two algorithms.

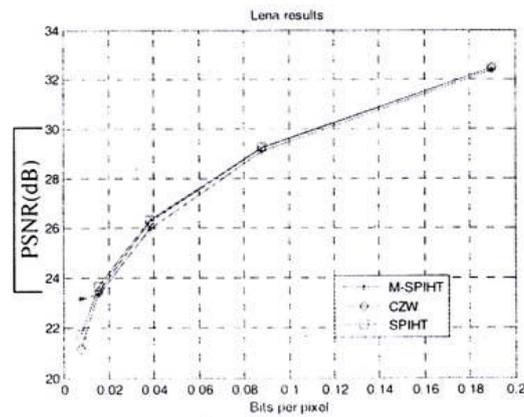


Fig. 2: Coding result for the Lena image

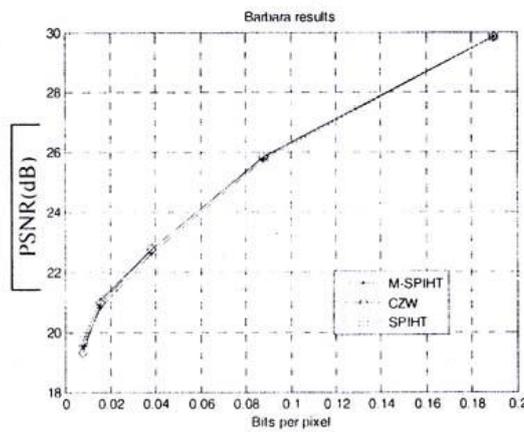


Fig. 3: Coding results for the Barbara image

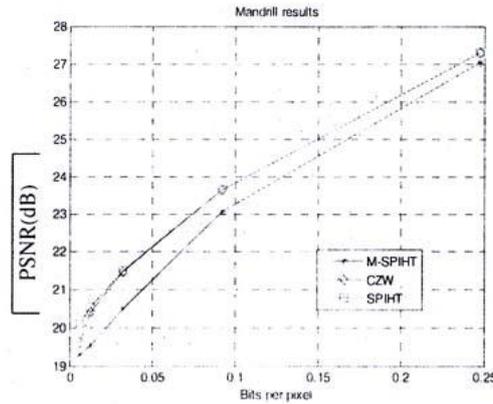


Fig. 4: Coding results for the Mandrill image

The main improvement of MSPIHT to SPIHT is on CPU time in second. Table II has shown the coding and decoding time for the two algorithms on Mandrill image, Lena Image and Barbara Image using system platform Pentium IV 1.7GHz CPU, 256 RAM for (a) Mandrill (b) Lena. (gc) Barbara. As shown in Table II, for 512×512 gray-level of Mandrill image, encoder is 7 times faster and for Lena image, encoder is 5 times faster than that of SPIHT at bit rate 0.0075 bpp. On the other hand decoder is 11 times faster for Mandrill image and 9 times faster for Lena image at the same bit rate. Taking the advantages of absolute zerotree structure, MSPIHT algorithm reduces the number of entries in the LIS, thus it has achieved the improvement of less execution time to code and decode. It satisfies the common requirements of wireless channel. MSPIHT is faster than that of SPIHT on CPU time that means MSPIHT has less computational complexity depends on number of mathematical operations in the whole algorithm including additions, subtractions, divisions, multiplications, and shift operations. Usually more complex compression algorithm takes longer time to execute and vice versa. As MSPIHT takes less time to coding and decoding than that of arithmetic coded SPIHT, therefore, it clarifies that this algorithm is less complex and perfect for mobile communication. We should note that the experimental image is 512x512 in sizes, which is quite large among all usual image formats for mobile communication.

TABLE II: Comparison on CPU Time in sec at Different Bit Rate

Bit Rate	CPU Time in second			
	MSPIHT		SPIHT	
	Code	Decode	Code	Decode
0.0075	0.06	0.02	0.44	0.22
0.0154	0.20	0.05	0.50	0.27
0.0380	0.21	0.06	0.54	0.32
0.0879	0.25	0.06	0.56	0.34
0.1898	0.33	0.08	0.57	0.42

(a)

Bit Rate	CPU Time in second			
	MSPIHT		SPIHT	
	Code	Decode	Code	Decode
0.0075	0.10	0.03	0.50	0.28
0.0154	0.28	0.08	0.52	0.27
0.0380	0.2969	0.09	0.54	0.28
0.0879	0.56	0.17	0.56	0.33
0.01898	0.58	0.26	0.56	0.33

(b)

Bit Rate	CPU Time in second			
	MSPIHT		SPIHT	
	Code	Decode	Code	Decode
0.0075	0.08	0.03	0.40	0.22
0.0154	0.28	0.08	0.44	0.27
0.0380	0.30	0.09	0.50	0.28
0.0879	0.51	0.15	0.55	0.45
0.01898	0.55	0.25	0.56	0.46

Fig.5 and Fig. 6 shows the visual quality of original Lena image and reconstructed image using the modified SPIHT algorithm at 0.0154 hpp, 0.038 bpp and 0.1898 bpp, the PSNRS are 23.33 dB, 25.96 dB and 32.38dB respectively. The visual quality of the reconstructed image at very low hit rate is quite impressive for M-SPIHT algorithm. We should note that the experimental image is 521×512 in size, which is

quite large among all usual image/video formats, particularly for mobile communication. For smaller images, the coding efficiency will be further increased and more exciting requirements Will be met.

By various analyses, we can say that the MSPIHT algorithm is a competitive algorithm among the zerotree based embedded image coding algorithm.

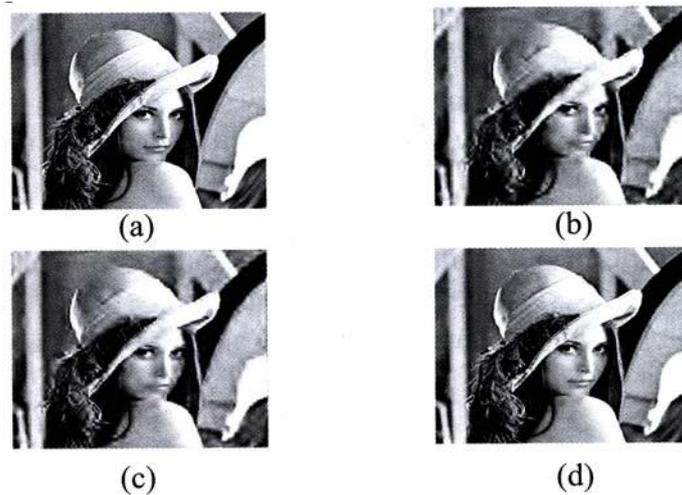


Fig. 5: Images obtained of Lena Image using MSPIHT without arithmetic coding

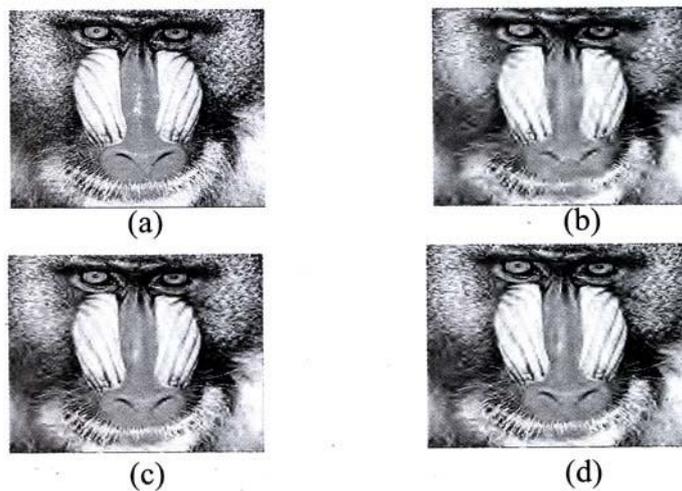


Fig. 6: Images obtained of Mandrill Image using MSPIHT without arithmetic coding

IV. Conclusion

An efficient image coder at low bit rate has been implemented for wireless communication. At low bit rate the MSPIHT algorithm is almost equivalent to the original zero tree-based encoder with respect to rate distortion performance. The experimental results have shown remarkable improvement of this embedded image coder that provides very efficient image transmission at very low bit rate. Efficiency and good visual performance has been achieved compare to arithmetic coded SPIHT and CZW. In this sense, MSPIHT provides an essential algorithm for mobile communications and makes these Zero tree-based encoders more competitive than other wavelet ones. With proper packetization of encoded bit stream and by adding arithmetic coding algorithm with MSPIHT, this algorithm can be used for video transmission for mobile communication because of having good PSNR at very low bit rate.

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Investigation of Generation-Recombination Noise in Semiconductor P-N Junction Diodes

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Abstract

Of all semiconductor devices, the junction diodes are mostly used devices. Almost all properties of junction transistors are related to junction diodes. Therefore, a good understanding of the noise properties of junction diodes leads to know about the noise properties of transistors also. The noise associated with generation and recombination in injected carriers in the transition region and outside of the transition region of P-N junction diodes has been investigated. The current spectrum of the generation-recombination (g-r) noise at the outside of the transition region has been calculated using 'Wiener-Khintchine Theorem' to the auto covariance of the carrier fluctuations that takes place between the energy levels. The current spectrums of g-r noise in the transition region have also been derived. It has been found that in the transition region this noise is yet masked by other noise sources, whereas in the bulk region it shows close resemblance to shot noise. The g-r noise is seen to be more prominent in the bulk region rather than in the junction space-charge-region of the diodes.

Keywords: Space-charge-region, Fluctuations, g-r noise, Wiener-Khintchine theorem. Ohmic contact. P-N junction, Energy levels and Bulk region.

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I. Introduction

For electrical neutrality in a solid material, the total charge density must be zero. So in the case of electrical conductors the total number of electrons must be comparatively constant, for which the independent action is not-possible by the charge carriers. Considering this. we can say that there is a possibility of negligible amount of shot noise. which a metal can exhibit [7].

There are spontaneous fluctuations of charge carriers (hole and electron) in a semiconductor sample arising from the statistical nature of the generation rates, recombination rates or trapping rates, whether an electric field is applied or not. The application of an electric field is a convenient method of detecting the fluctuations and for which the current fluctuations result [14].

These kinds of fluctuations are also observed in the space-charge-region of P-N junction [5]. In a P-N junction, trapping or releasing of a carrier, filling or emptying a trap or generation-recombination center by a carrier is purely a random process. This type of random process leads to a source of noise, which is known as g-r noise. The spectrum of g-r noise gives information concerning the time constants involved in generation, recombination and trapping of charge carriers [3]. These may be either bulk or junction surface effects or both depending upon the particular sample or [junction under investigations.

The g-r noise in semiconductor was predicated by Gisolf [6] and experimental evidence was first reported by Herzog and Van der Ziel [7], Since then many investigators have reported g-r noise in semiconductors [2], [3]; photoconductors [17] and P-N junction diodes [16]. [18].

II. Generation-Recombination noise due to carriers inside the bulk region of a P-N junction diode

The relation between the instantaneous current and the instantaneous number of carriers in the bulk space-charge-region i.e. at the out-side of the junction space-charge-region is given by the relation

$$i(t) = \frac{qE}{L} [\mu_n N(t) + \mu_p p(t)] \quad (1)$$

where

q = electric charge

E = an uniform electric field strength developed in bulk region

L = length of electron.

μ_n = mobility of electron

μ_p = mobility of holes

The eqn. (1) can be written as,

$$i(t) = \frac{qE}{L} \mu_n [bN(t) + p(t)] \quad (2)$$

where b is the ratio of the electron mobility to the hole mobility and N and P are total number of electrons and holes respectively. The variance of current is related to the carrier variances and co-variance, which is given by

$$\begin{aligned} \langle \Delta i^2 \rangle &= \left(\frac{qE}{L} \right)^2 \mu_p^2 [b(\Delta N) + \Delta P]^2 \\ &= \left(\frac{qE}{L} \right)^2 \mu_p^2 [b^2(\Delta N^2) + 2b \langle \Delta N \Delta P \rangle + \langle \Delta P^2 \rangle] \quad (3) \end{aligned}$$

$$\langle \Delta i^2 \rangle = \frac{I^2}{(bN_0 + P_0)^2} [b^2(\Delta N^2) + 2b \langle \Delta N \Delta P \rangle + \langle \Delta P^2 \rangle] \quad (4)$$

Here N_0 and R_0 are the mean total numbers of electrons and holes, and I is DC current;

The fluctuating current $I(1)$ is caused by fluctuations of ΔN and

ΔP in the number of carriers. The spectral density of current fluctuation is

$$S_i(f) = \frac{I^2}{(bN_0 + P_0)^2} [b^2 s_{nn}(f) + 2b s_{np}(f) + (f) + s_{pp}(f)] \quad (5)$$

where $s_{nn}(f)$, $s_{np}(f)$ and $s_{pp}(f)$ are the spectral intensities of the variance of n, the variance of P and the covariance of N and P.

These are defined as,

$$\langle \Delta N^2 \rangle = \int_0^{\infty} S_{nn}(f) df \quad (6)$$

$$\langle \Delta P^2 \rangle = \int_0^{\infty} S_{pp}(f) df \quad (7)$$

$$\langle \Delta P \Delta N \rangle = \int_0^{\infty} S_{np}(f) df \quad (8)$$

For multilevel case and for low concentration impurities, the solutions of eqns. (6) - (8) can be obtained by using the equivalent network analysis.

If the fluctuations are due to generation and recombination of hole-electron pair, then $\Delta N : \Delta P$ and eqn. (5) becomes

$$S_i(f) = \frac{I^2}{(bN_0 + P_0)^2} (b+1)^2 s_{nn}(f) \quad (9)$$

In addition, if the semiconductor is intrinsic ($N_0 = P_0$), then the eqn. (9) reduces to

$$S_i(f) = \frac{I^2}{N_0^2} s_{nn}(f) \quad (10)$$

Let us consider a two-level process such as that involves electron transitions between the conduction band and localized energy levels or

between conduction band and the valence band. The Langevin equation [11] describing this process is

$$\frac{dN}{dt} = g(N) - r(N) + h(t) \quad (11)$$

where,

N = the total number of electrons in the conduction band

$g(N)$ = the probability per unit time that an electron will be transferred to the conduction band.

$r(N)$ = the probability per unit time that an electron will be lost from the conduction band.

$h(t)$ = a short range function of the fluctuating random force (random noise term).

The eqn.(11) may be linearized by expanding about the mean value of N and neglecting higher order terms,

$$g(N) = g(N_0) + g'(N_0)\Delta N + \quad (12)$$

$$r(N) = r(N_0) + g'(N_0)\Delta N + \quad (13)$$

Therefore, eqn. (11) becomes,

$$\frac{d(N)}{dt} = [g'(N_0) - r'(N_0)\Delta N + h(t) \quad (14)$$

Introducing the relaxation time

$$\pi = \frac{1}{r'(N_0) - E'(N_0)} \quad (15)$$

The appearance and disappearance of carriers in a semiconductor sample by the process of generation and recombination (Fig.1) is described by a differential equation of the form

$$\frac{d(\Delta N)}{dt} + \frac{\Delta N}{\pi} = h(t) \quad (16)$$

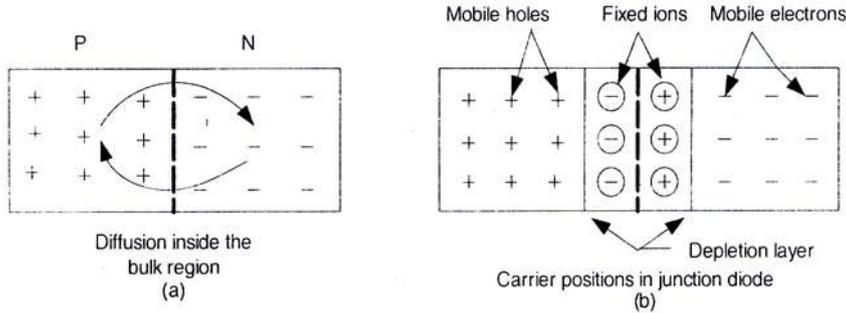


Fig 1: Generation-recombination of carriers outside the junction space charge region

It is therefore that in time 't' there are ΔN excess electrons, from those the remaining electrons, at the time 's' will be

$$\Delta N = Ne^{-\frac{s}{\tau}}$$

The auto covariance of the fluctuation will be

$$\langle \Delta N(t+s)\Delta N(t) \rangle = \langle \Delta N(t)^2 \rangle = Ne^{-\frac{s}{\tau}} \quad (17)$$

A From the general formula, the variance of carrier concentration for electrons for two level process is given by Burgess [2],

$$\begin{aligned} \langle \Delta N^2 \rangle &= \langle (N - N_0)^2 \rangle \\ &= \frac{g(N_0)}{r'(N_0) - g'(N_0)} \end{aligned} \quad (18)$$

Thus by applying the Winer-Khintchine Theorem [10] to eqn. (17)

$$S_{nn}(f) = \int_0^{\infty} \langle \Delta N(t)\pi \rangle e^{-\frac{s}{\tau}} \cos 2\pi f s ds \quad (19)$$

Therefore

$$S_{nn}(f) = 4 \langle \Delta N(t)^2 \rangle \frac{\pi}{1 + \omega^2 \tau^2} \quad (20)$$

From eqn. (17) and (18) we get

$$\langle \Delta N^2 \rangle = g(N_0)\pi \quad (21)$$

Therefore, the spectrum of eqn. (20) can be written as,

$$S_{nn}(f) = 4g(N_0) > \frac{\pi}{1 + \omega^2\pi^2} \quad (22)$$

Let us now consider a near-intrinsic semiconductor with N_d completely ionized donors and N_a completely filled acceptors. The charge balance is $P + N_d$, where N and P are the total numbers of electrons in the conduction band and hole in the valance band. When $(N_d + N_a)$ is less than N and P , then the generation and recombination rates are given by

$$g(N) = \alpha \text{ and } r(N) = \beta (N_a - N_d) \quad (23)$$

where α and β are transition constants.

In equilibrium $g(N_0) = r(N_0)$ for which We get

$$N_0 (N_0 + N_a - N_d) = \frac{\alpha}{\beta} \quad (24)$$

Now eqn. (18) becomes

$$\begin{aligned} \langle \Delta N^2 \rangle &= \frac{g(N_0)}{r'(N_0) - g'(N_0)} \\ &= \frac{\alpha}{\beta(2N_0 + N_a - N_d)} \\ &= \frac{N_0(N_0 + N_a - N_d)}{(2N_0 + N_a - N_d)} \\ &= \frac{N_0(N_0 + N_a - N_d)}{N_0 + (N_0 + N_a - N_d)} \\ &= \frac{N_0 P_0}{N_0 + P_0} \end{aligned} \quad (25)$$

Now the spectral intensity of the current fluctuations follows from eqns. (9), (20) and (25), is

$$S_i(f) = 4 \frac{I^2 (b+1)^2 N_0 P}{(nN_0 + P_0)^2 (N_0 + P_0)} \cdot \frac{\pi}{1 + \omega^2 \tau^2} \quad (26)$$

From an intrinsic semiconductor ($N_0 = P_0$) this gives to

$$S_i(f) = 4 \frac{2I^2}{N_0} \cdot \frac{\pi}{1 + \omega^2 \tau^2} \quad (27)$$

The eqn. (27) indicates that at $\omega \tau \ll 1$ the spectral density is uniform with frequency and falls as ω^{-2} at high frequencies. By the use of this feature one can separate the g-r noise component from the total noise.

III. Generation-Recombination noise inside the junction space- charge-region of a P-N junction diode.

It is well known that the hole and electron concentrations in the transition region of a junction are small and the fluctuations are associated with the change in charge of the g-r centers. In a P-N junction, where the charge in the transition region is fluctuating due to the trapped charges, the junction voltage or the transition region width or both will fluctuate, but the fluctuations are very small with respect to other noise sources in the devices.

A general theory for noise associated with current flowing through single level g-r centers in both forward and reverse biased P-N junction is given by Lauritzen [5], which was based on the ‘‘S-R-H’’ model (Shockley -model) [11]. Results obtained in the forward-biased condition are close in magnitude with the shot noise that produced by diffusion current across the P-N junction and the result in reverse-biased condition has been similar with that obtained by Scott and Strutt [15]. Scott and Strutt have found the mean squared noise

current, which is 50.66 of the full shot noise. But according to Van der Ziel [16], this is 50.73. A similar result has been obtained by Van Vliet [18]. Van Vliet and Van der Ziel [19], as Lauritzen's [5] in the forward-biased case, whereas Wade and al. [22] shows a value which is less than full shot noise but above the value obtained by Lauritzen [5] and Van Vliet [18], Wade and al. [22], obtained a value which is $5 \cong 85$, of the full shot noise.

It is also stated by Lauritzen [5] that if the predominant region of recombination occurs at the surface of the device that should not affect his calculations as long as the model of a single level "S-R-H" recombination is valid.

