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**Md. Jahangir Alam**  
**Homayara Latifa Ahmed**  
**Sutapa Bhattacharjee**

Determinants of Employee Performance in Business Firms: An Empirical Study in Bangladesh

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Internet Banking: Development and Prospects in Bangladesh

**Uttam Kumar Datta**  
Impact of Backward-Linkage Industry on Productivity of Export-Oriented RMG Industry in Bangladesh

**Riad Hossain**  
**Mohammed Belal Uddin**  
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**Masuma Akter**  
**M. Abdus Samad**  
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# **Prime University Journal**

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## Contents

**Md. Jahangir Alam**

**Homayara Latifa Ahmed**

**Sutapa Bhattacharjee**

Determinants of Employee Performance in Business Firms: An Empirical Study in Bangladesh 1

**Neaz Ahmed**

Internet Banking: Development and Prospects in Bangladesh 15

**Uttam Kumar Datta**

Impact of Backward-Linkage Industry on Productivity of Export-Oriented RMG industry in Bangladesh 32

**Riad Hossain**

**Mohammed Belal Uddin**

Cash Incentive in the RMG Sector of Bangladesh: Impact & Implication 49

**Masuma Akter**

**M. Abdus Samad**

VLSI Implementation of an Image Codec for Mobile Communication 62

**M. Arshad Ali**

Shakespeare's Macbeth and Bengali Dramatists from Michael to Rabindranath 74

**Mamun Al Faruque**

Suicide or Submission: A Comparative Study of Okonkwo and Caliban from the Postcolonial Perspective 88

**Tamanna- Sharmeen**

Self-Motivation and its role in the context of Bangladeshi Learner's English Language Learning 98

## **Determinants of Employee Performance in Business Firms: An Empirical Study in Bangladesh.**

Md. Jahangir Alam<sup>1</sup>  
Homayara Latifa Ahmed<sup>2</sup>  
Sutapa Bhattacharjee<sup>3</sup>

### **ABSTRACT:**

*Employee performance is one of the most significant criteria to achieve success in business; it is thus a core concept within work and organization. Performance by individuals also acts as an intrinsic motivator, as accomplishing tasks and performing at a high level can be a source of satisfaction, with feelings of mastery and pride. This article focuses on the level of employee performance which is influenced by deferent independent but influential variables to different degrees. Here, nine independent factors have been identified as influential variables and Multiple Regression Analysis was carried out to determine the impact of these on employee performance. The model developed from this study, identifies the relevant variables (salary, career opportunity, relevance of education, growth of organization and social status) having significant impact on performance; and this can thus be used to predict performance of individuals in organizations by identifying their level of motivation and competency.*

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## **1.0 INTRODUCTION:**

Performance refers to the degree of accomplishment of the tasks that makes up an employee's job. It reflects how well an employee is fulfilling the requirements of a job. Often confused with effort, which refers to energy expended, performance is measured in terms of results. Organizations that seek to gain competitive advantage through their workers must be able to manage the behavior and the result of all employees.

Individual performance is a core concept within work and organization. During the past 10 or 15 years, researchers have made progress in clarifying and extending the performance concept (Campbell, 1990). Moreover, advances have been made in specifying major predictors and processes associated with individual performance. With the ongoing changes that we are witnessing within organizations today, the performance concepts and performance requirements are undergoing changes as well (Ilgen & Pulakos, 1999).

Organizations need high performing individuals to meet their goals, to deliver the products and services they are specialized in, and finally to achieve competitive advantage. Performance is also important for the individual: accomplishing tasks and performing at a high level can be a source of satisfaction, with feelings of mastery and pride. Low performance and not achieving goals might feel dissatisfying or be experienced as a personal failure. Moreover, performance if others recognize it within the organization is often rewarded by financial and other benefits. Performance is a major although not the only prerequisite for future career development and success in the labor market. Although there may be exceptions, high performers get promoted more easily within an organization and generally have better career opportunities than low performers (VanScotter, Motowidlo, & Cross, 2000)\*

## **1.1 OBJECTIVE**

The broad objective of this study is to identify the variables that have an impact on employees' performance and develop a model. Specific objectives are:

- To identify the determinants that affect performance of employees in different organizations;
- To develop a model that will describe the employee performance relating to the various independent variables; and
- To find out the relative impact of each determinant / variable on employee performance.