Let us consider a P-N junction having width "d" of the transition region and again assumed that g-r center situated in the transition, which is located at a distance "x" from the P-region of the transition edge (Fig: 2). The carrier will be trapped or released at the said g-r center. Let the g-r center having a charge q, so that,

$$q = q_p + q_n \quad (28)$$

where q_p , and q_n are hole and electron charge making the depletion layer by an electric field such that,

$$\frac{E_1}{E_2} = \frac{d-x}{x} \quad (29)$$

where E_1 is the electric field between the location of q and the depletion layer edge of P and E_2 is between q and N boundary so that,

$$q_p E_2 = q_n E_1 \quad (30)$$

The hole and electron contribution to the total amount of charge following through the external leads is given by

$$q_p = \frac{qx}{x} \quad (31)$$

$$\text{and } q_n = q \frac{d-x}{x} \quad (32) \text{ respectively.}$$

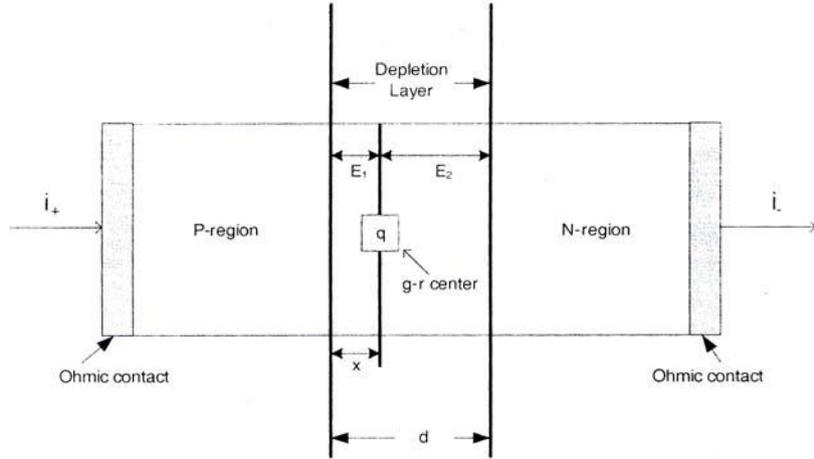


Figure 2: A P-N junction model with two ohmic contacts for showing the generation and recombination of carriers by a single level g-r center in the depletion layer.

If the location of a g-r center which has a charge q is closer to the P-side rather than the N-side of the transition region then the positive carrier (hole) will give rise to a current pulse in its forward direction in an inverse transit time, which is above the limited frequency of interest such that,

$$i_+ = q' \frac{x}{d} d(t) \quad (33)$$

where q' is the charge of the carrier, which is generated or recombines in the said g-r center. Similarly an equal and opposite current will flow but average result will be zero.

The capture or emission of a hole followed by the capture or emission of an electron which is dependent on the nature of the trap, giving rise to a negative pulsating current,

$$i_+ = q' \frac{d-x}{d} d(t) \quad (34)$$

Now eqns. (33) and (34) will give a pulse which has an area equal to one carrier charge. The current spectrum of the g-r noise in this process has been determined by using the random telegraph signal approach.

Therefore, it is clear that the amount of charges present in the pulses is playing the main role not the particular shape of the pulse. The noise obtained in this process has a close magnitude with the shot noise component produced by diffusion current across the P-N junction,

IV. Findings

From this study, it is clear that the g-r noise is appropriate in the bulk region rather than the junction transition region. Therefore, the g-r noise in junction diodes is an example of shot noise.

V. Conclusion

It has been found that the g-r noise is present even when there is no applied electric field in the bulk region of the diode. The entire bulk region may be considered as the source for g-r noise. In the transition region, this noise is yet masked by other noise sources, which needs more works in this respect. In a junction region g-r noise shows a resemblance with the shot noise rather than in the bulk region.

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An Analysis of Human Resource Management in Bangladesh

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Abstract

The main thrust of this study is to expose the present status of HRM policies and practices in Bangladesh. The analysis started with the recent concept of HRM. An effort has been made to present the status prevailing in Bangladesh in the milieu of the context prevailing in neighboring countries. So the study partakes the nature of a comparative study. In determining HRM position of Bangladesh, economic and business factors like 'Organization Culture', 'Performance Management', 'People Development', etc, and impacts of prevalent HRM approaches and practices on employees are dealt with. Visa-visa opinion survey formed the kernel part of the study. The findings are :one-half of the participating organizations attach high criticality to the requirement of Standardized System of recruitment at all levels; sectors like Financial Services and Manufacturing as well as Conglomerates do not attach very high competence to the requirement of Standardized System of recruitment; 8 out of 10 surveyed across sectors have competency based recruitment for senior and middle management positions; most of the sectors apart from NGOs and Financial sectors consider to have a standard system to evaluate performance ;all sectors barring Textile/ Garments and NGOs attach priority to training and development; and organization like Telecom, FMCG, Garments etc. have attached a high criticality to a well designed compensation system.

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I. Introduction

Like many other developing countries, the Human Resource Management (HRM) function is not yet fully established in Bangladeshi organizations. The term HRM has not yet taken root in Bangladesh. Therefore, the term sometimes is used to denote the broad personnel functions. However, in these days of globalization, no country can remain isolated and obviously the sway of HRM has swept our economy. The sooner the developing countries can realize the necessity of HRM policies and practices the better is on their part. An attempt is made in this article to highlight the main factors that determine HRM policies and practices in Bangladesh. Of course, situation prevailing in other developing and neighboring countries got prominence. Such a discussion should precede discussion on business environment, national culture and national institutions, which play a significant role in determining the status of HRM in Bangladesh. A brief idea of the concept of HRM will be pertinent here.

HRM has its multidimensional aspects; even its definition and perception vary with the prevalent situations of various countries. Poorer countries when move to higher literacy rate terms such move to progress towards higher HR development, but that is not in case of advanced countries where professionally competent persons and people conversant with most up to-date technology constitute HR.

II. Methodology

The main purpose of this article is to highlight HRM situation as exists in Bangladesh. As regards methodology followed here, three distinct methods are adopted. These are:

a) Survey of available literature on the status of HRM of neighboring countries like India, Pakistan and Nepal, The design or the structural framework of the article has been chosen driving shadow of

the ideas from those ones.

b) Secondary or published materials mainly by Bangladesh Bureau of Statistics (BBS) and individual authors have been used, and

c) Survey of organizations of reputed firms and opinions of experts, employees working in those organizations and management of employees has been carried out.

Of course, the analysis made and conclusions arrived are the author's own.

III. Outline of the study

Despite its unique cultural set-up, common heritage, language, and homogenous way of life, a large and capable workforce educated, and having communication skill in English, liberal privatization and investment policies, and strategic geographical importance, Bangladesh has been largely ignored in management research. The politico-economic and cultural factors responsible for the creation of such a situation have been taken care of in our discussion. The main aims of this article are three fold:

- a) to identify and portray the nature and status of HRM in Bangladesh;
- b) to analyze the influence of key national factors on Bangladeshi HRM; and
- c) to study the impact of prevalent HRM approaches on employees.

To achieve these aims, an analysis of the following issues are conducted:

1. The concept of HRM and its importance in the context of Bangladesh
2. The key economic and business environment
3. The status of total labor force and HRM situation.

4. The influence of national institutions on Bangladeshi HRM and
5. Recommendations.

3.1. The concept of HRM

Human Resource Management is concerned with “people “or human resources in an organization. Since every organization is set up by the people, acquiring their services, developing their skills, motivating them to high level of performance and ensuring that they continue to maintain their commitment to the organization are essential to achieving organizational objectives. When managers engage in Human Resource (HR) activities as part of their jobs, they seek to facilitate the contribution people make to achieve an organization’s strategies and plans. Through this strategies management of HR, managers make efforts to further the firm’s competitive advantages through plans and actions focused on contributing to the economics or” bottom line” success ofthe organization. The term’ bottom line’ ‘refers to organization’s survival, growth, profitability, competitiveness and flexibility in adapting to changing conditions. The challenges faced by any organization are important dimensions of human resource management (HRM), the policies, practices, and systems that influence employees’ behavior, attitudes, and performance. It has been realized that people are the common element in every organization; they create the strategies and innovations for which organizations are noted.” Assets make things possible, people make things happen.”

Michael Armstrong, in his very popular book *A Handbook of Human Resource Management* (2005), defined Human Resource Management (HRM) “as a strategic coherent approach to the management of an organization’s most valued assets- the people working there who individually and collectively contribute to the achievement of its objectives. Storey (1989) believes that HRM can be regarded as a ‘set of interrelated policies with an ideological and

philosophical underpinning’

The term HRM was popularized by Beer and others in the mid 1980s. The last 25 years or so had seen an unprecedented boom in the world economies, but in the western economies and none greater than in America. Rapidly changing technologies have probably had the biggest impact. In a few years, the computer has fundamentally changed jobs. And for that matter, information technology is currently playing a dominant role in this situation. Beer et al argue that while long term goals of a firm’s HRM policies should be individual and social well-being as well as organizational effectiveness, the HRM policy outcomes of immediate relevance to the firm should be: commitment, competence, congruence and cost~ effectiveness. Guest also makes more or less similar identification of HRM policy goals in terms of integration, flexibility, quality and commitment. Atkinson (1984) elaborates the concept of flexibility by identifying three forms: numerical, functional and financial.

The Importance of HRM

The increased globalization of market and intensification of competition have augmented the emergence of rhetoric of HRM in 1980s. This newly coined term HRM appeared in the writing of academics and business managers in the USA Peters & Waterman (1982), Tichy, Fomburn & Devanna (1982) as well as the UK Hendry & Pettigrew (1986), Guest (1987). They distinguished carefully the concept of HRM from traditional personnel management.

However, our focus will be more on four critical areas namely, human resource flow, reward systems, work systems and employee influence as mentioned by Beer et al or selection, appraisal, rewards and development as mentioned by Tichy et al.

By the end of 1980s, it became important to differentiate between the established ‘personnel’ thinking and that of the new concept of ‘HRM’. Because, in the opinion of many experts, the origin/root of the

HRM lies in personnel management and in the literature of Bangladesh, it is more evident.

3.2.The key economic and business environment

Politico-economic crisis and liberalization of Bangladesh economy

Bangladesh, since her inception, laid much emphasis on development planning and policies not only for sustained economic development but also for upholding socio-political and administrative development. Development efforts through planning process had been followed in this country as early as 1950s. Independence (in 1971) raised high expectations of the people. But prevailing mass poverty and the scarcity of resources were the main obstacles. Acute shortage of political leadership and absence of democratic norms were felt during 1950s and 1960s and even to the last day of united Pakistan. Although the plan (first five year plan of Bangladesh) was a political document, there was no public debate or discussion about its objectives, priorities and strategies. It was never presented in the Parliament for debate or discussion. Besides, there was a noticeable lack of effective co-operation among the members of the accept service and the bureaucracy; the bureaucracy and administrative ministries were not eager to accept the procedures of planning or to grant the role of Planning Commission as a leading one in the process of economic policy-making. The development efforts pursued in Bangladesh were never people oriented. Lack of an appropriate system of community based management, or, more specific to say, in the absence of community involvement in the execution and monitoring of the development program, the poorer section of the society's share are still remaining unfulfilled. Reflection on this issue for the last 36 years did not generate much hope. No leader in the past could give us a clear road map to success, or a sense of direction, or set a vision to be shared by others.

Of course, this is not to say that the country could not achieve

progress during the period. Rather, the country attained economic progress at a modest rate. A significant reduction of poverty had been achieved between 1991 and 2005. In 1991, around 60 per cent of the Bangladeshis were poor, as compared to 40 per cent in 2005. On an average, 1.7 million people came out of poverty during the period. In the same period, life expectancy increased from 45 years to 62 years, and secondary school enrollment went up by 13 per cent. Per capita income jumped up by around 70% in 2006. But if we compare these achievements with those of neighboring countries like India, China and Sri Lanka, certainly our achievement would be meager. In the effort to find out the cause or causes for such a pitiable situation, Amartya Sen.'s remark is worth mentioning here. He emphasized the role of democracy in enhancing the pace of development. He says: "Developing and strengthening a democratic system is an essential component of the process of development". Under the situation created till recently the problems of governance-transparency, corruption, non-responsiveness, favoritism, bureaucracy, inefficiency, lack of accountability, and ineffectiveness of implementation-should draw more attention.

On January 11, 2007 a dramatic change in the political power in Bangladesh took place. And the taking over the state power by the caretaker government has changed the whole scenario of Bangladesh in many aspects. The people in general started to think differently reversing the history that developed during last 36 years. It has become clear to them that a country with enormous potentiality could not reap this benefit to even at a moderate scale due to lack of appropriate political leadership, corrupt practices among businessmen and in competency in bureaucracy. The short term thinking of the politicians led to the thinking "Get Rich Quick" in all political parties including AL and BNP; this also explains why, in collusion with corrupt officials, the BNP leadership went into a frenzy of looting and stealing of the people's wealth (Islam, N, 2007).

In the mean time one year has passed, the Caretaker Government (CG) has been putting its utmost efforts to clean the accumulated undesirable socio-political events and taking actions against those corrupt politicians and businessmen responsible for such a situation. Much has changed and more will be soon. Even within this short span many of their steps, such as moving towards market economy, expanding trade with neighboring countries, and privatization of the losing public concerns, reflect modern beliefs for growth of the economy. But the support from the business community on these issues in the economic fronts did not receive proper attention. Bangladesh economy measured by output is weakening at an alarming rate. Employment is also shrinking. The two time devastating floods and severe cyclone (Sidr) aggravated the situation. Available evidence suggests the level of investment by the private sector is declining sharply. This investment level will, most possibly, continue for the rest of this financial year. Most major investor groups have reduced or stopped investing. Many of them do fear that they may face difficulty in explaining where they got the money from. Most businessmen perceive risks in investing at this time. They believe, it is better to wait for. The ground rules are uncertain. The anti-corruption programs appear to be turning more and more intrusive. The economy is currently marked by a sharp drop in private investment of a magnitude that is likely to lead to zero or even negative growth of GDP (Cookson 2007). At the year-end it has been observed that the businessmen are reluctant to invest in businesses and the economy has slowed down, prices-of goods have gone up unemployment has increased.

The magnitude of this decline and the multiplier effects induced are likely to cause the economy to decline in FY2007/08; the GDP growth rate will certainly be much lower. Export growth will continue but slow down over next two years. Bangladesh will have to import more food to offset the effects of the floods and recent cyclone-Sidr. The combined impact of these factors will be a very slow growth of

GDP over this period. Correct economic policy can help to a limited extent, but the return of business confidence will take much more time. Besides, inordinate delay in making decision on the pending investment proposals may send a wrong message to international investors about the country's willingness to attract investment. Reportedly, about US \$ 12 billion worth of investment proposals from a number of internationally reputed companies are now pending with the Board of Investment.

Influence of national culture including religion' on Bangladesh

HRM National factors:

Over the years, a number of researchers highlighted the significance of national factors (like national culture, work-related values and environment) in understanding HRM systems, following which many studies have been conducted to determine their impact on HRM policies and practices. Some of the studies in this arena are: Easter by Smith et al., 1995; Gill and Wong, 1998; Hannon et al, 1995; Howitzer and Darren, 1998; Lawler et al. 1995; Newman and Nolan, 1996; Rosinweed and Nohria, 1994. Budhwar and Sparrow (1998) and Ernst & Young (2007) have categorized these as national culture, dynamic business environment, institutions and specific business sectors. They also 'provide a detailed list of the aspects constituting each of these factors.

Economic policies followed in Bangladesh can be termed as liberal. They sought to make maximum use of market mechanisms. Until 1980s, the role of public investment had been to supplement rather than to displace private investment. Rigid personnel practices were the norms and decisions were largely beyond the control of the management. Chief executives were hired or fired by successive governments. Managers, especially in sector corporations, were often forced to hire staff or for making illegal money they used to employ people leading to excess, not necessarily on the basis of merit, but on

the recommendations of union leaders, who were backed by political party in power. Semi military and autocratic political power's dictations and lack of transparency and accountability were responsible for the creation of such a situation. Unions, which had a special political protection, not necessarily representing workers' interest, made it difficult to lay off excess staff-based remuneration was forbidden. Wages and salaries were not competitive with those of foreign competitors.

National culture

To examine the influence of national factors on HRM policies and practices, we can identify the following issues, such as: national culture, institutions, and dynamic business environment and business sectors.

Research in HRM has shown that social institutions (such as family, education through socialization process) influence companies' strategies and organizational practices in a systemic way, with the result that companies' structures and processes reflect typical national patterns (for details see Hofstede, 1980, 1991; Jaeger and Kanungo, 1990; Mueller, 1994; Tayeb 1995).

Based upon the above premise, a systemic analysis of the work related values of the employees in Bangladesh; many influences from early childhood are evident.

From the above discussion it is evident that all spheres of HRM in Bangladesh are affected. Recruitment and selection through open and fair competition in most cases are maintained to observe the formalities and cover legal outfit, rather referrals and close link with management is the most common source of recruitment. The recruitment activities of Public Service Commission (PSC), constitutional body in Bangladesh became a controversial one to such an extent that people lost confidence in PSC. Government is the greatest employer in Bangladesh and all cadre positions are filled in

through PSC recruitment. In the minds of the people, maintaining a good relationship with managers is far more important than the actual tasks they perform.

Religion: the foregone influence

About 90 percent of the Bangladeshi people are Muslim. The people of the country are quite liberal in their belief and performance and show tolerance to non-Muslims in their religious observance. With the exception of a few sporadic incidences of disputes, Bangladeshi people show excellent communal harmony both among themselves and different nationals. Consequently, what is needed is vigilant eye on a small group of people who want to disrupt the situation and maintain strict law and order situation. The people are secular-minded and willing to strive for economic enlistment. It may be argued that although Bangladesh is predominantly a Muslim country, there would be an extensive influence of religion on HRM. Examples include the allocation of prayer rooms where the employees could say their prayer during office hours, extended lunch breaks for Friday prayers and shorter office hours during Ramadan (the month of fasting). It may be noted here that during 1980s the then head of the government declared Bangladesh as a Muslim state just to fulfill his political motive only. Such sort of Islamization program is concerned only with the outer shell and not the core of Islam.

The bond of language

Bangladesh is almost a monolingual country, life-style is also similar for greater majority of the people and there is much common in daily necessities, religious differences fail to overshadow the impacts of other influences. The people of this country are originally from the Indian sub-continent. Therefore, many of the prevailing customs and tradition that form the edifice of the society can be traced back to Indian origin. The social set-up in Bangladesh is family-centered. Obligations to family include both financial and ritual practices. In a

typical working family set-up, great care is taken in the choice of child's education. Today because of the impact of globalization, parents, especially, those living in urban areas and responsible guardians in general, are more serious about their words' future and ready to spend money for education, Education is considered as the most priority area for investment. The children are expected to be obedient to their parents, teachers and other elders. The pattern of dependence (upon the elders or seniors) pervades all human contact and people carry a strong need for 'dependence/security' (Lyon. 1993). The education system also requires a through change; to cope with the needs of twenty first century blended with information technology use. Personal initiative, originality and independence in decision-making which were discouraged at one time under the pattern of dependency (accepting authority unquestioningly) deserve to be freed to play its own role.

It is important to mention that many of the characteristics of the Bangladeshi set-up are contrary to the very principle of Islam. For example, Islam calls its believers to mediate and probe, promotes 'achievement' and holds each individual responsible for his actions.

3.3 Status of total labor force and HRM situation in Bangladesh

Bangladesh is the most populous country of the world. The country has an area of 147570 sq. kilometer with total population of 136.6 million, creating density of population of heads 928 per sq. kilometer. There is no other country in the world where so much population lives in so small an area. According to one study by UN body, in 2050 its population is expected to surpass 25 crore. Therefore, the scope to develop HRM in Bangladesh is enormous and what is required is the conversion of huge population into HR. In many developing countries including India there is a Ministry of Human Resource. But it is a matter of regret that Bangladesh government lacks vision and has no ministry or directorate dedicated to human resource management.

The sectoral contribution to GDP has been shown in Table 1. The positive trend of structural transformation from agriculture to non-agriculture sector has been consistently continued unabated. In FY 06 the contribution of agriculture sector including fisheries and forestry stands at 21.11 per cent which was at 22.27 and 21.84 per cent respectively in FY 04 and FY 05. The share of industry sector in GDP has been gradually increasing since FY 1999-00. The share of manufacturing industry stood at 17.79 per cent in FY 06 from 17.08 per cent of the previous fiscal year. In FY 05, the share of whole sale and retail trade estimated at 14.17 per cent, which was 14.08 per cent and 14.12 per cent in FY 04 and FY 05 respectively. The contribution of transport and communication is also increasing steadily. The trend of structural transformation of broad sectoral shares in GDP shows that the contribution of agricultural sector to gross domestic product (GDP) is declining and at the same time the share of industry (manufacturing) is growing steadily and it is expected to bypass the agriculture sector in the next ten years, both in the contribution of GDP and in terms of the labor force employed in manufacturing sector.

Since the early 1990s, Bangladesh has been implementing a comprehensive program of deregulation and fostering a climate for private investment by opening up activities previously monopolized by the public sector. Bold steps have been taken to privatize the entire public sector, including financial institutions and industrial units and coinniercial enterprises and lucrative incentives have been offered for private investment. The aim of privatization is to stimulate the industrialization and economic progress of the country and also to create more opportunity of employment by strengthening the private sector. Another important objective is to infuse dynamism to the loss-making organizations to reduce the burden of losses of the government. The share of industry (manufacturing) is picking up with the passage of time. In FY 2005-06, the growth of manufacturing sub sector reached double-digit level. It is expected that this upward growth trend of the

industrial sector will help to reach the national growth rate at 7 per cent level. According to provisional estimate, in FY 2005-06 the contribution of the manufacturing sector to GDP is 17.05 per cent which is 0.54 per cent higher than that of the previous year.

TABLE I: Sectoral Share of GDP (%) at Constant Prices (1995-96)

Sector/Sub Sector	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
1 Agriculture, forestry and fishery	25.58	25.03	23.98	23.47	23.08	22.27	21.84	21.11
2 Mining and quarrying	1.03	1.07	1.07	1.09	1.11	1.14	1.16	1.19
3 Industry (Manufacturing)	15.40	15.59	15.76	15.97	16.16	16.51	17.08	17.79
4 Electricity, gas and water supply	1.43	1.46	1.51	1.54	1.59	1.64	1.65	1.63
5 Construction	7.84	8.08	8.41	8.63	8.83	9.03	9.14	9.16
6 Whole-sale and retail-trade	13.35	13.48	13.77	13.87	13.97	14.12	14.07	14.17
7 Hotel and restaurant	0.63	0.64	0.66	0.67	0.68	0.68	0.69	0.70
8 Transport, Storage & Communication	9.20	9.42	9.62	9.76	9.79	9.98	10.07	10.21
9 Financial intermediation	1.57	1.57	1.61	1.63	1.65	1.69	1.72	1.73
10 Real estate, renting and business activities	8.88	8.72	8.63	8.48	8.30	8.12	7.87	7.65
11 Public administration and defense	2.55	2.56	2.60	2.60	2.63	2.68	2.71	2.75
12 Education	2.20	2.24	2.31	2.36	2.40	2.44	2.49	2.54
13 Health and social services	2.20	2.19	2.21	2.21	2.22	2.25	2.27	2.29
14 Community, social and personal services	8.13	7.97	7.87	7.72	7.59	7.45	7.25	7.09
Total GDP	100.00							

Source: Bangladesh Bureau of Statistics (BBS)

TABLE II: Share of Employed Labor Force by Sector (15 Years and Above Age)

Sectors	1995-96	1999-00	2002-03
Agriculture, forestry and fishery	48.85	50.77	51.69
Mining and quarrying	-	0.51	0.23
Manufacturing	10.06	9.49	9.71
Power, gas and water	0.29	0.26	0.23
Construction	8.27	2.82	3.39
Trade, hotel and restaurant	17.24	15.64	15.34
Transport, maintenance and Communication	6.32	6.41	6.77
Finance, Business and Services	0.57	1.03	0.68
Commodities & Personal Services	13.79	13.08	5.64
Public administration and defense	-	-	6.32
Total	100.00	100.00	100.00

Source: BBS Labor Force Survey 1995-96, 1999-00 and 2002-03

Table 2 presents labor force employed in Bangladesh for the period 1995-96, 1999-00 and 2002-03. Since Bangladesh economy is agrarian in nature 51.69 per cent of the labor force is employed in agricultural sector. Second largest percentage of labor force is employed in trade, hotel and restaurant in Bangladesh. Since Bangladesh is so densely populated, customer-oriented business will flourish more and more to satisfy their demands.

According to Labor Force Survey in FY 2002-03, 15 years old and above a total 4.43 crore of labor force (male 3.45 and female 0.98 crore) are engaged in different professions. Still the largest number of laborers is engaged in agriculture (51.69%). It may be noted here that in FY1999-00, 15 years and above labor force was 3.90 crore (male 3.11 and female 0.79 crore) engaged in different professions. Amongst

them 50.77 were engaged in agriculture. In between two periods of survey, employment in agriculture increased by 1.16 per cent. In the analysis of the classification of the survey conducted in FY 2002-03, it is found that of the total employed labor force 44.70 per cent are self-employed; whereas self-employed labor force was 46.67 per cent in FY 1999-00. It is evident that in between surveys the percentage of the self-employed declined by 2 per cent. According to survey of FY 2002-03 the proportion of day laborer and regularly employed labor force are 20.09 per cent and 13.77 per cent, whereas according to earlier survey figures were 24.36 per cent and 16.67 per cent respectively, On the other hand, according to latest survey the labor force employed without remuneration in the family increased from 6 per cent to 18.28 per cent.

Public sector organizations, which were dominant feature of the economy and marked by a passive management culture, have been replaced by privatization. Political patronage, rather than sound business decisions used to determine their operations. Therefore, from the onset, the private sector was encouraged to develop forward-looking management systems. However, it was not until mid 1990s that the government undertook the task of changing the prevailing corporate culture of public sector enterprises by doing the following:

The Industrial Policy 2005 and the associated reforms in trade and fiscal policies now augur well for investment by both the inland and foreign nationals and companies and also non-resident Bangladeshi nationals. No approval is required for any investment by the foreign investors in any sector of the economy except for the few areas (strategic ones), which are still reserved for public investment only. Given the present environment of global competition, the private sector is playing an important role in the industrialization of the country.

To strengthen the role of private sector and establish private sector as a driving force of development, the Government has been privatizing the state-owned enterprises (SoEs) and the other

commercial entities in phases. It may be noted that 44 SoEs in the country incurred a net loss of Tk 4,228.2 crore in FY 07 which was Tk 2848.55 crore in FY 06 (showing a shoot up of 48.43 pc). To raise the efficiency of official works use of information technology has been ensured, having classified the activities of the Board of Investment (BoI) with the goal of extending highest possible assistance and high quality service to both local and foreign entrepreneurs in establishing industries. In FY 2005-06 foreign projects (foreign and joint venture) registration increased by 12.5 per cent. The value of total 135 foreign/joint venture investment proposals is Tk. 24986 crore. Principal sectors of the registered foreign/joint venture investment proposals include service, textile, chemical, engineering and agro-based product.

3.4 Influence of national institutions on Bangladeshi HRM

Current analysis of the available literature and information reveals that the majority of Bangladeshi managers believe that Bangladeshi labor laws influence their HRM policies and practices marginally. Because business laws are easily bypassed in this country without any hurdles. Bangladesh very often expresses its desire for maintaining good industrial relations and therefore for the survival of organizations. They have a direct impact on personnel policies and act as guiding pillars for 'exit policies' (developed to facilitate retirement in the light of liberalization) and downsizing of organizations.

At present, there is no specific individual law to govern or regulate HRM in Bangladesh. The very concept of HRM had been introduced in Bangladesh in the recent past. The Bangladesh Labour Code 2006 is one of the very recent laws with major overhauling changes in the field of labour legislation. Further more, although the name of the law is Bangladesh Labour Code, in fact, it is not a code rather a consolidating legislation only.

Any establishment in Bangladesh, private or public, is influenced

by the rules and regulations created by the establishment concerned. Besides, this is to be noted that their own rules cannot infringe or violate the rules laid down in Bangladesh Labour Code, 2006 or any other law in force. However, the legislation still dictates most HRM policies and practices. Some of the prominent and repealed lab our laws are;

1. The Workmen's Compensation Act, 1923(viii of 1923);
2. The Workmen's Protection Act, 1934 (iv of 1935);
3. The Payment of Wages Act, 1936 (iv of 1936);
4. The Employer's Liability Act, 1938 (xxvi of 1938);
5. The Employment of Children Act, 1938 (xxvi of 1938);
6. The Maternity Benefit Act, 1939(iv of 1939);
7. The Employment (Records of Service) Act, 195, (xix of 1952);
8. The Minimum Wages Drdinance, 1961 (xxxiv of 1961);
9. The Factories Act, 1965 (iv of 1965);
10. The Shops and Establishment Act, 1965(vii of 1965);
- 1 1. The Employment of Labour (Standing Orders) Act 1965 (viii of 1965);
12. The Industrial Relations Grdiance, 1969 (xxiii of 1969);
13. The Newspaper Employees Act, 1980 (Condition of service) (xvii of 1980).

The above law governs various aspects of HRM at the enterprise level. Unfortunately, although the law has been framed very recently, the implementation is weak. In Bangladesh, in most of the factories, the rate of payment of wages is very -low, because laborers are available at a low rate of wages. Moreover, in most factories laborers are not organized. Effective unions are absent. With the rising awareness among the workers, and also because of pressure from international bodies, the payment of minimum wages issue is getting grounds.

The government of Bangladesh last year (FY 2006-07) fixed the

minimum wage at Tk. 1662.50 during a tripartite deal involving the government, the owners and the workers. After the agreement, Bangladesh Garments Manufacturers and Exporters Association (BGMEA) are determined to enforce payment of minimum wages to workers of all garment factories (4,600) by June 30,2007 It has been found that after the expiry of the date 419 units did not comply with the agreement and the other 21 factories were closed down in June 2007.

It is expected that, the influence of trade unions on HRM is significant. Although in per centage terms the unions in Bangladesh are in decline, mainly due to shut-down of So Es, but in absolute terms there is an increase in union membership because of increase of employees, especially in garment factories. Moreover, as has happened in the West (for example in the UK), in Bangladesh unions are playing a more co-operative role and are less militant. Nevertheless, they still greatly influence HR policies and practices in Bangladeshi companies, for example, in the recruitment of new employees, payment of bonuses and intemal transfers. However, the separation of Judiciary from the executive is expected to yield positive results.

Empirical study and its analysis

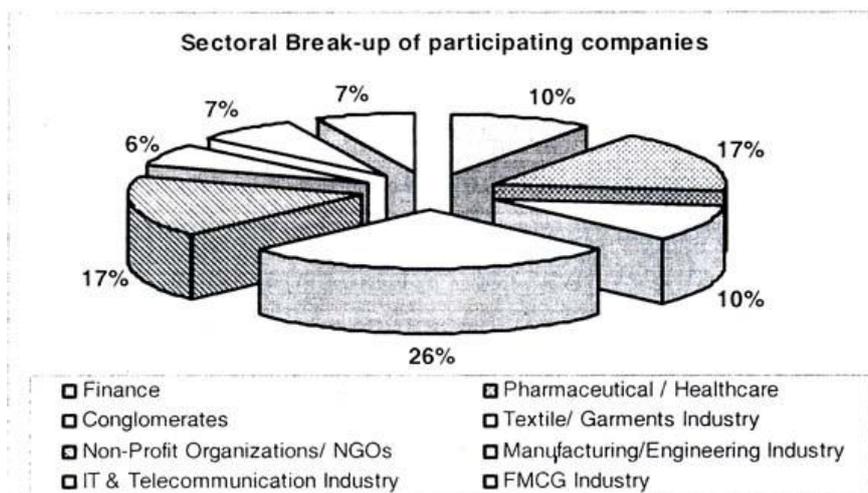
To assess the present status of HRM in Bangladesh, an effort was launched through opinion survey on the basis of questionnaire. The coverage of the survey was neither adequate nor its findings are reasonably acceptable even by the author. At this critical situation, the report on *HR Practices Survey, Bangladesh: An Analysis of Findings* (a joint effort by Human Capital, Ernst & Young with its global expertise on HR Advisory space in collaboration with *Metropolitan Chamber of Commerce and Industries - MCCI, Dhaka*) was published ceremoniously on 12 December 2007. The coverage of the report was adequate, inclusive of both public and private sectors. *HR Practices Survey, Bangladesh*, probed into the prominent areas (factors) of people management practices like ‘Organization Culture’,

‘Performance Management’, ‘People Development’ etc. The focus was to identify underlying themes from a cultural point of view. The survey data was collected under seven different factors-

1. Talent Acquisition;
2. Performance Management System;
3. People Development;
4. Compensation and Benefits;
5. HR Strategy and Processes;
6. Organization Culture; and
7. HR Practices for Workmen, Staff, and other Non- managerial Employees.

The article’s theme is similar to that of the report, but the approach followed in the latter was different.

PIE-CHART I: The sectoral break-up of participating companies



Significant differences were identified among sectors. While the broad socio-economic and cultural fabric within which the participating operates is the same, differences emerged between sectors due to differential stages that the sectors are in, the legacy of the sectors, exposure to global practices, etc.

To sum up the findings of the report, these are:

The survey indicates that about one-half of the participating organizations attach high criticality on Standardized System of Recruitment at all levels. This is evident from Chart 1. Percent of Organizations having Standardized System of Recruitment can be seen in Chart 2.

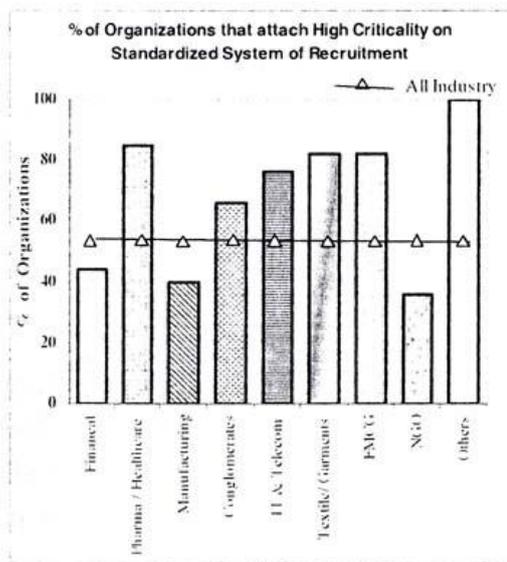


Chart 1

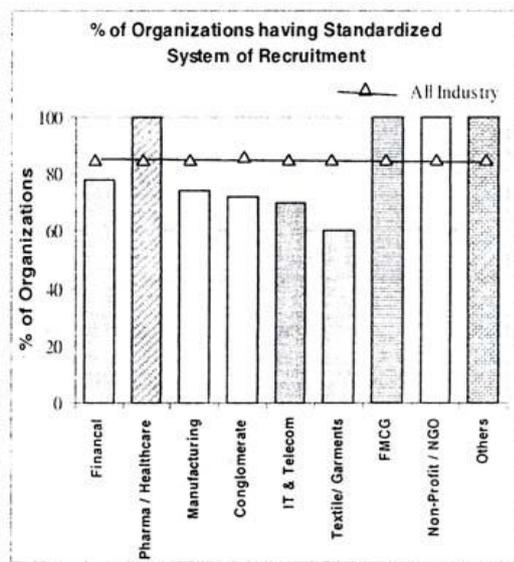


Chart 2

The planned approach helps organizations in getting good quality people as well as required number. Chart 3 shows percentage of Organizations practicing competency-based recruitment. In recent management practice, "Performance management system (PMS)" has taken place of performance appraisal or annual review. Most of the participating organizations do maintain a process to measure the performance of its employees and this is evident from Chart 4. Apart from that, in a substantial proportion of companies, the rating of an employee depends on the organizational performance, the business unit/department's performance and the team/section's performance.

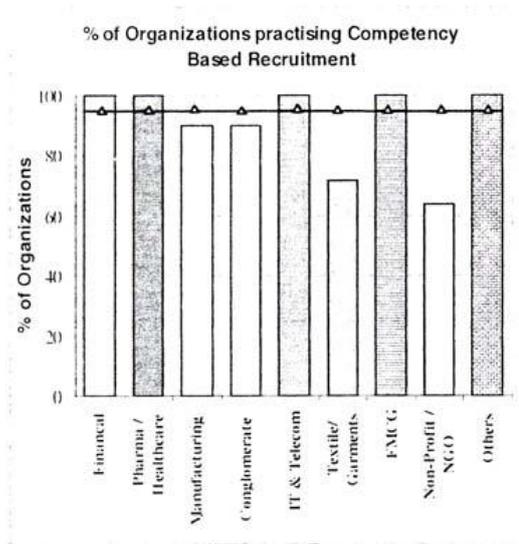


Chart 3

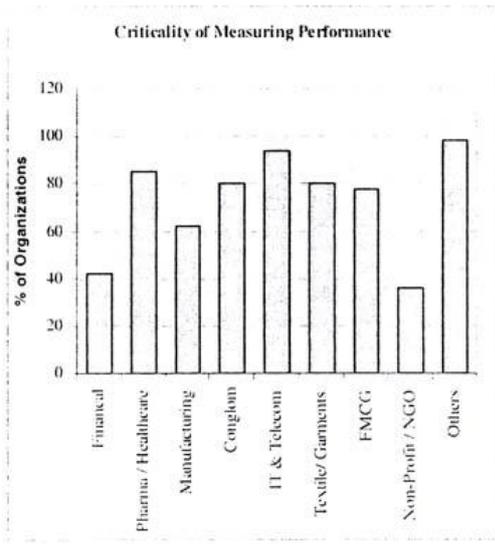


Chart 4

Percentage of organizations that attach high criticality to training & development or organizational success can be seen in Chart 5. The survey result shows that, across all industries, about 55 per cent of all organizations consider that a strategically designed compensation is critical for organizational success and it is evident from Chart 6.

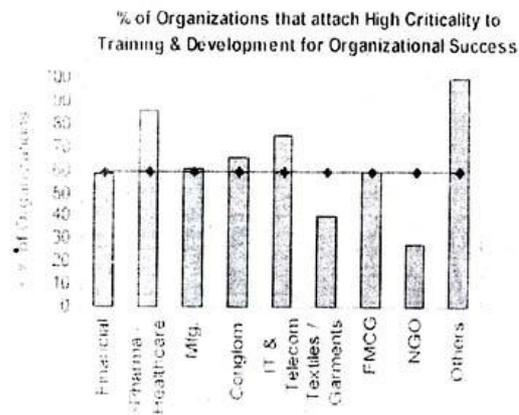


Chart 5

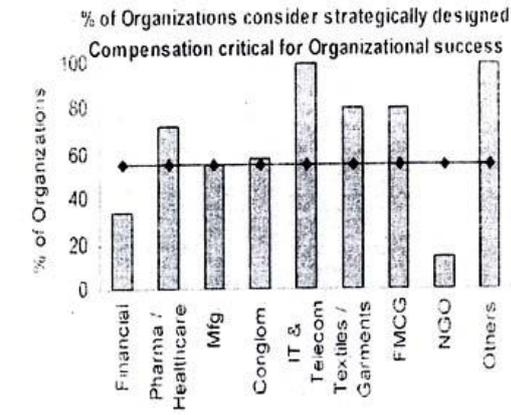


Chart 6

To assess the present status of HRM in Bangladesh, the findings of both the surveys have been taken together. It is evident that

businesses have no clear policy on HRM; few businesses (both local and foreign) have recently restructured their personnel divisions as human resource divisions, but they are yet to firm up their policies and start practicing accordingly. Results of both the studies show that on an average Bangladeshi managers give a high priority to the importance on cultural assumptions that shape the way employees perceive and think about the organization, as well as Bangladeshi common values, norms of behavior and customs and way in which managers are socialized in Bangladesh. With the expansion of the facilities like, web-site, LAN, internet communication and arrangement of regular meeting (such as, annual general meetings with social dinner, cultural evenings, observation of national days) and above all globalization forces etc. dynamic business environment is progressing. Those who are ready to shoulder the challenges of the present and the future have realized at least that without attaching proper attention to HRM policies and practices the future will be bleak.

A high per cent of the Bangladeshi managers believe that common Bangladeshi values, norms of behavior and customs have an important influence on their HRM policies and practices. Managers' actions are dictated by these values and norms of behavior and family ties play a dominant role here. But some recent incidences of postings, promotions, placements and recruitments and selections in one important ministry having vast opportunity of creating illegal money testify that money play a crucial role. Bangladeshi managers feel that pressure groups (such as unions backed by political parties, especially party in power) exert unseen power in accommodating their people, paying money and sometimes dictate certain agreements -- the terms and conditions and most of the time these create trouble for management. Innumerable instances of such incidence came out after 1/11 in Bangladesh.

3 5 Recommendations

1. Compared to even many developing countries there is a dearth of studies on HRM in Bangladesh. Although recently many organizations have instituted HRM branch/ section in their organizations, but they are yet to formulate appropriate policies considering their needs and environment. Many organizations are lacking experts to deal with such issue and found disarray in this regard. To drive immense benefits from the practice of HRM, organizations should pay proper attention to this issue.
2. Bold steps should be taken to privatize the entire public sector. The colossal loss of maintaining SOE is a great burden on the nation deterring its moving forward. At the same time, the government should not waste time in taking decisions on foreign direct investment, particularly, on big ones proposed by world-renowned companies. But there is no alternative to a judicious decision.
3. The country has taken enough time to build trust on our own strengths to the domestic entrepreneurs (as emerged from above). Their spheres of areas and operations should be broadened to cover every possible area of enterprises. For that small and medium size enterprises should be treated as lead ones.
4. Let Bangladesh be a leading manpower exporting country leading to increasing annual migrant remittances. Through concerted efforts of both private and public levels efforts should be made to identify export growing and high-skilled labor markets in the United States, Britain, Bahrain, Malaysia and Saudi Arabia as the next target for economic migrants. Bangladesh Manpower Employment & Training (BMET) and Bangladesh Overseas Employment & Services Ltd. (BOESL) may be the lead organization for that purpose. At the same time, unscrupulous businessmen in manpower export business should be dealt with very carefully.
5. Any program for HRM should be backed by the findings of the recent survey; or can initiate a new survey for achieving any goal.

IV. Conclusion

The HRD effort both policy and practices in this country is at the burgeoning stage and disarray also. Bangladesh has enormous potentiality in converting her huge population into HRD both for own requirement and also to meet the increasing demand for other countries. What is needed is well-planned efforts. Scholars and practitioners should come forward to work in this area.

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A study on the Foreign Direct Investment Scenario of Bangladesh

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Abstract

The role of foreign direct investment (FDI) in the growth process has for long been a topic of intense debate. Although this debate has provided rich insights into the relationships between FDI and growth, there is very little analysis of the issue. The widespread belief is that FDI generally has a positive impact on economic growth in developing countries. But in vast majority of countries, FDI has no statistically significant long-run impact on growth. In very few cases, FDI indeed contributes to economic growth both in the long and the short run. The government of Bangladesh has been taking efforts since the early eighties to attract FDI for speedy industrialization and to bridge the gap of capital, technology and managerial skills of the country. However, the investment plans in Bangladesh do not have appropriate mechanisms for the progressive development of foreign investment. In the absence of a long-term industrial development strategy, the reform initiatives have only had negligible success to create conditions favorable to promote foreign direct investment. The present scenario of FDI in Bangladesh is not still satisfactory enough but the availability of abundant resources, skilled and cheap labor forces, stable political atmosphere, fruitful monetary and fiscal policy, improvement of infrastructure and long term strategic planning to stimulate FDI might be able to make the condition favorable to attract foreign investment in Bangladesh. This paper has recommended some guidelines that can be used to attract foreign investment in Bangladesh. This paper investigates the state of the business environment in Bangladesh, identifies major determinants affecting the FDI and the benefits that the country is enjoying due to FDI. Moreover, the FDI sometimes play a negative role for the host country. This paper also tries to reveal the true picture of negative impact of FDI in the economic development of Bangladesh.

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I. Introduction

One of the most remarkable trends in the world economy over the past two decades has been its increasing global economic integration and growing internationalization, reflected in terms of the rising share of international trade and foreign direct investment (FDI). The issue of FDI has been receiving phenomenal attention from many national governments. In recent years policy makers and multilateral organizations have increasingly emphasized the importance of a sound investment climate for promoting economic growth in developing countries. In this age of “Avenue tournament” where governments compete for attracting FDI by offering various incentives and benefits among the nations, the major challenge to host countries is to ensure an eye-catching and conducive environment for foreign investment.

The climate for investment is determined by the interplay of a whole set of factors: economic, social, political, technological, and environmental those have a bearing on the operations of a business. Foreign direct investment (FDI) has the potential to generate employment, raise productivity, transfer skills and technology, enhance exports and contribute to the long-term economic development of the world’s developing countries.

More than ever, countries at all levels of development seek to attain FDI for development, because foreign affiliates of some 64,000 corporations generate 53 million jobs (The World Bank Research Observer. 2002). FDI is the largest source of external finance for developing countries. Developing countries' inward stock of FDI amounted to about one third of their GDP, compared to just 10 percent in 1980. Bangladesh has long been trying to attract FDI to support its internationalization process. Since the 1980s, the government of Bangladesh introduced open door economic policy and implemented macro and micro economic reform programs to attract foreign investment. Consequently, Bangladesh has been experiencing an

upward trend in FDI inflow. However, by international standards, so far Bangladesh could attract only an insignificant amount of foreign capital.

The paper is organized as follows. Section-II & III outline the objectives and methodology of the study. Section-IV discusses present condition of FDI in Bangladesh. Section-V and VI describes the factors affecting FDI climate and roles of FDI in Bangladesh. Finally section-VII, VIII and IX summarize the finding suggestion and conclusion of the paper.

II. Objectives

The major objective of this study is to evaluate the contribution of FDI in the economic development of Bangladesh. Some other objectives behind this study are as follows:

- To focus on the present scenario of FDI in Bangladesh.
- To reveal the general impact of FDI on the economy of Bangladesh.
- To suggest a few necessary steps to make the FDI more useful for Bangladesh.

III. Methodology

The task of this study is primarily based on secondary data. No primary data have been used in this study. The secondary data were collected from different websites, journals, books and newspapers. By using these data, the study at first has figured out the present condition of FDI of Bangladesh. Thereafter, these data were analyzed to assess the impact of foreign direct investment in the economic development of Bangladesh. Lastly some policies were suggested for the efficient and useful utilization of FDI by removing existing obstacles to achieve the desired level of economic development for the country.

IV. Present Condition of FDI in Bangladesh

Bangladesh is in the process of transition from a predominantly agricultural economy to a modern economy. There have been significant shifts in the structure of the economy during the last two decades. The share of agriculture in Bangladesh's GDP has fallen by 0.90% and shifted from 4.1% (FY-04) to 3.2% (FY-07) ³. The private sector is envisaged to play an increasingly active role with public sector development programmers concentrating on basic infrastructure and human resource development. In recognition of the private sector's ability to contribute towards achievement of the goal of socio-economic improvement to its people and self-reliance for the nation, the government has recently implemented policy reforms to create a more open and competitive climate for both foreign and local investment.

TABLE I: Private Investments Projects Registered with Board of Investment (BOI)

Year	Local Investment		Foreign / J.V		Total	
	No. of Projects	Crore (TK.)	No. of Projects	Crore (TK.)	No. of Projects	Crore (TK.)
2000-01	1,788	7,809	80	6,993	1,868	14,802
2001-02	2,875	8,806	89	1,734	2,964	10,540
2002-03	2,101	1,1653	104	2,067	2,205	13,720
2003-04	1,624	13,546	130	2,644	1,754	16,190
2004-05	1,469	14,005	120	5,298	1,589	19,302
2005-06	1,754	18,370	135	24,986	1,889	43,356

Source: Bangladesh Bureau of Statistics

Private Investment and percentage of GDP:

Total private investment from FY 2001-02 to 2005-06 amounted TK. 302,550 crore which is 82 percent higher than that of the previous 5 years investment. During FY 1995-96 to FY 2000-01, the total private investment was Tk. 166,560 crore. In the FY 2005-06, the private investment stood at 18.7 percent of GDP from 15.8 percent in FY 2000-01.

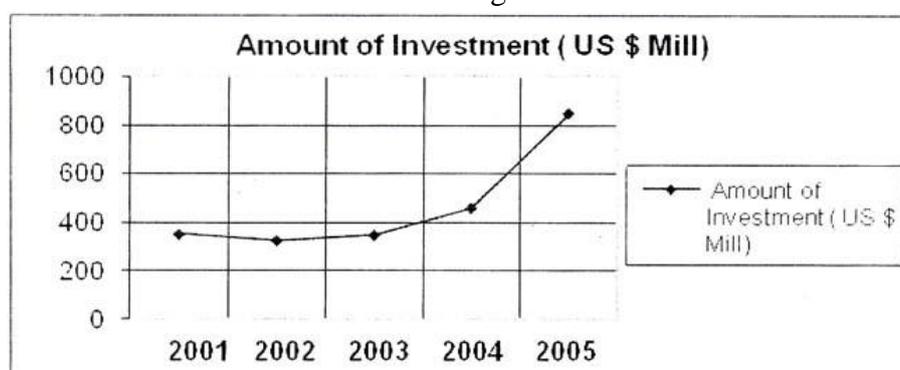
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TABLE II: FDI in Bangladesh since 2001

Year	Amount of Investment (US \$ Million)
2001	354
2002	328
2003	350
2004	460
2005	845

Source: Bangladesh Bureau of Statistics

CHART II: FDI in Bangladesh since 2001



In the Year of 2005, most of the FDI (87%) have been brought by companies registered with the Board of Investment and the balance (13%) has been invested in companies registered with Bangladesh Export Processing Zones Authority (BEPZA).

TABLE III: FDI Brought by Companies Registered with Regulating Authority

FDI components	BIO-Registered Entities-2005	BEPZA-Registered Entities-2005	Total FDI-2005
Equity Capital	410.8	14.8	425.6
Reinvested Earnings	213.8	33.7	247.5
Intra-Company Loans	109.9	62.3	172.2
Total	734.5	110.8	845.3

Source: Bangladesh Economic Review

CHART III: FDI Distribution by Regulating Authority

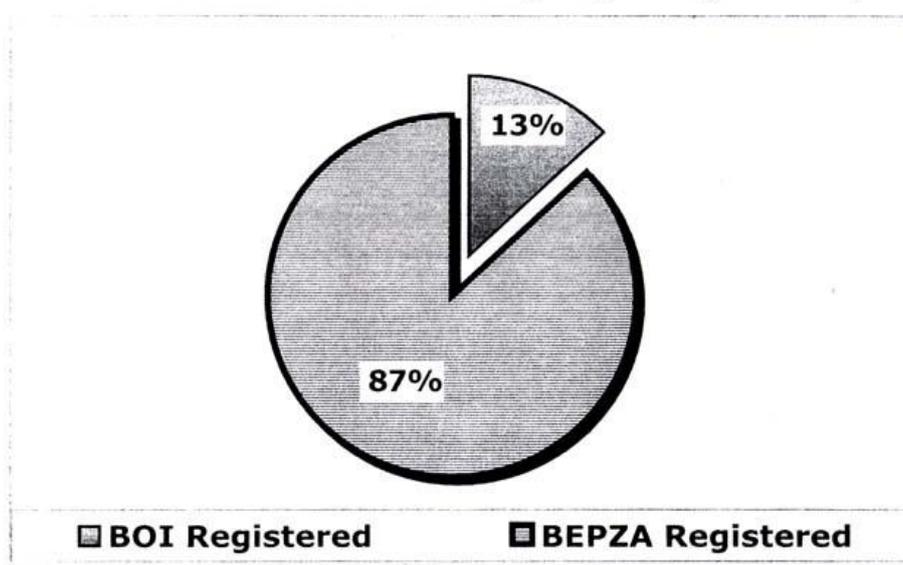


TABLE IV: Sector-wise distribution of FDI during 2005 (in Million US\$)

FDI Sectors	FDI (2005)	2005 Share (%)
Agriculture and Fishing	2.3	0.3%
Power	27.2	3.2%
Gas and Petroleum	181.1	21.4%
Textile and Wearing	96.5	11.4%
Chemicals and Pharma	3.9	0.5%
Metal and Machinery Products	0.1	0%
Vehicle and Transport Equipment	1.6	0.2%
Fertilizer	61.2	7.2%
Cement	45.3	5.4%
Leather and Leather Products	0.7	0.1%
Other Manufacturing	10.1	1.2%
Trade and Commerce	130.5	15.4%
Telecommunication	278.8	33%
Others (TSC)	3.1	0.4%
Services	3.0	0.4%
Others	-	0.0%
Total	845.4	100 %

Source: Statistics Department, Bangladesh Bank

CHART IV: Sector-wise Distribution of FDI during 2005 (in Million US\$)

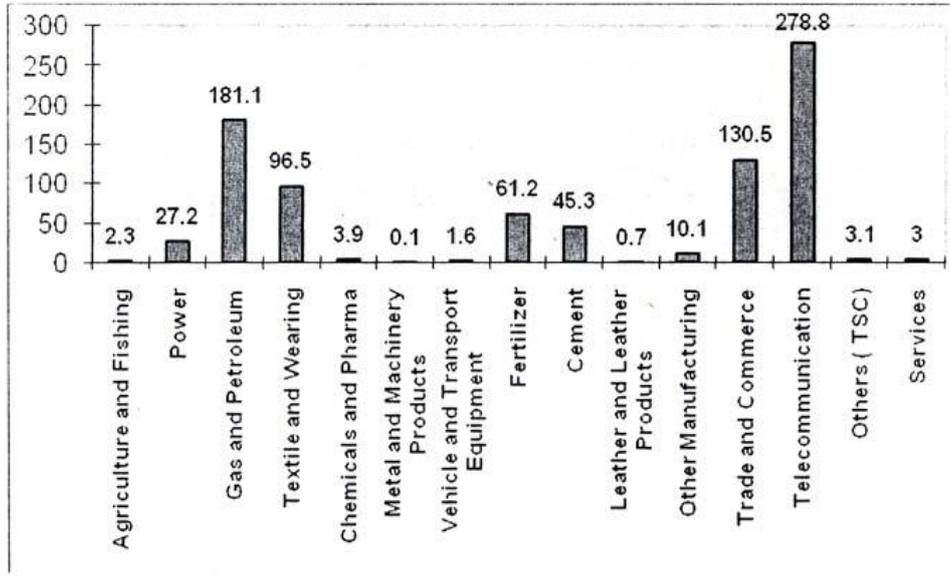


TABLE V: FDI Inflow in Bangladesh during 2005 (in Million US\$)

Country	Total-2005 (in Million US\$)	Country Share (%)
United Kingdom	152.80	18.08%
USA	141.80	16.78%
Singapore	97.40	11.53%
UAE	55.40	6.55%
Norway	53.50	6.33%
Hong Kong	53.10	6.28%
Egypt	48.40	5.73%
Japan	46.50	5.50%
Malaysia	33.10	3.92%
South Korea	29.80	3.53%
Pakistan	25.50	3.02%
Denmark	18.20	2.15%
Netherlands	15.40	1.82%
Taiwan	11.40	1.35%

Source: Statistics Department, Bangladesh Bank

CHART V: FDI Inflow in Bangladesh during 2005 (in Million US\$)

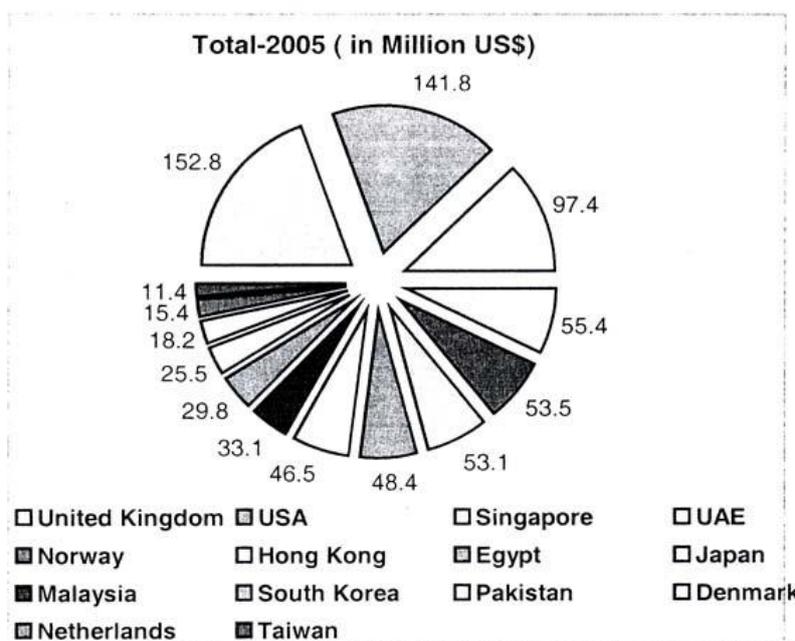


TABLE VI: Investment and Employment Generation by Industries under Bangladesh Export Processing Zone (EPZ) (Up to June-2006)

Goods	Number of Industries	Total Investment (Million US\$)	Total Manpower
Readymade Garments	49	253.28	94,742
Electronics	15	52.27	3001
Textile Goods	26	239.23	20,158
Metal goods	12	20.57	815
Leather goods	12	52.36	5,280
Plastic goods	13	21.24	1,025
Cap	07	43.12	12,583
Terry towel	16	34.89	4,491
Knit textile	21	84.28	19,028
Garments goods	30	76.01	6,013
Others	41	102.19	10,674
Total	242	979.46	1,77,809

Source: BEPZA

TABLE VII: Top Multinational Companies Investing in Bangladesh

Company	Projects
Asia Energy	2
Cotecna	2
Siemens	2
Stare Bank of India (SBI)	2
Taiwan Trade Center	1

TABLE VIII: Source country of MNCS investing in Bangladesh

Company	Projects
USA	8
UK	7
Germany	4
Malaysia	3

TABLE IX: FDI Projects in Bangladesh by Industry Clusters

Industry Clusters	Projects
Heavy Industry	10
ICT	10
Business and Financial Services	8
Light Industry	6
Chemical. Plastic and Rubber	4
Transport Equipment	4
Logistic & Distribution	3
Property, Tourism & Leisure	2
Electronics	2
Food/Beverages/Tobacco	2
Consumer Products	1

Source: Bangladesh Bureau of Statistics

From these data it can be observed that FDI is increasing day by day and the developed countries of the world like USA,UK, Japan, Norway etc. are now becoming interested to invest in Bangladesh. One of the important factors to attract the foreign investors in Bangladesh is the low labor wage rate and sound weather condition. The country has abundant resources of its own to attract investors. It has also been observed that FDI is positively correlated with stable political atmospheres, infrastructure facilities, low interest rates, large potential domestic markets, low inflation rate, positive and stable exchange rates, fruitful monetary and fiscal policy by the central bank and the government. Bangladesh government should develop long-term strategy to stimulate foreign investment in Bangladesh. If it happens then surely GDP of the country will be increased, growth will be accelerated and unemployment problem will be reduced and the country might be converted developing to developed country. The recent years witnessed tremendous interests of foreign investors to invest in diversified sectors in Bangladesh. In FY 2005-06, major foreign investors include Dhabi group of U.A.E, YKK of Japan and Microsoft of USA. Besides a large number of investment proposals worth about US\$ 10.5 billion are at negotiation and / or approval stages. These includes investment proposals from TATA group of India, Toray of Japan, Indorama group of Thailand, Luxon Global of South Korea, Delta Pacific Mining of United Kingdom, Dawood group of Pakistan, Kingdom group of Saudi Arabia and other proposals from China, Malaysia, India , Taiwan , USA, UK, Australia, Singapore, Thailand, Saudi Arabia, UAE and Kuwait.

V. Factors affecting FDI climate in Bangladesh

Macroeconomic environment

Macroeconomic factors include issues such as fiscal, monetary, and exchange rate policies and political stability. The overall economic

condition and business climate as well as various specific economic factors have a serious bearing for FDI. Foreign investors choose a location where there is evidence of success and availability of favorable macroeconomic conditions. Bangladesh started its journey towards development immediately after independence and formulated six consecutive plans emphasizing growth of income and employment, poverty alleviation programs and business development. Later a Structural Adjustment Reform (SAR) initiative gradually opened the economy to more internal and external competition. At the same time Bangladesh undertook substantial investments in human development, making great strides in such areas as primary enrollment, education, child nutrition and fertility reduction. Primary enrolment, for example, rose from 61 percent in 1980 to 72 percent in 1990 and 97.5 percent in 2000. Reforms in institutional and regulatory frameworks were less encouraging as efforts to liberalize across economic sectors lost momentum. The program to divest state enterprises in manufacturing stagnated and state enterprises are a huge drag on the Bangladesh economy. In the financial sector, progress was uneven in the 1990s. Private banks gained market share throughout the decade, and their financial situation improved in recent years, though their share of loans remained high at around 17 percent in 2001, Despite the mixed picture in reform, Bangladesh achieved positive growth results. In 1991-2000 real GDP growth averaged about 5 percent a year. Export of selected items contributed this growth. This growth stimulus came mainly from woven garments and knitwear, which grew from \$32 million in early 1980s to nearly \$5 billion in early 2000, which now account for 75 percent of Bangladesh's total annual exports. The next largest items are frozen food and raw jute, which account for 5 percent and 4 percent of total exports respectively. Bangladesh's economic performance and slowing population growth over the past two decades produced real per capita GDP growth of 3.1 percent a year. The country has moved to a flexible exchange rate regime since May 31, 2003 so that it can

improve its export competitiveness and absorb external shocks more efficiently.

Although the progress of the 1990s was been slow, Bangladesh has fallen short of its growth potential and other low income countries such as China did spectacularly well, enjoying per capita GDP growth and poverty reduction rates of more than 8 percent a year in the 1990s. India also outperformed Bangladesh, with GDP per capita growth at 4.4 percent and poverty reduction at 5.4 percent a year. The per capita GDP growth of Bangladesh was negative in the 1970s, rose to 1.7 percent in 1980s and to 3.1 percent in 1990-2001. Bangladesh has kept inflation lower than most other countries in East and South Asia. Its consumer price inflation averaged 5.1 percent in 1990-2001, compared with 7.1 percent in China, 8.6 percent in India, and 9.2 percent in Pakistan. The PDI in Bangladesh has turned the country into a middle-income country from the low-income country category since 2005 after crossing 60 billion dollar GDP. However, though Bangladesh performs well on some areas, it still fails to keep up with the growth in other low-income countries, which means it needs to improve its investment climate and also to attract FDI.⁶

Governance

Governance relates to government interactions with business, which typically mean regulation and corruption, both of which affect the costs of starting and running a business. Bangladesh scores relatively well on the indexes for voice and accountability, regulatory quality, and government effectiveness, exceeding the average for low-income countries on all three measures (in an index measure named government hexagon). In addition, it performs better than China, India, and Pakistan on regulatory quality- but worse than all three on government effectiveness, control of corruption, political stability and rule of law and also worse than the average for low income countries. A particularly important aspect of governance is the ease with which

firms can enter and exit a market- an important deterrent of productivity, investment, and entrepreneurship. Study found that-stricter regulation of entry is correlated with more corruption and a larger economy. Corruption is a major governance problem in Bangladesh.

Infrastructure

Infrastructure refers to the quality and quantity of physical infrastructure (such as power, transport, and telecommunications). The better the infrastructure of the host economy, the more attractive it is to foreign investors. The quality of infrastructure appears to be relatively poor in Bangladesh. In a survey of business executives from 75 countries, the quality of infrastructure in Bangladesh was rated as being "poorly developed and inefficient". Of all countries in the world, Bangladesh was ranked as 74th. In terms of power supply, evidence from firm-level investment climate surveys confirms that electricity (supply, transmission and distribution) is a problem in Bangladesh. Over the past two decades the country's power generating capacity increased almost threefold, from 1.0 million kilowatts in 1980 to 3.3 million, however firms have reported experiencing power outages and surges of about 250 days a year on an average. To buffer these outages, about 72 percent of enterprises in Bangladesh reported having a generator while 42 percent in Pakistan and only 27 percent in China. Firms have reported losing more than 3 percent of production on average as a result of problems in the electricity grid. This factor creates an unattractive climate for investment. In terms of transport, ports and roads, results from surveys suggest that transport is also a problem in Bangladesh in comparison to other countries. According to the Global Competitiveness Report 2001/02, Bangladesh ranked 70th among the 75 countries for the quality of roads and 72nd for ports. Although Bangladesh outperformed Sri Lanka, India, and the Philippines in the ranking for roads, it ranked lower than any of the

comparable countries for ports. India ranked 57th on ports, and China took 51st position for ports. Well developed telecommunication services are important for FDI.

The number of fixed line telephones per 100 people in Bangladesh rose significantly in the past two decades, from 0.11 on 1980 to 0.39 in 2001. The dramatic growth of privately invested mobile phone market is more encouraging, introduced only in the 1990s, 0.4 percent of people used mobile phones in the year 2001. However, Bangladesh still lags behind other countries in both fixed line and cellular telephony. In 2001, it had fewer fixed line and mobile phones than the average for low income countries and also fewer than other comparator countries in East and South Asia. For example, Pakistan had 2.4 fixed lines and 0.6 mobile phones per 100 people, India had 3.4 fixed lines and 0.6 mobile phones and China had 13.8 fixed lines and 11.2 mobile phones per 100 inhabitants. The World Bank investment climate survey also reveals that a median wait for getting a fixed telephone connection within the previous two years were 90 days in Bangladesh, 18 days in Pakistan and only 7 days in China.

Financial infrastructure

Access to finance influences a firm's propensity to invest. Firms or industries in Bangladesh have reasonable access to formal finance compared to other low-income countries. For example, in 2001 credit to the private sector amounted to about 27 percent of GDP in Bangladesh. Although this ratio was lower than those in some countries in the region, it compares favorably with the average low-income countries (24 percent of GDP). And it was only fractionally lower than the ratios in India (29 per cent) and Pakistan (28 per cent), despite their higher per capita incomes. However, Bangladesh still lags behind in its financial systems (banks, stock, leasing company and bond markets etc.) and needs to develop institutional support for a better investment climate.

International integration

International integration is another determinant associated with investment. Countries that aggressively pursued integration with the global economy (such as Brazil, China, India, Malaysia) grew more quickly in the 1990s than those that did not. The low level of incoming FDI in Bangladesh indicates poor integration with the global economy. As a share of GDP, foreign direct investment in Bangladesh (0.59 per cent) is slightly lower than the average for low-income countries (0.63 per cent), and it is slightly higher than that in India (0.50 per cent) and Pakistan (0.51 percent). But it is considerably lower than foreign direct investment in most East Asian countries. Bangladesh has been very slow to integrate into the global economy, despite some growth in trade in recent years. The country's exports rose from only 6 percent of GDP in 1980 to 15 percent in 2001, while its imports increased from 18 percent of GDP to 23 percent. These proportions compare favorably with those of India and Pakistan, but less so with those of other low and middle-income countries, especially in East Asia.

Political stability

Political instability of a host country changes the 'rules of the game' under which businesses operate and that has impact on profit and future FDI inflows. Political factors like change of government, attitude of opposition group, transparency in bureaucracy, degree of nationalism, corruption, terrorism and so on, are seriously considered by the investors in pre-investment decision making. In Bangladesh, there is no broad national consensus on some of the major political issues. Although a democratic political process has been initiated, a sound bipartisan system is yet to be developed. Moreover, a deterioration of law and order, political rivalry, unauthorized strike, militant gang incidents and ineffective enforcement of regulations has affected the confidence of foreign investors.

Human resources

Bangladesh has created an improved education infrastructure but failed to generate a pool of skilled workforce to attract investment in non-traditional industry sectors. The Global Competitiveness Report 2001/02 ranked Bangladesh 58th among the 75 countries in the survey, ahead of China (59th) and Malaysia (60th) but below other comparable countries in terms of skilled and trained labor. In terms of unskilled labor, it is widely believed that Bangladesh offers the most competitive labor cost in the South Asian region. The recent inflow of FDI in the garments and textiles sector and labor-intensive processes of electronics and machinery in Bangladesh has been induced by cheap labor.

Technology infrastructure

Technological progress plays an important role in economic growth, which stimulates FDI. It includes more modest advances and the implementation of better business processes, and involves the adaptation and adoption of new technologies? However, according to UNESCO, Bangladesh spends less on research and development (R&D) as a share of GDP than do most other developing countries in East and South Asia. While R&D spending totaled about 0.03 percent of GDP in Bangladesh, it amounted to about 0.2 percent in the Philippines and Malaysia and about 0.2 percent in China and India.

Business start up

Data from the World Bank's 'Doing Business Project' suggest that to start up a new firm in Bangladesh is relatively costly. Hiring and firing workers is generally perceived easier than most other developing countries in East and South Asia. An entrepreneur must complete seven procedures to start a firm - the smallest number among a group of comparator countries in Asia (Malaysia is also seven). Another measure suggests that including regulatory and utility connection is

relatively difficult in Bangladesh compared with other Asian countries. Executives surveyed for Global Competitiveness Report 2001/02 ranked Bangladesh 60th out of the 75 countries in regard to the difficulty of starting a new business. This is worse than the ranking for all the comparator countries in East and South Asia.

VI. Some Key Roles of FDI Played in Bangladesh

Introduction of advance technology

For the FDI, a country can enjoy advance technology in various sectors, which are not available in that country. The Multinational Corporations (MNCs) have become vehicles for transfer technology, especially to the developing countries like Bangladesh. The Research and Development (R&D) prospects need a lot of investment, which is the main source of the introduction of advanced technology is possible only by the developed nations. They first invent the technology and after some period they transfer it to the developing and underdeveloped nations by the FDI. For example-we can consider the telecommunication sector of Bangladesh. Its immense growth is mainly for foreign investment in this sector.

Proper utilization of local resources (raw materials and labor)

Some nations have valuable and more resources, which can be utilized to earn a lot of profits. But for the proper investment and efficient management, they cannot do that. By the FDI there local resources can be used which uses directly increase the GNP of that countries. By the efficient use of these local resources, the product cost will be reduced and the local people can consume the products with their low income. There are the country can export the finished products from these local resources and can earn a lot of foreign currencies. For example Bangladesh has been utilizing domestic

resources at an increasing rate and these domestic resources currency finance more than 90% of its budget, which reached to US \$10 billion in the fiscal year 2006-07. Obviously, this positive message has been possible for the increasing FDI in the country.

Investment in unconventional and profitable sectors

FDI has opened the door of tourism and hotel business in Bangladesh. When the Westin is going to start its journey, at least two other international chain hotels-- Intercontinental Dhaka and Holiday Inn, Dhaka are also under construction, showing the growth of hotel business in the country. Dhaka's new hotel Radisson Water Garden has emerged as the best performing hotel in the International chain's Asia Pacific region. Registering \$9.5 million revenue in the first year of operation, FDI in hotel is gradually increasing in Bangladesh. Bangladesh has the potentiality to be recognized as a popular tourist destination because some international tourist spots such as Nepal, India, Bhutan, and Sri Lanka surround the country. Singapore and Thailand and these places are not far from Dhaka. People visiting Bangkok might come to Dhaka for a few days if there is enough tourist facilities and hotels. In medical sector, Singapore and India are the Bangladeshis popular destination for medical travel. In 2005, Bangladeshis were amongst the top 10 healthcare visitors to Singapore and there is no data of people who visited India for medical travel. But Apollo Hospital established in Dhaka explores the new medical facility for the Bangladeshi's with cheap rate and discourage to medical travel to Singapore and India.

Development of skilled personnel

FDI help create employment opportunities in various sectors e.g., five-star hotels in big cities like, Dhaka and Chittagong. Foreign technology and know-how play a vital role to create efficient and skilled personnel in commodity and service industries of the country.

Bangladesh -a promising market segment

Conducting market research in Asia titled “eye on Asia’ to better understand the region’s consumer behavior found that over 50 percent of Bangladeshi consumers are young. They welcome new innovations, helping new companies introduce with new products and services. This research indicates Bangladesh is one of the fastest growing markets in Asia for new investing opportunity.

Bangladesh-an attractive investment center

Considering abundant and cheap labor and low cost of infrastructures as well as congenial investment climate in Bangladesh, Thailand has expressed interest to relocate its textile and Ready-Made Garments (RMG) industry here. TATA Company has also keen interest to establish huge investment in fertilizer, power sector, steel, etc. A Malaysian company invests in power. Saudi prince has bought the Rupali Bank with a view to reorganize the bank and become one of the leading banks in the country as well as abroad. Different foreign companies have invested in textile sector in different EPZS of the country. As a result different jobs have been created.

FDI reduce imports, save currency and provide lower price of product

Bangladesh Garments Manufacturers and Exporters Association (BGMEA) makes three year plan to double export. Different local and foreign companies have invested in the Garments sector, which has created opportunity to exports instead of imports as well as lower the price of Garments product available in Bangladesh market for all consumers. BGMEA implementing new strategy to resolve the local and global barriers, they would look into enforcement of the tripartite agreements on RMG workers minimum wages and compliance issues to augment exporters form EB 9 billion to \$ 18 billion. This demands ensuring the infrastructure facilities. FDI in deep-sea port Chittagong

and maintenance of Chittagong seaport creates the opportunity to exports huge and CCCI (Chittagong Chamber of Commerce and Industry) seeks 150-day storage time for imported goods which also help the import based companies to produce goods. By FDI there are new opportunities to new passenger airline eyes to fly by July. A Kuwait based Company has joined Bangladesh's leading air Cargo operator to launch the country's second private passenger airline.

VII. Findings

FDI increases employment opportunities in Bangladesh and it helps the country to convert into an industrial economy. Bangladesh cannot properly negotiate with the giant foreign investors due to lack in bargaining power of the government and officials. They cannot manage huge amount of investment for the betterment of the country. Though FDI introduces many advance technology but the MNCs in Bangladesh are not yet interested to build their research and development centers in the country. Bangladesh is not as much as technologically developed to attract huge foreign investment in Bangladesh. FDI helps in attaining the GDP growth but for the shortcomings of our own policy, a huge amount of money repatriation takes place in Bangladesh every year. FDI has enhanced the social welfare activities in Bangladesh and is helping the country to create strong international relationship. The giant foreign investors demand a lot of facilities, which is difficult to provide as a developing country like Bangladesh. The foreign investors sometimes influence and abuse the government to formulate policies in their favor. Most of the MNCS in Bangladesh are not enlisted with the stock exchange and they are not public limited companies. So the people of Bangladesh are deprived of the ownership and a share of their profit.

VIII. Suggestions

- The capacity of Board of Investment (BOI) must be strengthened further. During negotiations with multinationals, BOI hire/appoint external experts, and therefore, there is a clear necessity to build a team of technical, financial and legal experts to tackle the issues and concerns of any proposed investment plan.
- There is an urgent need to improve power supply, port operations and railway systems as soon as possible. All efforts should be made to convert the Chittagong port into a regional hub and thus enabling land-locked areas like North-East India and Southern China to have access to global shipping routes.
- Successful completion of the agreement on the proposed investments is important to increase FDI in Bangladesh.
- It is necessary for Bangladesh to focus on other long-term goals and to ensure that the strategy for increasing FDI in Bangladesh is comprehensive and effective. One such measure should be the improvement of higher educational institutions in the country specifically the business management institutions and the improvement of English language skills. More vocational training institutions could be established to give training to increase the efficiency of the young workforce.
- Bangladesh can take the advantage of LDC status, which gives the opportunity of duty-free access to many countries including USA, Canada, Japan, Australia, New Zealand and the European union.
- The government must focus on improving the law and order situation in Bangladesh and must eliminate all forms of extortion.
- There is a definite need for Bangladesh to promote regional

cooperation and integration in order to transform South Asia into a single market. Bangladesh is conveniently located between two major consumer bases (south and south-east Asia), and a single Asian market can boost investment in Bangladesh.

- The critical prerequisite of an efficient and effective long-term strategy is cooperation and consensus among the major political parties. Bangladeshi politicians need to join hands and work together for the future developments of Bangladesh.
- It is necessary for all political parties to respect contracts concluded by preceding governments and avoid abrupt changes in that policy.
- A permanent Business Regulatory Commission with appropriate representation from the private sector is needed to monitor the business sector and to facilitate the local and foreign investment.
- Effective and independent judiciary services must be ensured for the settlement of disputes regarding business.

IX. Conclusion

The FDI can undoubtedly play an important role in the economic development) of Bangladesh in terms of capital formation, output growth, technological progress, exports and employment. The relatively small share of FDI in GDP indicates that Bangladesh is still unable to attract foreign investors for the attainment of economic as well as industrial development of the country. The government of Bangladesh should be concerned about the possible negative effects of FDI, including the question of market power, technical dependence, capital flight and profit outflow. The government of Bangladesh should try to remove the obstacles by taking some necessary steps and can use FDI as an effective tool for the economic development of the country.

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Working Capital Management Polices of Manufacturing Industries in Bangladesh - An Evaluation

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Narzia Florin²

Abstraet

The study aims to examine the relative aggressive and conservative working capital practices of six major manufacturing industries over a period of five years. Analysis shows that working capital investment policies of Food, Pharmaceuticals, Textile, Engineering, Cement and Miscellaneous industries are not significantly different. So the working capital investment policies of the industries are almost same but working capital financing policies are different. The study also focuses on the relationship about how aggressive asset management corresponds to aggressive financial management. It is evident that relatively aggressive working capital asset management seems balanced by relatively conservative working capital financial management.

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I. Introduction

A firm's decision about the level of investment in current assets involves a trade-off between risk and return. When a firm invests more in current assets it reduces the risk of illiquidity but loses in terms of profitability since the opportunity of earnings from the excess investment in current assets is lost. The firm therefore is required to strike a right balance (Pandey LM, HM, 2003).

The financing of current assets also involves a trade-off between risk and return. A firm can choose from short or long term sources of finance. If the firm uses more of short-term funds for financing both current and fixed assets, its financing policy is considered aggressive and risky. Its financing policy will be considered conservative if it makes relatively more use in financing its assets. A balanced approach is to finance permanent current assets by long-term sources and temporary current assets by short-term sources of finance. Theoretically, short-term debt is considered to be risky and costly to finance permanent current assets.

One way to measure the relative aggressiveness and conservatism is to analyze Current Asset (CA) / Total Asset (TA) and Current Liability (CL) / Total Asset (TA) ratios. Relatively higher CA/TA and lower CL/TA ratios indicate conservatism and lower CA/TA and higher CL/TA ratios show relative aggressiveness.

The purpose of this study is to determine if significant differences exist in working capital practices of six manufacturing industries of Bangladesh. Results show that industries tend to follow almost the same policies regarding working capital investment policies and significantly different working capital financing policies.

This article based on the present study has been organized as follows. Section-II & III cover the objectives and methodology of the study, Section-IV outlines the review of literature behind the study. Section-V presents the empirical results of the study and Section-VI provides conclusion.

II. Objectives

The specific objectives of the study are:

- a) to know what type of working capital investment and financing policies are followed by the manufacturing industries in Bangladesh.
- b) to identify whether there is any relative significant difference between the industries in case of working capital investment and financing policy or not.
- c) to find out the relationship about how aggressive asset management corresponded to aggressive financial management.

III. Methodology

Aggressive asset management results in capital being minimized in current assets versus long-term investments. This has the expectation of higher profitability but greater liquidity risk. As an alternative, a more conservative policy places a greater proportion of capital in liquid assets, but at the sacrifice of some profitability. To measure the degree of aggressiveness the current asset to total asset ratio is used, with a lower ratio meaning a relatively more aggressive policy. Aggressive financing policies utilize higher levels of normally lower cost short-term debt and less long-term capital. Although lowering capital costs, this increases the risk of a short-term liquidity problem. A more conservative policy uses higher cost capital but postpones the principal repayment of debt, or avoids it entirely by using equity. The total current liability to total asset ratio is used to measure the degree of aggressive financing policy, with a high ratio being relatively more aggressive.

The data set includes current liabilities, current assets, and total assets for companies in six different industries between 2001 and 2005.

The six industries cover pharmaceuticals, food, textiles, engineering, cement and miscellaneous goods; where the number of companies is 10 in each industry except in cement and miscellaneous, with a total of 54 industries in the final sample. So at a glance, out of this sample size 19% of food industry, 19% of textile, 19% of pharmaceuticals, 19% of engineering, 15% of cement and 11% of miscellaneous industries are considered for final calculation. For better inter-industry comparability, calendar rather than fiscal year data is compiled. This eliminates the distorting impact of different reporting periods and seasonality patterns. To remove the effects of seasonality, data for all firms in each industry is added and averaged together. Therefore, a sequence of five yearly figures for each ratio per industry is generated. A yearly basis CA/TA, CL/TA ratios are calculated to find out the mean and standard deviation of each company for these two ratios. A five-year industry mean and standard deviation is also computed for each ratio by averaging the individual companies' means and standard deviation. By SPSS (computer program) we have calculated the F-test to see the significance level of the industry mean differences of the CA/TA, CL/TA ratios.

IV. Review of Literature

The concept of working capital is of great essence now a days. The term working capital originated with the old Yankee peddler, who would load up his wagon with goods and then go off on his route to peddle his wares. The merchandise was called working capital because it was what he actually sold, or "tamed over," to produce his profits. The wagon and horse were his fixed assets (Besley and Brigham, 2005).

The concept of working capital can be explained as a gross or net term. The term 'Working capital' or 'gross working capital' refers to a

firm's current assets. 'Net working capital' can be defined as current assets minus current liabilities. Basely and Brigham (2005) defined working capital as, "A firm's investment in short-term assets - cash, marketable securities, inventories, and accounts receivable." They also defined working capital policy as, "The firm's basic policies regarding a) target levels for each category of current assets and b) how current assets will be financed." Jones (1992) defined working capital as current or short-term assets. Working capital investment and financing strategies can be categorized into three parts: aggressive, matching or moderate and conservative. High risk, high return working capital investment and financing strategies are referred to as aggressive; low risk and return strategies are called conservative; the balance between two policies indicate the matching (Brigham and Gapenski, 1999; Gitman, 2007).

No evidence of empirical study is found in working capital literature, which directly addresses the question of aggressive and conservative working capital policy except one. Much of recent working capital literature focuses on special subsets of business. Ferconio and Lane (1991), Kincaid (1993) looked at the healthcare industry, Belt and Smith (1991) examined Australian companies; Kim, Rowland, and Kim (1992) investigated Japanese manufacturers in the United States and Bums and Walker (1991) studied small businesses. However, these studies did not address the issue of differences in aggressive/ conservative working capital policies.

A single literature is found in the related field. Weinraub and Visscher (1998) examined the working capital investment and financing of a cross-section of ten different industries over a ten-year period. This study focused on the relative relationship between aggressive and conservative working capital practices. The primary purpose was to determine if significant industry differences exist in working capital policies.

V. Analysis and Findings

a) Peer Company Analysis of Aggressive and Conservative Policy

From TABLE 1 it is found that food industry is following more aggressive working capital investment policy than the other types of industries. Then engineering, textile and miscellaneous industries are following comparatively less aggressive working capital investment policy than pharmaceuticals and cement industries. Cement industry is following relatively conservative working capital investment policy than other types of industries.

TABLE 1: Five Years Industry Means and Standard Deviations for Current Assets / Total Assets and Current Liabilities / Total Assets

Industry	Number of companies	CA/TA	CA/TA	CL/TA	CL/TA
		Mean	STD	Mean	STD
Pharmaceuticals	10	.9290069	.6906641	1.0059129	1.2073169
Textile	10	.7591375	.1054433	.5436781	.1761534
Food	10	.4470243	.1403228	.5948604	.1280969
Engineering	10	.6223837	.22605493	.5117028	.19714670
Cement	08	1.183393	1.8193469	1.060641	1.5671890
Miscellaneous	06	.7837140	.63646603	.4575189	.52856364

In case of working capital liability management we see from TABLE I that Cement industry is following more aggressive working capital financing policy than other types of industries. Pharmaceutical industry is following more aggressive working capital financing policy than others industries but less aggressive working capital financing policy than the cement industry. Then less aggressive policy is followed by respectively Food, Textile, Engineering and miscellaneous industries. We can infer from the above table that the miscellaneous industry is following relatively conservative working capital financing

policy than other types of industries. That means when industries were following relatively more aggressive working capital asset management policies, it is balanced by relatively less aggressive (conservative) working capital financing policies.

b) Differences in Policies

One objective is to determine if a significant difference exists in the aggressive/conservative working capital policies between industries. Industry investment policy is first examined. To determine if significant differences exist in the current asset to total asset ratio means, a one-way ANOVA has applied to the set of five year average ratio means. Differences in the relative degree of aggressive/conservative asset management are tested by performing a one-way ANOVA on the current asset to total asset means. The F-ratio is 2.417 for CA/TA (see table 2). The differences in the means between the industries are not highly significant; such comment can be made even at 5% significant level. But the ANOVA test clearly shows distinctive differences do exist at 10% significant level in the asset management policies between industries. It is apparent that significant industries differences are not exist in the relative degree of aggressive/conservative working capital policies for only asset management policies. However, the ANOVA test shows these industries are following more or less same asset management policies.

TABLE 2: Significance Levels for Industry Mean Differences of the Current Asset / Total Asset Ratio and the Total Current Liability / Total Asset Ratio (F Test)

**ANOVA TABLE
CA/TA**

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.606	5	.321	2.417	.065
Within Groups	3.188	24	.133		
Total	4.793	29			

ANOVA TABLE
CA/TA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.766	5	.353	2.652	.048
Within Groups	3.198	24.29	.133		
Total	4.964				

Differences in the relative degree of aggressive/conservative liability management are tested by performing an one-way ANOVA on the current liability to total asset means. The resulting F-ratio was 2.652 in table 2. These industries ratios differences were statistically significant. These left six industries with CL/TA ratios whose differences were statistically significant at 5% level of significance. With respect to this data set, the industries are not following the same aggressive and conservative financing policies.

c) Relationship between Investment and Financing Policies

Another relationship examined is how aggressive asset management corresponded to aggressive financial management. This relationship is tested on a year-by-year basis. For the first year, the industries are ranked from low CA/TA ratios to high ratios, corresponding to ascending order of relatively aggressive policies. Rankings are also ordered, for the first year, from high to low CL/TA ratios, again corresponding to an ascending order of aggressiveness. Rank order correlations between the two policies are then computed for year 2001, This procedure is repeated for each of the remaining four years and the results are presented in TABLE 3.

TABLE 3: Rank Correlation, Per Year. of Aggressive Investment Policies and Aggressive Financing Policies

Year	Correlation	Significance
2001	-.416	.413
2002	-.964*	.002
2003	-.805**	.054
2004	-.747**	.088
2005	-.648	.164

* Significant at 5% level

** Significant at 10% level

Without exception the correlations between the two policies are highly negative each year and they are significant at 5% significance level in 2002 and 10% in 2003 & 2004. It is evident that industries, which pursued relatively aggressive asset policies simultaneously, followed relatively conservative financing policies.

VI. Conclusions

This study looks at six industry groups to examine the relative relationship between their aggressive/conservative working capital policies. Regarding the degree of aggressive asset management, the industries have more or less same policies. In addition, Industry policies concerning the relative degree of ‘ aggressive liability management are significantly different. In general, it appears that when relatively aggressive working capital asset policies are followed they are balanced by relatively conservative working capital financial policies.

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A Study on Performance Appraisal System of CARE Bangladesh

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Mohammad Abdul Jabber²

Abstract

Performance can be viewed as a combination of several variables such as ability, motivation, working conditions, expectations and perceptions. The purpose of this study is to evaluate the efficiency of the CARE Bangladesh performance appraisal system. There are also other objectives of this report; identifying the problems, identifying the strengths of the system, knowing about motivational orientation. CARE Bangladesh has maintained their performance appraisal system starting with the job analysis, and then identifying the goal setting, and last one is the feedback. In the feedback, they provide incentives to the categorized evaluated employees. It also takes some corrective actions to the less performed employees. Basic strength of this appraisal system is appraisal interview and project base evaluation. But the problem relating this appraisal system is that there has no chance for participative appraisal process. Peers and subordinates are not allowed to participate in the appraisal system. To make this system effective and efficient, it should adopt efficient feedback system to motivate employees. This report gives a suggestion to include 360 degree feedback program. And this appraisal should be a participative one, include peers and subordinates in the appraisal system. The appraisal climate should be based on trust and confident. As the performance appraisal system is very important among the other international human relations functions, so CARE International through CARE Bangladesh should adopt the measure that make the system more effective and efficient.

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I. Introduction

A critical dimension of employees' effectiveness is their willingness to exert high energy levels-their motivation¹. High performance is desired by all, by all organization. Performance appraisal is a tool to count the performance of the employees, count the motivational orientation of the employees. It helps to find out lower performer and limitations relating that and also higher performer and stabilizing them in that position. In the multinational context, performance appraisal is really a complex work. But regarding its importance, multinational should go through the process. How the activities are organized in the multinational and their consequences should be found out. This report aimed to find out the information and solution about performance appraisal in the CARE Bangladesh, a renowned multinational organization.

II. Scope and Objectives of the study

The purpose of this study is to evaluate the efficiency of the CARE Bangladesh's performance appraisal system. In the international context, performance appraisal is not only done for the evaluation of the employees but also to assess the organization itself. This article is also aimed for the fact. However, the main objectives of the study are–

- knowing the complex procedure of the performance appraisal system of CARE Bangladesh.
- identifying the weaknesses of the performance appraisal system which used by the CARE Bangladesh.
- finding out the major strength of the system, and how the strength acts on the performance.

1. D. Dcenzo and S Robbins (1997) *Human Resource Management: Cocepts and Applications*, 6th ed., Singapore: John Willy & Sons Inc., pp. 286

- being acquainted with the system and make the inferences about the differences between international organization and local organization.

Employees must anticipate that their performance will be recognized by proper rewards². So this article is aimed to examine the rewarding system after the evaluation of employees.

III. Methodology of the study

This paper extensively uses the secondary data available in different books, publications, press releases and internet etc. The primary data are gathered from concerned personnel in the CARE Bangladesh office, and are collected from the two groups of personnel, who are directly related with this performance management. The first group is the project employees (technical officers) who are affected for the company management policy, and the other group is the personnel relating to the Human Resource Division, who are liable for the management of the employees.

IV. Limitations of the study

The objectives and the methodology of this article are clear. But there has some limitations of this research should be noted. These are:

- Performance appraisal system is not so common in Bangladesh and the practices are limited in some area. So it is really hard to analyze some activities that CARE Bangladesh exercises in their organization with their employees.
- Even in the CARE Bangladesh, there is a deficiency in the expertise people who have the higher-level knowledge in the HRM functions.

2. Sandra O'Neal and Madonna Palladino (1992) "Revamp Ineffective Performance Management," *Personnel Journal* pp. 93-102.

- As CARE Bangladesh enjoys polycentric approach, so the local employees are unable to respond promptly according to the Headquarters' HRM functions and operations.
- Activities in the CARE Bangladesh are directly related with the various projects it undertakes. Here organization development means, to some extent, the development of the projects. So the variations associated with different projects lead creating different job requirements for same ranked professionals and results different evaluations.

V. Overview of Issue and Company

5.1 Overview of the issue

Performance can be viewed as a combination of several variables such as ability, motivation, working conditions and expectations³.

Performance appraisal refers to the outcome of the behavior of employees. When this term performance is applied in case of an employee to participate or judge his/her performance then it is known as performance appraisal, But in the multinational context, performance appraisal refers to a formal, structured way to measuring, evaluating and influencing an employee, whether PCN, TCN, HCN.

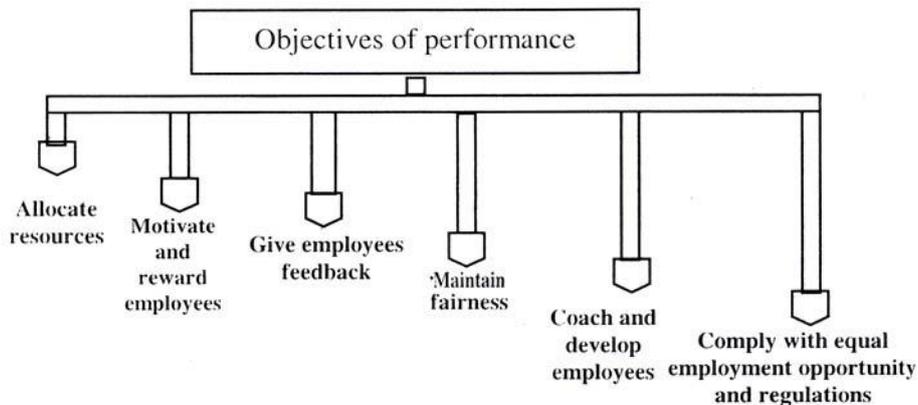
Performance appraisal is important because this allows a person to know where he/she stands vis-it-vis Company and the owner. It needs no reiteration to that behind every successful organization, there is an effective process to reward the best performer and this has certainly an impact on the growth and the productivity of the employee.

3. Dowling, P., Welch. D. and Schulei; R. (1998) *International Human Resources Management: managing people in a multinational context*, Canada: South-Western College Publishing, pp. 123

5.2 Objectives of performance appraisal

Performance appraisal is the process of evaluating the performance of employees, sharing that information with them, and searching for ways to improve their performance. Performance appraisal is necessary in order to (1) allocate resources in a dynamic environment, (2) motivate and reward employees, (3) give employees feedback about their work, (4) maintain fair relationships within groups, (5) coach and develop employees, and (6) comply with regulations. It is also a formal opportunity to do what should be done much more frequently in organizations—express appreciation for employee contributions⁵. Appraisal systems, therefore, are necessary for proper management and for employee development.

EXHIBIT 1: Objectives of performance appraisal



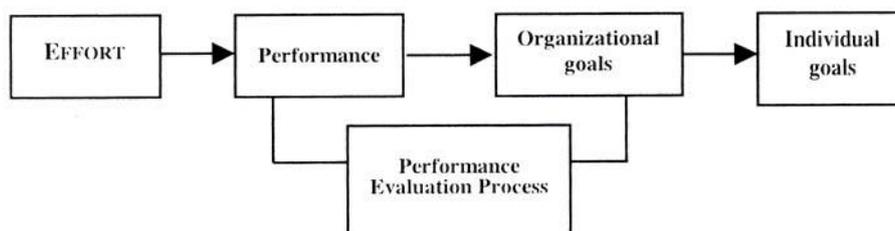
Adapted from: Newstrom, J. and Davis, K. (1997) *Organizational Behavior: human behavior at work*, -10th ed. USA: McGraw-Hill Companies, Inc., pp. 174

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4. Newstrom, J. and Davis, K. (1997) "Appraising and Rewarding Performance" *Organizational Behavior: human behavior at work*, -10th ed. USA: McGraw-Hill Companies, Inc., pp. 173
 5. Deborah Shouse, Newsweek: May 1, 1995, "The Sound of Two Hands Clapping," p.12.

5.3 The Linkage to motivation

Performance is a vital component of the motivation model⁶. Specifically, there has link between effort and performance, and between performance and rewards. Employees need to know what is expected from them, and they need to know how their performance will be measured. Employees must feel confident that if they exert an effort within their capabilities, it will result a better performance as defined by the criteria by which they are being measured. Finally, they must feel confident that if they perform as they are being asked, they will achieve the rewards they value.

EXHIBIT 2: Performance evaluations and the motivation process



Adapted from: Dcenzo, D. and Robbins, S. (1999) *Human Resource Management: Concepts and Applications*, -th ed., Singapore; John Wiley and Sons Inc., pp.289

So performance appraisal is a very crucial aspect for any organization. To find out the objective and the motivational orientation in a multinational firm, this research aims to define the performance appraisal of a multinational.

6. Murray. Brain and Gerhart, Barry (1998) “An Empirical Analysis of a Skill-Based Pay Program and Plant Performance Outcomes”, *Academy of Management Journal*, Vol. 41, pp 68.

5.5 CARE International

CARE is an independent humanitarian organization working to end world poverty. With programmes in over 70 countries, CARE touches the lives of over 45 million of the world's poorest people. Whether supporting primary health care, promoting sustainable agriculture or developing savings and loan schemes, our programmes promote positive and lasting change and reduce long-term dependency. (Source: www.careinternational.org).

5.6 Vision, Mission and Core Values and Principle

CARE International seeks a world of hope, tolerance and social justice, where poverty has been overcome and people live in dignity and security. Mission is to serve individuals and families in the poorest communities in the world. Core values are respect, integrity, commitment and excellence. And principles are promoting empowerment, working in partnership with others, ensuring accountability and responsibility, minimizing discriminations and thriving for sustainable results.

5.7 CARE Bangladesh

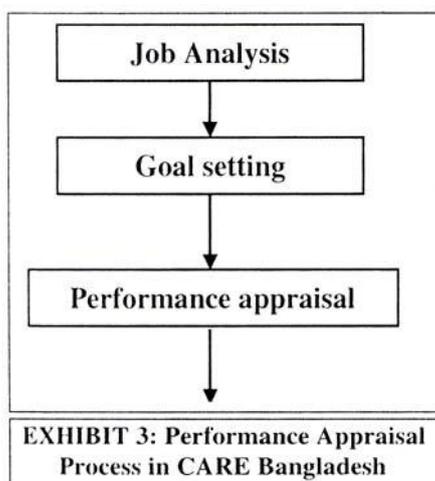
CARE Bangladesh is a part of CARE International, one of the world's largest private international humanitarian organizations, enabling families in poor communities to improve their lives and overcome poverty and many more other social work. It began work in Bangladesh in 1949 with the famous CARE packages that the Americans sent to survivors of World War II in Europe and Asia. The plain brown boxes holding food and other essential items were harbingers of hope. (Source: www.careinternational.org).

5.8 Vision, Mission, Core Values and Principles

CARE Bangladesh and CARE International have similar vision, mission, Core Values and Principles. The slogan is that CARE seeks a world of hope, tolerance and social justice, where poverty has been overcome and people live in dignity and security. For their vision they are operating very successfully since 1949. Now CARE deals with eight projects in Bangladesh basically aimed at alleviating poverty. (Source: www.careinternational.org).

VI. Analysis and Findings

6.1 Performance Appraisal system in CARE Bangladesh



CARE Bangladesh maintains performance appraisal system that starts with the process of job analysis. Basically, all employees' performances match with the pre-defined set of requirements. After the completion of the appraisal, employees receive some incentives for good performances and in case of poor performances they get warning as a form of appraisal feedback. Performance appraisal process of CARE Bangladesh may be taken as the following form–

a) Job Analysis: Job analysis involves the identification and description of what is happening on the job⁷. It is a systematic exploration of the activities within a job. CARE Bangladesh's activities are project base. In each and every position for the project the clarification of the job has properly done for the purpose.

7. Henderson, R. (2000) *Compensation management in a Knowledge-based World-9th edition*, p. 131.

b) Goal Setting: It should not be the part of the employee's job to guess what is expected to them. Too many jobs have vague performance standards, and the problem is compounded when these standards are set in isolation and do not involve the employees⁸. CARE Bangladesh set the goal for the job and for employees. So it is easy to predict the requirements of the employees.

c) Performance Appraisal: After a periodic review, CARE Bangladesh has done performance appraisal of the employees.

d) Feedback: Final action in the appraisal is the identification of corrective actions and rewarding for the desired performances. CARE Bangladesh maintains this by providing certain incentives to the various categories of evaluated personnel. These are-

- *Below Requirement*

The employees who have not done their job according to their goals or preset objectives are classified under the below requirement. For them CARE Bangladesh provides corrective action for them and gives stipulated time to maintain the performance.

- *Mostly met the Requirement*

The employees who have done their job moderately according to their requirement are classified under mostly met the requirement. For them CARE Bangladesh provides incentives to maintain or develop the performance.

- *Fully met the Requirement*

The employees who have done their job perfectly according to their requirement are classified under fully met the requirement. For them CARE Bangladesh provides incentives to maintain or develop the performance.

- *Significantly exceed the Requirement*

The employees who have done their job extensively well according to their requirement are classified under significantly met the requirement. For them CARE Bangladesh provides basic to motivate their performance.

8. Tyler. Kathryn (1997) "Careful Criticism Brings Better Performance." *HRM Magazine*, pp. 57.

6.2 Who makes the appraisal?

In the CARE Bangladesh maintenance of the appraisal system is governed by the superiors of the organization. In the appraisal system there is no chance for inclusion of remarks from peers and subordinate. This will help functioning the appraisal system as a control device. So employees are very careful for their activities and their job requirements.

6.3 The appraisal interview

CARE Bangladesh's appraisal system requires supervisors to assess employees on various aspects on their productivity (results), behavior, or personal traits. Supervisors have done their appraisal by the appraisal interview. Appraisal interview is a session in which supervisor provides feedback to the employee on past performance, discusses about detected problems, and invites a response. Then the two parties set objectives for the next time period, and the employee is informed about her or his future salary. The appraisal interview also provides a rich opportunity to motivate the employees⁹.

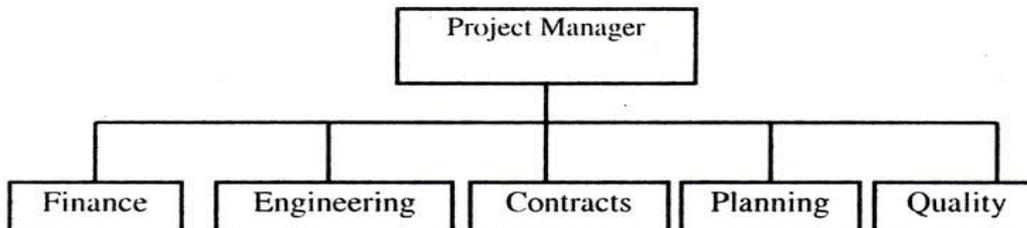
6.4 Project based appraisal

CARE Bangladesh basically recruits employees on the basis of project. Naturally project managers are the PCN or TCN. Besides, the local employees fulfill all other positioned. For appraisal the project manager, the activities and responsibility are much greater than the local employees. The project manager must be more skilled at synthesis, and uses the system approach¹⁰. Moreover job analyses, goal settings, performance appraisal are based on some certain factors. These are—

9. J. Newstrom and K. Davis, 1997, *Organizational Behavior: human behavior at work*, -10th ed. USA: McGraw-Hill Companies, Inc., pp. 176

10. J. Meredith and S. Mantel, 2003-2004, *Project Management: a managerial approach*, -4th edition, Singapore: John Willy & Sons, "The project manager", pp. 87-89

EXHIBIT 4: Project management organization showing typical responsibilities of a project manager.



Source: J. Meredith and S. Mantel, 2003-2004, *Project Management: a managerial approach*, -4th edition, Singapore: John Willy & Sons Inc., "The project manager", p. 89

6.5 Findings

- a) In the performance appraisal system in CARE Bangladesh has shown the great control mechanism. For that reason it successfully gains the control over employees and their performance.
- b) The performance appraisal system in the CARE Bangladesh supports the appraisal interview process that helps to motivate employees.
- c) Superiors conduct the appraisal process. So there is less likely to have a conflict situation.
- d) This system helps the supervising officer to have better idea about the strength and weaknesses in the department where he/she is involved. So efficiency of the workplace has ensured.
- e) Job analysis, goal settings help employees to assume the role that the CARE Bangladesh deserves from them, and also clarify the tasks. CARE Bangladesh always notes the effect of organizational and cultural norms for establishing the job

requirements. Organizational and cultural norms interactively determine the role of the manager.

- f) f) Employees are appraised by their immediate supervisors. This can pose problems for CARE Bangladesh managers. CARE Bangladesh managers, - project managers tend to be assessed according to their divisional performance, which somewhere misleads their actual performance.

In the appraisal system, there is no opportunity for self-analysis. Peers, subordinate are not involved in the appraisal system. For that reason, the CARE Bangladesh could not achieve a participative environment.

VII. Recommendations and conclusion

The performance appraisal system of CARE Bangladesh is semi- efficient in the context of Bangladesh where the practice of HR related issues is still undervalued. CARE Bangladesh enjoys polycentric approach, where CARE International possesses a little authority on the normal operations. To make the system more efficient and effective, some recommendations are listed below:

- a) There should be provided an efficient feedback for the appraised employees. To make the feedback system more efficient, CARE Bangladesh can follow the 360-Degree feedback programs. This is the process of systematically gathering data on a person's skills, abilities, and behaviors from a variety of sources-the manager, peers, subordinates and even customers or clients.
- b) The criteria used for the job analysis, setting goals and performance appraisal of CARE Bangladesh should have some flexibility around the project nature, culture and project requirements.

- c) The appraisal system needs to make very simple and easily understandable towards employees that they can anticipate the consequences of their activities.
- d) The performance appraisal system should be continuous, monthly or half yearly, not once in a year.
- e) To give the compensation to the employees, there should be a survey around the pay policy. This will help to make the employees satisfy and that will reflect in the appraisal system.
- f) An atmosphere of confidence and trust should be developed so that there must have some brainstorming sessions among the supervisors and the employees to get effective solutions for solving existing problems.
- g) Performance appraisal system in the CARE Bangladesh looks upon the past performance. But it should focus on the future performance and the future development.

These are the recommendations that will help to make the present appraisal process more effective and efficient.

VIII. Ending Summary

Performance appraisal provides a systematic basis from assessment of employee contributions, coaching for improved performance, and distribution of economic rewards. Modern appraisal philosophy focuses on performance, objectives, mutual goal setting, and feedback. CARE Bangladesh follows a modern philosophy but the only draw back involved in the system is lacking of feedback from employees. The main strength of this performance appraisal system is inclusion of appraisal interview that helps to gain the employee motivation but it is very difficult for both managers and employees.

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**Adventurous Relationship and Suicide of the Heroines
in Modern Novels: Some Observations**

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Abstract

Stories about adventurous relationship often combine the reinforcement of dominant ideologies with the pleasurable feminist subversions of status quo. Superficially, novels of adventurous relationships are easily defined, being based on an act defined as sexual relationships between two people, at least one of them already married. Literary history shows that the adventurous relationship of men and women, which is popularly known as adultery, has long served as a public challenge to marriage. As a result, adultery is usually considered a grave offence, whether of personal, social, or religious nature. The plots of novels of adultery hinge on the effects on those immediately involved, and on their immediate circle. On the contrary, this paper discusses how novels of adultery have been theorized as the novels of "Adventurous Relationship", not merely as the novels of "Adultery" as the word "adultery" determines social disobedience and offence. This paper mostly focuses on the emotional emptiness of the heroines, which facilitate them to embrace the adventurous relationships with much pain and challenges. Thus the paper argues its own theoretical perspective and traces mostly the heroines from their roots in modern novels and the consequence of her fate of committing suicide. Throughout, it argues that the adulteress's refusal to display traditionally feminine behaviors and desires identifies her as a site of cultural anxiety and alternatively, as a form of feminine admiration.

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Adventurous Relationship, which is mostly regarded as adultery, is a prominent literary theme in Western literature. This paper will examine the theme and its structures in selected texts of modern Western literature.

One of the most well-known novels with the theme of such adventurous relationship, along with Flaubert's *Madam Bovary* and Zola's *Thérèse Raquin*, is Tolstoy's *Anna Karenina*. In Tolstoy's text, while the main protagonist Anna's story is in the foreground, her brother Stiva's adventure constitutes a subplot of the story. What is the outcome of these adventures? Stiva's adventure is an "insignificant" love affair. In many cases it is seen that a man finds himself in a complex situation in his extra-marital relationship. Traditionally, he seldom reaches the point of abandoning his wife and children, thus dissolving his family. So it is no surprise -- as a reflection of socio- psychological parameters-that Stiva implores his wife to forgive him, thus intending to keep his marriage intact. This is not the case, however, with our heroines. It appears that Tolstoy suggests to the reader that women in great need for a man's love throw themselves into the arms of the first man who, they think, will satisfy their emotional needs. For Anna Karenina this is the successful politician Karenin, despite the fact that the difference of age between them is rather great. For Emma Bovary this man is Charles Bovary, the doctor of the area, who, as she initially thought, would satisfy her romantic fantasies. Only Therese Raquin feels obliged to marry her aunt's son, because of the obligation she feels towards her aunt for bringing her up.

After a time, all three women in the above examples feel an unbearable boredom with their lives as married women. The men they are married to are able to offer them much but not the most significant matter, love. Apart from the particular individual constellation of personality and other narrow specifics, it is the intense pressure of male dominance in a patriarchal society where their only way out becomes the case of such adventurous relationships. Anna Karenina, unlike her brother-for reasons already mentioned-abandons her husband. Emma,

on the contrary, cannot persuade her lover to take her away and leave husband and country. He is not in love with her, and their relationship in his eyes is nothing but a casual love affair, like so many others he has had so far. Therese Raquin is more successful than Emma, on the other hand. She manages to persuade her lover to assassinate her husband. All three women are on the point of a nervous breakdown. Anna begins to take drugs and her relationship with Vronski turns more and more strained and complicated. She suspects that he has become bored with her and that he will abandon her. The only way out of her emotional abyss is suicide. Emma, like Anna, also kills herself, abandoned as she is by her lover, and immersed in debts. Neither will Therese Raquin avoid suicide. The crime she committed breaks her nerves and the nerves of her lover, Laurent. Wanting to escape from their despair, they try to kill each other but when they realize, horrified, each other's plans; they decide to commit suicide together.

Here we come to our first question: why did Flaubert, Tolstoy, and Zola choose such an end for their heroines? Why do the women commit suicide, or, why do the authors of these texts resolve the question of adventurous relationship by writing the women committing suicide? One answer may be obvious: the authors consciously seek to portray a woman's emotional deprivation and turbulent psychology, and, to make the tale more interesting and convincing, they write them into suicide. But another, and equally obvious question may also be posed: is it not possible that the authors chose suicide as an end for their heroines in order to appease society's implicit and explicit demand of punishment for such relationship?

But let us go further than the obvious reason that the punishment of heroines in fiction is a reflection of historical parameters of society. In the case of Tolstoy, there may be an additional, personal, reason in place. Tolstoy, in his writing in a period of eleven years has evolved his fiction with regard to such adventurous relationship from the simple and scornful treatment of Helena, the wife of Pier-in War and Peace, to the suicide of his heroine in *Anna Karenina*. In a context of a

biographical and psychological influence on his fiction, could it not be that Tolstoy is dramatizing a personal situation? Tolstoy is a Russian aristocrat and a successful writer. He is, however, ugly and his wife is seventeen years younger than he is. When Tolstoy begins to write *Anna Karenina*. The is forty-four years old while his wife is twenty-seven. The possibility that Tolstoy meant the novel, as a forewarning toward his young and beautiful wife appears to be very strong and a worthwhile notion to consider with regard to the genesis and purpose of *Anna Karenina*. The fact that some critics have seen Anna's death as a way of self-punishment for similar relationship committed by himself (he seduced a young peasant woman) would not disprove this hypothesis. Rather, it may as well have been an additional subconscious motivation. In his novella *The Kreutzer SOIZCLICI* (1890) Tolstoy goes even further. He has his hero kill his wife only on the basis of suspicions, though the evidences were enough for the court to declare him innocent. In the nineteenth-century Russia it seems to be sufficient for the murderer to prove that his wife deceived him to be released.

We would like to suggest that for women, such adventurous relationship is an expression of sensuality and sexuality, a situation where the (Freudean) Id conquers the Superego, thus violating its prohibitions. In the fictional dramatization of this Freudean view of the matter, our three writers degrade their protagonists not by their adventures but by the women's suicides. While in the case of Tolstoy the punishment of the heroine is based on his latent Puritanism (a view advocated by Maxim Gorky), his patriarchal world view, and (possibly) his personal psychological state with regard to his young wife, Flaubert`s case points to the clear impact of the author's biography resulting in a repressive mechanism expressed in his fiction, in the service of suppressing sexual instinct. A failed relationship of Flaubert with the poet Luise Colet caused his solitary life, and Flaubert's own dictum, "Madame Bovary c'est moi," represent clear evidence of the biographical elements of and in the novel.

In Zola, who was an adventurer himself, we are unable to

contemplate such influences of the biographical in his fiction. But let us approach Zola from a different angle: heroes in the novels of Naturalism are always negative heroes and in the end they are justly punished because of the evil they have spread. However, in the case of Zola, it may be a pertinent question to ask why he focused his narration not on his negative heroes, but rather on his negative heroines in several of his texts.

In order to expand our examples from canonized texts in West European literature, we will now draw on some examples in modern Greek literature. The protagonist Lalo in Nikos Kazantzakis's play *It's Dawning* (1906) commits such adventure only in her thoughts. She does not have the courage to proceed to the real act but, as another example of the motif of adventurous relationship and suicide, she torments herself because of her desperation and vacillation and in the end commits suicide. Kazantzakis -- using as a *porte-parole* for his ideas the family doctor (perhaps an Ibsenian influence) -- presents himself as an exponent of sexual liberation. However, in my opinion the tale Kazantzakis writes disproves his intentions. The fact that his heroine is written into killing herself not only means that sexual liberation was too early for Greek society of the time; it also means that it was too early for the writer himself to accept emotionally, not only intellectually, his own stand.

D.H. Lawrence's *Lady Chatterley's Lover* lies at the other end of the spectrum. For Lawrence, sexual satisfaction is one of the happiest experiences of man and he should constantly pursue it, without succumbing to inner inhibitions or external pressures. His heroine, Lady Chatterley, will not commit suicide. On the contrary, she will abandon her husband to run away with her gardener. Here, the author of the controversial act of such adventure justifies the protagonist's flight in various ways. Her husband is invalid, owing to a wound he received in the war. Initially he prompts her to develop sexual relations with another man. When, however, this happens, he finds in unbearable torments. The real tragedy of *Anna Karenina* is that she is unfaithful to

the greater unwritten morality. Lawrence's *Lady Chatterley*, on the contrary, remains faithful to this morality, without inhibitions or feelings of guilt, and it is her who makes the first step approaching the gardener. In contrast, Madam Bovary waits in vain for Leon to take the first step; she has to wait until Rodolphe takes the initiative.

While Tolstoy, Flaubert, and Zola punish their heroines by writing them into suicide, other authors write such women into situations where they are killed. Examples of such texts are *Oresteia and Hamlet*, where both Clytemnestra and Gertrude are killed. In Cinema, a good example is Nagisha Oshima's *In the Realm of the Senses* (1976). Here, it is clear that it is not the adventurous relationship as a social crime that is condemned; rather, it is sexuality as an unbridled, uncontrolled instinct that is negated. As a less dramatic punishment where this is written into an internal, self-directed punishment of such adventure is the case of resignation. For an example, we would like to draw on Maro Vamvounaki's novel, *The Chronicle of an Adultery* (1981). His heroine, Anna, similar to Kazantzakis's Lalo, does not dare to proceed to the real act of adultery, although she very much wishes it would happen. In the end and after much torment, she resigns to capitulation. Vamvounaki, interestingly, returns to the theme in her next novel, *The Pianist and Death*, where the protagonist returns to her husband after much soul searching. There are similar confluences in the heroines of Thomas Hardy. For instance, Sue in *Jude the Obscure* considers the death of her children as a punishment, because she abandoned her husband for Jude, her cousin with whom she had been in love before getting married and Tess in *Tess of the D'Urbervilles* feels equally guilty for letting herself be seduced -- more accurately, raped -- by a rich relative.

Finally an opposite example is worth mentioning. In her Greek best seller, *Judas Kissed Wonderfully* (1998), the author Maira Papathanasopoulou does not kill off the male counterpart in her text. Rather, she ridicules him in various ways, by having him return to his wife, who pays him back in kind: she flees with the husband of the

woman with whom he deceived her. The truism that women have often been victims of men in a patriarchal society does not necessarily result in literature in texts where social and societal situations are simply fictionalized as analogies of society. It is usually more than that. The plot is often acting out of the writer's own suppressions and rationalizations, a disguised emergence of the suppressed material of the unconscious into the fictitious world of the novel. The biographical material offers the basis of the deconstruction of the novel, and the discovery of the hidden intentions of the novelist, often diverging greatly from the explicit ones. And in the case of the three great authors mentioned above, we can deduce that they are subconsciously less tolerant to a married woman, whose frustrations lead her to explore such adventurous relationship.

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Effects of Social and Psychological Constraints in Public Speaking

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Abstract

This paper analyses the constraints that make a speaker a 'High Communication Apprehensive' and thus make a man less desirous to correspond publicly, to talk less, to show less interest in the topic, take fewer risks and say less about themselves. Even when they find themselves in situations where communication is unavoidable, they show signs of disinterest and silence. This effect of High Communication Apprehension can be serious; it can even make people feel disinterested in life. They are rarely perceived as leaders. They are viewed as less composed, less attractive socially and less attractive as work partners. However, they are not less intellectual or unhealthy. This paper analyses the social and psychological aspects of High Communication Apprehension. The researchers observed the monolingual community and home environment behind this apprehension. Lack of cognition, comprehension and psychological aspects of the apprehensive community was also an important subject of the research. This paper finds the notable aspects and suggests some strategies to get rid of this apprehension and to make the speakers confident and effective in public speaking.

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I. Introduction

Many people are seen to be weak especially in public speaking. They can create, understand, interpret but cannot express themselves to others. They feel scared when they are asked to speak to others. This fear of speaking in public is called by many names like social phobia and is now called 'communication apprehension'. This term covers many kinds of communication fears in diverse situations-fear of speaking to the classroom, fear of face-to-face conversation, fear of talking to authority figure or high status individual, fear of speaking in a small group and fear of speaking to the audience. When this fear turns into a permanent feature, it can become a psychological problem and the affected may become handicapped by this fear for lifetime. High Communication Apprehensive (HCA) tries to avoid communication situations. These people choose residence hall rooms, at the ends of halls, away from other people; in housing, away from busy streets and playgrounds. They may be difficult to get to know.

The HCA people are reluctant to communicate. They, are indecisive in choosing their topics of speaking. They fear about everything. They suffer from lack of confidence and think themselves inferior. Sometimes it happens that they do not want people to understand their weak points. They are reluctant to speak first. They think everything negatively. Professor John Daly of the University of Texas at Austin and three doctoral students showed that anxious people are overly concerned with self and are negative in their assessments. They choose speech topics with which they are less familiar and have less sensitivity to public speaking situations. (Daly, Vanaugh, 1989)

Anyone affected in communication apprehension needs nursing. Proper care with strategies can help the apprehensive people to overcome the situation. A classroom can be a proper place to start the promotional activities. Being able to speak well in school helps a

student to communicate better in presentation and to the teachers and classmates.

This ultimately leads to better grades. Speaking at work place in presentations, at meetings or simply in personal interactions will create a better impression of speaker's competence and result in raises and promotions. The first thing is to ensure that speakers are motivated enough to do well in public speaking. Besides they must know the requirements of the speech they would like to deliver. He/she must work hard to develop the speech and practice the delivery per requirements. They need to be Well prepared with no uncertainty. Actually proper motivation, hard work and effective strategy can make the speaker excellent in public speaking.

II. Objective of the study

The main objective of the study is to investigate to what extent High Communication Apprehension hinders people in speaking publicly and to find out the measures to help an effective public speaker.

Specific objectives:

- (i) to characterize the social and psychological aspects which are the constraints of public speaking;
- (ii) to find out the obstacles in the concerned field;
- (iii) to assess the impact of social phenomena (e.g. fear, shyness) on public speaking;
- (iv) to identify the measures that can be taken for overcoming the difficulties to speak in public.

III. Methodology

The research was conducted mainly taking the students as sample. The researchers observed their peers closely, talked to them and their parents about their problems. Research was also done with close observation in public gathering like social, cultural and religious functions. The researchers also shared their findings with other colleagues and people who deal publicly. They arranged a workshop on September 23,2007 in Prime University on debate and public speaking and shared their views with teachers, students and prominent debaters. The researchers talked with different types of people especially successful public speakers of different levels and had an interview with Dr. Mohit Kamal They went to the Internet, books, and journals to assimilate their ideas. They chalked out strategies to carry out experiments on the HCA students. They also observed their day-to-day improvement and discussed with the peers about their improved performance.

IV. Review of literature

Paul E. Nelson and Judy C. Pearson in their book “Confidence in Public Speaking” emphasize the speaker- audience relationship. They note the fact that most of the speakers when they begin public speaking are full of uncertainties about the message, the audience, and their selves. The speaker needs some experience to feel better about the audience. He/she needs to compose some messages until he/she feels more comfortable in communicating with others.

Aristotle wrote twenty-four centuries ago that a speaker’s character might almost be called the most effective means of persuasion

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he possesses. That idea is as true today as it was then. The speaker's character goes by many names: reputation, honesty, loyalty, sincerity, faithfulness and responsibility. Aristotle called this idea 'ethos'; today the term is 'source credibility'. The idea focuses on the sources, speakers, or contribution to the speaker-audience relationship.

Source credibility is not something that a speaker possesses, like a suit of clothes used to dazzle an audience. Instead, credibility is created by the relationship between the speaker and the audience.

Many speakers fear their audience. According to a cluster of articles in U.S. News and World Report (1999, June 21), shyness now has a new label: Shyness is now called "Social anxiety." The authors, Schrof and Schultz, describe the malady:

"The heart races, palms sweat, mouth goes dry, words vanish, thoughts become cluttered, and an urge to escape takes over".

Vygotsky² believes that society can make one more than the person is, that one can go beyond one's innate abilities, cultural context, society and the grip of the language the speaker uses can make the communication successful. The suggestion of Vygotskian thinking is sometimes called "scaffolding" which means where the speaker adjusts the instruction (i.e. speech) so that it is within the audience capabilities.

Tell me, and I will forget.
Show me, and I may remember.
Involve me, and I will understand.

- Confucius³, 450 B. C.

This famous saying instructs the importance of the involvement of the audience.

2. Russian Theorist

3. Prominent Chinese Philosopher

Speech is a kind of sharing of experiences, (Gawford, 1996). The action comes when emotions get attached to believable facts. “Joint attention and shared problem solving is needed to create a process of cognitive, social and emotional interchange” (Hausfater, 1996). Thinking of such an environment makes the speaker less anxious and poses a positive assessment toward the self. Considering the self as a valuable resource ultimately leads to progression of a successful communication.

B.R. Bugelski in his book “The Psychology of Learning Applied to Teaching” identifies six different types of problem for the teacher. These are:

- (1) The problem of action or activity
- (2) The problem of action, i.e. motivation
- (3) The problem of reinforcement of learning
- (4) The problem of forgetting and extinction
- (5) The problem of transfer of training
- (6) The problem of understanding

Jack C. Richards in his book “The Language Teaching Matrix” opines that part of the difficulty in deciding what to do in the conversation class is due to the nature of conversation itself. He sets some questions for this. What is conversation and what is involved in producing fluent, appropriate, and intelligible conversation? Can conversation be taught or is it something that is acquired simply by doing it? What principles can be used in planning a conversation program and in developing classroom activities and materials?

The Bruskin report identified public speaking as American’s number one fear (What An American Afraid of, 1973). Although 41 per cent of those surveyed identified public speaking as their greatest fear, only 18 per cent listed death. The contrast between their two numbers led comedian Jerry Seinfeld to conclude that if people go to a

funeral, they would rather be the one in the casket than the one delivering the eulogy.

Nelson and Pearson further talk about the factors that can determine audience perceptions with the speaker's own choice. The kind of language, vocabulary, use of arguments and evidence can express the speaker's education and reasoning power. A smooth performance can show that the speaker cared enough to prepare and practice a speech for them.

V. Findings

Fear of public speaking is a common phenomenon to most of the speakers. But this is not the only cause of less effective public speaking. Sometimes a courageous speaker is also proved to be unsuccessful public speaker if he is disorganized. Many social and psychological barriers are found to be active in public speaking and results into less effective speech. People who like to deliver speech in a second or foreign language feel shy to speak publicly as they are aware of their low competence. They become afraid of speaking publicly as they are not confident enough. Even they do not like to start for practice with their surroundings like friends, parents, and fellows. Some people are naturally unconfident from the very beginning of their life. These people are introvert by nature. They like to hide themselves from any gathering. They feel shy of others. This can be treated as both individual psychological problem and social problem. It happens that people ,of this group are deprived of suitable companion from the childhood. They do not find their parents or teachers free and friendly enough to interact with. In Bangladesh, most of the children are treated badly by their parents or teachers. They are mainly creator of fear. They cannot read the children psychologically. They cannot understand their needs and their different behavior. These children do not get

psychological support from their surrounding rather they receive fear from everything. It becomes a permanent psychological problem and they are to suffer from it in the whole life.

When a speaker fears his mistakes all the time, he cannot be a good speaker. These types of speakers care about optimal accuracy. They are afraid of the structures of the sentence, their contents and pronunciation. They are not confident enough about their accuracy. They become aware of it even during the speeches that hamper their fluency. These types of excess care make him/her less effective in public speaking. In Bangladesh people learn English through the Grammar Translation Method. They try to speak structurally and only translate their ideas in English. This does not make them competent in communication. As a result, when they become public speakers of English, they cannot communicate fluently and sometimes fail to convey the right meaning. They become less effective to the audience as a public speaker.

To communicate in a second language, people use interpreter in their brain. It needs time to deliver speech, which is followed by pauses, lack of fluency, and lack of confidence and even fear. This makes a public speaker unsuccessful.

People sometimes become more dependent on the traditional phrases for greeting, responding, starting and finishing. But all the time they cannot use these phrases as situation varies from time to time. Some people are also afraid of how to start.

Another important problem of less effective public speaking is indecision about topics. Some people are indifferent to select suitable topics for their public speaking; on the other hand, some care about it much but become disorganized. This occurs because they do not do needs analysis of the audience. Some people choose a topic that seems to be hard. Even the speaker fails to reach in the core point of the topics. This is an unscientific attitude because speaker should select a

topic that is easier for him and also for the audience to understand.

The audience expects the assurance that the speaker belongs to them which can create a respect to the speaker as a source. Audiences are more likely to apply what they comprehend and they are more likely to apprehend when they can create a belonging with the topic. It is not enough to assume that the audiences understand the connection between themselves and the topic. Instead, it's wise to make it explicit to the listeners how the topic relates to them. This relationship and belonging of the topic will make a desire of knowledge inside the audience like the way we ask a rhetoric question to a kid while telling a story- "Do you know what happened to the King & Queen?"

People usually do not feel free on stage. They show uneasiness in standing before the audience that hampers their smart exposure to the audience. Even they feel uneasy to stand naturally. Actually they care about the difference of mood, setting and situation. This extra care of feeling difference makes them uneasy to deliver their speech spontaneously. It hampers the total organization of their speech. Speakers fear to face audience. They are prejudiced against the audience and misinterpret the questions of the audience as personal attacks or dissatisfaction. These create an inferiority complex in the speaker's mind.

There are some social problems that create barriers in making a good public speaker. Our society does not allow the children or adolescent to talk freely on a topic in front of elders. They are suppressed. Children and adolescent are kept far from the high thought speech. The society does not create any chance to nurse the children to be good public speakers. Introvert children are treated as good boys/girls where the extroverts are naughty.

Social criticism is another problem in our country. Some people are much traditional. They only look for finding faults with others. They discourage others' opinion. This makes a great barrier in the

growth of a good public speaker.

Educational institutions can be a great source of nursing the students as the future public speaker. Unfortunately, we cannot make the environment as necessary. Students are only supposed to fulfill their academic requirements. They go to school only to pass the examinations. Besides, the number of students in the classroom works as a barrier. Every student does not get a chance to talk in the limited period of time, as the number of students is much more than the standard number.

A teacher works as a guide to build a public speaker. He/she is supposed to provide psychological and logistic support for the students. Unfortunately, most of the teachers in our country are the subjects of great fear to their students. Actually they cannot act as a facilitator but a barrier to build public speaker.

The study reveals the fact that knowing the subjects' interests, liking and disliking sets a positive psychological relation between speaker & audience (i.e. the subject). Every individual possesses a unique way of speaking.

VI. Recommendations and Conclusion

An individual faces the difficulty. So, he or she should play active part to blow out the barriers in effective public speaking. The speaker can work within self to reduce his/her fear or anxiety. He/she can act confidently to be a confident speaker. He/she must find out problems that make him/her unconfident. A positive approach in speaker can help to improve a lot. The speaker should ignore the lack he/she bears. He should start first without feeling anxious or hesitating. He/she can have suggestions of a psychologist to reduce the unnecessary fear.

The authority of educational institution can find the High Communication. Apprehensive students and can improve the students with proper schooling. They can create atmosphere to let them do practice in different situations.

Psychological support also can lead them to reduce their anxiety. Parents should be more careful about their child's ideas and let them express their thinking freely.

The classroom should be the ground of building a public speaker. The number of students in a classroom should be standard to create chance to speak to their teachers and friends formally.

To deliver a successful speech, the speaker should play the active role. He/she should be well organized and select a topic that is familiar to him and the audience. The topic should be according to the needs of the audience. The speaker should think positive about the audience. He/she should consider them friendly and should not bear any prejudice.

The learning system also should be developed. For communication, accuracy should be maintained but that does not mean extreme grammatical accuracy. Practice is necessary to be a good public speaker. Goal-oriented and strategic practice can make an individual a good public speaker where communication apprehension will merely be a doctrine.

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Women and the Environment in Bangladesh: Rethinking of Empowerment

Tahmina Khanam Shilpi¹

Abstract

In a third world country like Bangladesh, women are inseparable from physical environment in their different modes of life, such as collectors of food, fodder, fuel woods and other forest products, waters and as farmers and income earners through manual labour. In the last several decades, human beings have accelerated natural changes in the environment and many environmental problems result from human induced activities. These women not only bear the brunt of environmental degradation, but also play a crucial part in environmental management. Their importance is also estimated in rational use of environmental resources and in dissemination of environmental education and knowledge through their involvement at the grass-root level, such as tree planting, fuel saving, water management and more efficient farming, and environmental movement, despite the limiting constraints and barriers from patriarchal society and gender inequality. Though the Constitution guarantees equality of men and women in Bangladesh, the importance and potentialities of women have been disregarded in socio-economic development like environmental management till now. Women's empowerment to ensure their effective participation in environmental issues is a global concern in this new millennium. Today in Bangladesh women issues are in the forefront of governmental activities, but the real situation is not upto the mark. In this article attempt has been made to explore the importance of women in relation to environment and development of Bangladesh. It tries to explain that environment will never improve unless women are enlightened on environmental issues and become full and equal members of their communities.

Key words: Environment. women. development. empowerment, Bangladesh.

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I. Introduction

Women in Bangladesh contribute substantially to their household and to the country's economy. Women constitute 48.6 percent of the population of Bangladesh and the sex ratio is such that there are 105 men per 100 women¹. In urban areas there is a predominance of male population, particularly in large towns. This indicates substantially high level of migration of male population from rural areas, seeking employment in urban areas². Therefore, in the rural areas there is predominance of female population and of particular the female-headed households³. Unlike developed world, women and nature in the developing world are intrinsically linked not in passivity but in creativity and in the maintenance of life⁴. In a typical agrarian developing country like Bangladesh, the daily life of rural women is totally dependent on the environment. They are considered the primary users of natural resources (e.g. land, forest, and water) because they are responsible for gathering food, fuel, fodder and water and other basic needs. Throughout the history men have looked at natural resources as commercial entities or income gathering tools, while women have tended to see the environment as resources supporting their basic needs. For an example, the rural Bangladeshi women collect the dead branches that are cut off by storm for fuel rather than cutting the lives trees. Since Bangladeshi rural women use the land to produce food for their family, they acquire the profound knowledge of the land conditions, water, plants and other environmental features, which promote a new culture of respectful use and preservations of environment, therefore, that next generations can meet their needs.

1. Bangladesh Bureau of Statistics, 2006

2. For details. see ESCAP, 1995.

3. For Asia's Women in Agriculture. Environment and Rural Production: Bangladesh Perspective, see <http://www.fao.org/sd/wpdirect/WP0104.htm>

4. See. Rodda, Annabel (1991) *Women and the Environment*, Zed Books Ltd., London & New Jersey. pp. 5

However, any changes in the environment⁵ and depletion of natural resources like deforestation, soil erosion, flooding have a direct bearing on the lives of women in Bangladesh and cause them to suffer until they can cope with these changes. The latest example would be the land slide causing a large number of death casualties in Chittagong Hill Tracts region on 12 June 2007 and the cyclone, SIDR causing unprecedented damage to human life, property and environment in 16 districts of South region of the country on 15 November 2007⁶.

In Bangladesh, women play a crucial role in environmental management as farmers, workers, stockbreeders, and suppliers of fuel and water; they interact most closely with the living environment. It is common knowledge that as far as the environment is concerned, there is no better person to be informed or used than the women. However, in developing countries like Bangladesh, most women are not allowed to shape policy or make decision about the environment even though such decisions often affect them in disproportionate and negative ways. Rather they are measurably affected frequently, by policy changes, deforestation, water scarcity, soil degradation, exposure to agricultural and industrial chemicals, organic pollutants, etc. which have impact on women's workloads, nutrition and health. But women have always responded more sensitively and actively to environmental dilemma and debates. If the women are enlightened on the environmental issues, then the whole nation will be enlightened. The empowerment of women is therefore vital if they are to participate fully in environmental issues and management.

5. The term 'environment' is very wide which includes the interrelationship existing between water, air, soil and physical property and their relationship with human beings, other animals, plants and micro-organisms. See Section 2, The Environment Conservation Act, 1995 (Act No. 1 of 1995). In the last several decades, human beings have accelerated natural changes in the environment and many environmental problems result from human induced activities. Example includes: ozone layer depletion, global warming, loss of biodiversity and deforestation, unsustainable exhaustion of natural resources, soil erosion, desertification, population increase, water pollution, natural disaster etc.

6. For details, see the Daily Prothom Alo, 12 June 2007 and 16 November 2007 respectively.

II. Objective of the Study

The objective of this study is to assess the role of the women in Bangladesh as major environmental force and to identify how environmental degradation affects their life, basic needs. It also intends to examine the situation of women in Bangladesh, their work, home life, their responsibilities and close linkage with the nature and environment; and their active and necessary participation in environmental issues are crucial in the developing countries like Bangladesh.

III. Materials and Methods

The study is basically based on the review of primary and secondary literatures including books, journals, annual reports, newspapers etc. Modern Internet browsing has been exhaustively used for collection of most recent literatures on the subject.

IV. Findings and Discussion:

The Role of Women

Natural resources are central to the livelihood of poor rural households in Bangladesh and women are inseparable from physical environment in their modes of life, such as collectors of forest products, food, fodder and of water and as farmers and income earners through manual labor. Rural women play a major role in managing natural resources - soil, water, forests and energy. Their tasks in agricultures, forestry and animal husbandry as well as in the house make them daily managers of the living environment. The substantial role of women is further discussed under the following heads.

4.1 Collectors of fuel, food and fodder and water

Women in rural Bangladesh have always had a close relationship with the trees and the forest. Traditionally they gather products from

the trees and other plants, products which have provided them with the basic three 'F's of fuel, food and fodder, and for a variety of other uses. The source of the most of the domestic energy used in Bangladesh is provided by the burning of bio-mass and it is women who are mainly responsible for its collection. One study showed that women and girls collected 84 percent of the fuel. To do so, the women walk long distances and carry heavy loads. The time spent will depend on the availability of the supply. In Bangladesh, rural women and children spend an average of three to five hours daily.⁷

In Bangladesh, wood is the main fuel used in towns. Women collect and sell fuel wood,⁸ often as a sole means of livelihood. However, thousands of women cut wood illegally in order to ensure the survival of their families. Thus, many tribal women who had traditionally learned to live in harmony with their environment are today collecting as much as possible from the forest before it is sold to logging contractors. In this way women are forced into damaging the environment through their own desperate circumstances and need for survival. At the same time, women also have major role in homestead forestry. Women collect a variety of foods from forests, such as fruits, nuts, leaves, bark, roots, fungi, honey and betel leaves. These foods rarely form the basic diet, but are important as supplementary foods and of particular benefit at times of seasonal deficiency in food productions.

The collection of animal food is also usually the responsibility of the women. They gather grass, branches, leaves and fruits to feed small domestic animals, such as goats, cattle and poultry that are kept for their milk and meat. Women also play a vital role as both water suppliers and water managers. It is women who have knowledge of the location, reliability and quality of the local water sources. Almost as soon as they

7. FAO/SIDA (1987). *Restoring the Balance: Women and Forest Resources*, Rome, Food and Agricultural Organization of the United Nations, Stockholm, and Swedish International Development Agency.

8. The term 'fuel wood' includes a wide variety of materials used for burning twigs, leaves, brushwood, grass-wood, and grass, straw and animal dung.

can walk, small girls go with their mother and older sisters to the well or river or ponds. Carrying water is so integral to their lives that it is scarcely something to grumble about. The journey is exhausting, moreover, women are responsible for storing the water and deciding on its use. Women's expert knowledge of local water conditions is passed on to successive generations.

4.2 Women as producers and income generators

4.2.1. Agriculture

A large majority of the households in Bangladesh depend upon agriculture and related activities like livestock rearing, fisheries and forestry.⁹ Despite their routine domestic work, women are very actively involved in agricultural production in Bangladesh. Women in rural areas are in general responsible for most of the agricultural work in the homestead. They traditionally undertake home gardening. Farm activities in the homestead, ranging from selection of seeds to harvesting and storing of crops, are predominantly managed by women. Despite women's important role in agriculture, the traditional society norms and customary laws combined with the purdha system deprive Bangladeshi women of equitable economic opportunities and access to resources.

4.2.2 Crop production

In Bangladesh, a common social perception exists according to which women in the farm household do not perform field and market work and men do not undertake most of the productive activities carried out in the proximity of the homestead.¹⁰ But in reality, among poor households, such clearly demarcated gender divisions of labor do not apply. Presently due to extreme poverty and food crisis, social norms

9. In 2005-2006, the agriculture sector accounted for 21.84% of Gross Domestic Product, fisheries 3.91%, livestock, 6.15% and forestry 5.18%. For details, see Bangladesh Bureau of Statistics (BBS), 2006

and traditions are changing and women are appearing in the field as well.¹¹ About 60-70 percent of women from landless and near landless households work as agricultural wage laborers, whereas women from larger farms do not participate in field activities. In the Cvrameen Krishi Foundation working in North West areas of Bangladesh, women equally share all tasks of rice production, even the presumably male task of irrigation.¹²

4.2.3 Fisheries and livestock

Women in Bangladesh have diversified in fisheries, with substantial participation in small-scale fisheries. In Barisal and Rajshahi districts, women catch fish. They, to a large extent, carry out the drying, curing and marketing of fish as hawkers, stall keepers in permanent market places and weakly bazars. The majority of the employees in shrimp processing plants in Chittagong and Khulna are women. Women are also pre-dominantly involved in net making, the main income generating occupation in many families, and fresh water farming¹³.

Women have traditionally participated primarily as family labor in preparing fish nets and in some areas, in fish processing. In some NGC)s and government programmes, women from landless household cultivate fish individually or jointly in leased ponds, either within or near the homestead¹⁴.

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10. See Abdullah T. A. and Zeidenstein, S. A. (1982) *Village Women of Bangladesh: Products for change*, Pergamon Press, Oxford.
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 13. FAO (1980), *Role of Women in Small-Scale Fisheries of the Bay of Bengal*, FAO, Madras.
 14. See. Jahan, I. (1990) "Country Paper for Bangladesh" in *Gender Issues in Agriculture: Paper and Proceedings of the Regional Conference on Gender Issues in Agriculture (Manila, 5-6 December)* ADB and UNIFEM, pp. 189-200.

Women are also in general responsible for livestock and poultry rearing. Poultry rearing is a traditional activity performed by women for income generation, feeding livestock, cleaning sheds and securing them properly for the night and healthcare are the activities performed by women. Owing to their crucial role in livestock care, women are generally consulted while buying and selling the livestock.¹⁵ Women take care of the farmyard manure collection, thus reducing recycling, which has important consequences for soil fertility,

4.2.4 Food security

Despite a noticeable improvement in recent years, yields, particularly of food crops, still fall short of attainable levels. In Bangladesh, fully half the country's population cannot afford an adequate diet. Over 95 percent of women headed households, which account for about 8 percent of rural households, fall below the poverty line. Women share only 23.1 percent in total earned income in the country. Food insecurity is a critical concern with widespread child and maternal malnutrition. Recently, women in the poor households have been identified as the 'victims' as well as 'managers' of household food security. Women as producers of food and livestock as well as primary meal makers have important responsibilities to ensure household food security.

4.2.5 Labour force and gender parity

In Bangladesh the share of women in the total economically active population is 10.3 percent indicating a relatively lower economic participation by women. Most often, activities such as care of livestock and poultry, vegetable growing, post-harvest processing and preservation, usually done by women in the farm households, are considered uneconomic. Revised enumeration methods documented that about 52 percent of the employed population has been engaged in agriculture and related industrial activities. In this sector 79 percent of women were employed as compared to 60.3 percent of men. Women,

15. See Abdullah, supra note 10

who primarily work as unpaid family workers, accounted for 22.8 percent of total employment in agriculture. The second largest employment sector-manufacturing - engaged 9.9 percent of women. In this sector, women are concentrated in the food, beverage and tobacco industries¹⁶. Among all people employed, women accounted for 64 percent.

The Human Development Index (HDI) ranking for Bangladesh in 2006 was 137 out of 177 countries, indicating medium level human development category of countries like India and Srilanka for four consecutive years from 2003. This demonstrates the difficult development challenges confronting Bangladesh in human resource development. The Gender-Related Development Index (GDI) rank of Bangladesh in the same year was 102 out of 177 countries.¹⁷ This illustrates that the human development gap is further aggravated by substantial gender disparities, indicating that the country performs relatively worse on gender equality than on average achievements alone.

4.3. Impact of environmental degradation upon women

In most developing countries like Bangladesh, women participate in economic activities, like farming, fishing, producing fruits, selling etc. Additionally, they are responsible for domestic tasks, like cooking, gathering wood for fuel, hauling water, nurturing and caring for ehiafeh, tending to eiaeriy members of the household etc.¹⁸ The wide range of women's daily interactions with the environment to meet household needs, means they are often affected by its degradation¹⁹, have a significant bearing on the daily life of a woman and the well-

16. Labour Force Survey 2002-2003 for Bangladesh, BBS 2004

17. Human Development Report, UNDP, 2006

18. See. Women in Bangladesh, Country Briefing Paper, *Asian Development Bank* (ADB), January 2001, p.26

19. The common forms of environmental degradation especially due to natural and man made disasters include: floods, Cyclones, droughts, deforestation, soil and riverbank erosion, drying of wet lands, contamination from agrochemicals and industrial waste, commercial shrimp cultivation, inappropriate land use and poorly planned infrastructure such as embankments.

being of her family, resulting in deprivation of traditional means of livelihood. The amount of time and energy women spend on household duties can dramatically increase as resources are depleted.

Deforestation makes collecting wild herbs, fruits, natural medicines, fuel wood for cooking, boiling water etc. more difficult. When women need to travel further distance, take more time to collect fuel wood, and water, girl children are often take out of school to assist their mothers.” The energy, which is used to carry water, may consume one third of a women’s daily calorie. In areas where water is in particularly short supply, women use even more energy, putting them at risk of malnutrition and reducing their economic productivity. Women and girls suffer most in places where they eat last and least. Exposure to certain agricultural industrial chemicals, and organic pollutants, increases women’s vulnerability in pregnancy and childbirth. Stillbirths are linked to expectant mother’s pesticide exposure, the WHO estimates that one-third in Bangladesh are environmentally attributable, including 90 percent of diarrhea and 60 percent of acute respiratory infection cases.²¹

Riverbank erosion is a serious problem in Bangladesh that causes a substantial amount of land loss and the displacement of thousands of people, contributing to rural poverty and to out migration.²² The people are forced to leave their homeland to settle elsewhere becoming environmental refugees.²³ It is estimated that about one million people become homeless due to riverbank erosion in the Padma-Brahmaputra-Meghna region.²⁴

Natural disasters like cyclones and flooding cause damage and death almost every year in Bangladesh. In 1991, 85 percent of victims were women and children in some areas. In 2007 the cyclone, SIDR

20. Babul. Parvez, "Women also Need a Safer Environment", a article published in The Daily Star, Sunday, June 05, 2005 on the eve of World Environment Day, 2005.

21. See. *ibid*.

22. See *supra* note 18, p.27.

23. See *supra* note 4, p.95

24. See *supra* note 18, p-27.

has caused unprecedented damage to life, property, cattle and environment and World Bank has estimated to 21 (twenty-one) thousand crore Taka. We have also witnessed how rural women have become victims of natural disasters due to climate change, in manifold such as insecurity, supply of food, drinking water and displacement etc. More severe floods (50-60 percent inundation), such as occurred in 1954, 1955, 1974, 1987, 1988 and 1998 and 2007 caused enormous damage to crops and property. Women and children suffer significantly during natural disasters because of their lesser mobility and inadequate infrastructure support.²⁵ Export oriented shrimp cultivation in the coastal areas, which is the second largest export commodity after readymade garments. has raised controversies such as rights to livelihood, and use of common resources, the right to live with dignity on one's own property and irreversible degradation of the environment. About 124000 hectares of coastal shrimp lands have been created by converting agricultural land and mangrove forest into saline ponds.

These shrimp farms in the densely populated coastal areas exert a negative impact on the environment (e.g. increasing Salinization, soil degradation, loss of vegetation and mangroves, leading to the loss of agricultural production, fresh water, fishing, livestock, poultry and biomass, sometimes impeding women's contribution through kitchen, gardening, livestock and poultry rearing, as they have lost their access to and rights over common resources.²⁶ Though some of them obtain employment in pre-processing factories near shrimp farms, the pay is low.²⁷

25. See. *ibid.*, p.28

26, See, *ibid.*, p.29

27. See. *supra* note 3

V. Conclusion

The foregoing discussions reveal that in developing countries like Bangladesh, women particularly in rural areas, play pivotal role not only to the management of natural resources but also to the management of the domestic economy. The wide range of women's daily interactions with the environment to meet household needs means they are often affected by its degradation. However, women's roles are mostly undocumented and unaccounted in the official statistics. Poor women in Bangladesh often have no choice but to exploit natural resources in order to survive, even though they may have knowledge to promote sustainability. But the development planners and policy makers do not usually consider how development will affect the ordinary people, especially women. Although women are central to the issues in environment and development, they are prevented from participating fully by social, political, economical and educational constraints. which limit their opportunity.²⁸

Women's position in the family and the community is determined by traditional practices and customs, and the overall constraints of a patriarchal system. In patriarchal societies, husbands control most of the resources and women in-laws decide what is to be cooked or eaten even at the time of women's pregnancy and lactation. As a result, women are being habituated to say less, get less, eat less, and learn less and above all to expect less. One can see that most policy decision makers are men, but women have responded more sensitively and actively to environmental dilemmas and debates. Around the world, lack of women's representation in government limits their influence over governance and public policy. World wide, women held only 14 percent of seats in parliaments and in Bangladesh at the ministerial level, women's representation has never risen above 3 (three) percent.

28. See, supra note 4, p.99

Though the women are keenly affected by environmental degradation but yet they are scarcely involved in environmental policy at local and national levels. Women's limited participation means their perspectives, needs, knowledge and proposed solutions are directly and indirectly ignored." In most cases, the legal framework exists, but women themselves are unaware of this; they lack the necessary information and are not politically educated. Even the literacy rate is far lower for women (45.8%) than for men (57.2%). Female illiteracy is higher in rural than urban areas. In urban areas 52.5 percent of women are literate compared to 20.2 percent in rural areas.³⁰

Despite these constraints . and limitations, women as environmental educators, communicators and information" specialists have been and continue to be key agents of change in the evolution process leading to a more sustainable development of the planet.

Women are traditionally environmental conservationist. They are influencing the whole world from the family circle to the decision makers. Women influence the entire family circle and especially children, in their environmental perception, values, attitude and in ethics, as well as in the use of natural resources, energy consumption and in waste and recycling." Today the world witnesses women as environment specialists. World leaders have raised environmental issues with a feminine touch. Their thinking and actions have led the way to the concepts of sustainable development and its applications.

Example includes: Rachel Carson, a pioneering American Ecologist,

29. See, supra note 19

30. BBS,2004

31. The word 'information' consists of knowledge or data, and the word 'communication' is the transfer of information. Education is the use of information and communications systems to teach in a given matter or field using structured approach and applying it in a format or an informal setting in order to improve the knowledge and understanding of others.

32. See, Rodda, supra note, 4, p. 104

in her book 'Silent Spring' (1962), single-handedly alerted people throughout the world to the misuse of chemicals in the pest control.³³ In 1991 local, national and regional workshops on environment and sustainable development were held in Bangladesh, India, Nepal and Pakistan. Hundreds of grassroots women came together to share their experiences, voice their concerns, and show their solidarity against environmental degradation. The centrality of women's role in protecting the environment was recognized nationally due to the advocacy of women's groups and NGOs.³⁴ The landless women are mobilized in Khulna (south west zone) against shrimp cultivation as it reduces the fertility of arable land have adverse environmental implications. Grassroots Women have been mobilized and they demonstrated against poorly planned development projects such as embankments, particularly flood action plans. An increasing number of landless women's organizations are leasing government lands and water bodies for afforestation, agriculture and fishery programmes.

Nevertheless, considering the above discussion and analysis the following suggestions may be proposed to ensure their effective participation in sustainable environmental management in Bangladesh:

1. Women need official channel to reflect their needs and to give them a voice in environmental decision- making. Bangladesh ratified the UN Convention on Elimination of All Forms of Discrimination against Women (CEDAW) and took active part in the Beijing Platform for Action that identified 12 major barriers to development of women and also the steps to be taken by governments, international community and NGOs to overcome them. To bring the women into mainstream, the government as well as NGOs, scientists, environmental experts, civil society and every concerned individual should Work on their behalf. Helping women will be helpful for us to conserve natural resources, protect biodiversity, and promote equitable and sustainable development.

33. See *ibid.*, p.104

34. For details, see *supra* note 18, p.30

2. Though Bangladesh has attempted to bring more women into the decision making process by setting seats especially for them within national and local government, but side-by-side, the women need better environmental training, better education, and greater power and authority to be involved from the outset in planning, implementing and evaluating policies and programmes. Government has to be more sincere, active and attentive to increase the real awareness of the environmentally vulnerable and disadvantaged women by fully implementing initiatives.
3. On the other hand, gender equality reduces poverty, supports economic growth, encourages good governance and promotes better quality of life. Nobel laureate Amartya Sen has said, “advancing gender equality, though reversing the various social and economic handicaps that make one of the best ways of saving the environment.”³⁵ So to develop sustainable solutions of environmental problems, the voice of women must be heard. In the World Summit on Sustainable Development in South Africa, world leaders emphasized the women’s participation in decision making for a safer and healthy environment.”
4. To ensure environmental sustainability is one of the Millennium Development Goals. Bangladesh is committed to integrate the principles of sustainable development into country policies and programmes and reverse loss of environmental resources. The environmental aspects of health and vulnerability due to climate change and natural disasters, as we have recently witnessed by cyclone, SIDR, need more attention in the Poverty Reduction Strategy Paper (PRSP).
5. The additional cost of improved environmental management should be included in the budget. The PRSP should make clear what the environmental strategy actually is. It should

35. See, Babul, supra note 20

36. See “Declaration on Sustainable Development” adopted at the World Summit on Sustainable Development. Johannesburg. South Africa, Aug 26- Sept 4. 2002.

also outline how women will get their fair share and how the women-friendly environment will be created. Let us come 'forward to save our 'world by ensuring a safer and better environment for women.

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