## **1.2 SCOPE:**

The study was conducted with employees in management level from different medium to large organizations located at Dhaka city (Company names and type are given in Appendix A). It tries to identify the determinants that account for employee performance and construct a generic model applicable for employees in all types of organizations.

## **1.3 LIMITATIONS:**

Major limitation of the study is its focus only on the management employees, thereby limiting our differential analysis of exempt vs. non-exempt employees. Also, the sample used in this research was selected on a random manner while a systematic approach would have generated proportionate representation of respondents from various industries.

## **2.0 LITERATURE REVIEW:**

Performance is the level of achievement of tasks and objectives, measured in terms of end-results. In an organizational set-up, employee performance is all about meeting accepted / agreed standards of tasks and goals defining an individual's job. The concept of performance, however, has no credit to itself without any reference to other independent variables that have been seen to have an impact on performance. These variables are education, training, experience, growth potential of individual / career opportunity, growth potential of organization, satisfaction with salary, satisfaction with other financial benefits, and social status.

The word education comes from the Latin e-ducere meaning "to lead out". It can be defined as "to develop the knowledge, skill, or character of individuals" (Webster). Thus, we might assume that the purpose of education is to develop the knowledge, skill, or character of employees. In ancient Greece, Socrates argued that education was about drawing out what was already within the individual.

There were many attempts to study whether more educated individuals are more productive, have produced very mixed results. Berg (1970, Chapters 5-8) found more educated workers no more productive in a variety of blue collar and white-collar occupations. Swartz (1978, pp.28-30) found education unrelated to performance at a large conglomerate firm. Brenner (1968, pp.29- 30) found high school record (grades, teachers' ratings, absenteeism) significantly related to job performance among Lockheed-California workers. Medoff (1977, p23) and Medoff and Abraham (1978, p18) found education unrelated to performance but positively related to salary among managers at the same grade level in three large organizations.

The significance and value of training has long been recognized. A simple but profound saying by Confucius who lived in the 5th century BC was “Give a person a fish and you feed him for a day. Teach a person to fish and you feed him for a lifetime.” Given today’s business climate and the exponential growth in technology with its effect on the economy and society at large, the need for training is more pronounced than ever.

This concept refers to the acquisition of knowledge, skills, and competencies as a result of the teaching of vocational or practical skills and knowledge that relates to specific useful skills. In the most simplistic definition, it is an activity that changes people’s behavior. Increased productivity is often said to be the most important reason for training. But it is only one of the benefits. Training is also essential to motivate and inspire employees by showing them how important their jobs are and giving them all the information they need to perform those jobs (Anonymous, 1998). McNamara (n.d.) lists the following as general benefits from employee training:

- increased job satisfaction and morale
- increased motivation
- increased efficiencies in processes, resulting in financial gain
- increased capacity to adopt new technologies and methods
- increased innovation in strategies and products
- reduced employee turnover

While training enhances performance, it is not always the answer to performance problems. Brandt Sakakeeny, training industry analyst for Solomon Smith Barney, believes that training can be a great investment and training can be a waste of money (Rosner, 1999). Training is indeed a waste of money when the desired behavior does not occur. Gupta acknowledges that not all performance problems can be addressed by training. In many cases, non- training interventions are necessary (Gupta 1999). The key is to identify what problems can be attributed to training deficiencies and, once that is accomplished, to insure that the right training is implemented. To make training count, it must be matched directly to the needs of the organization and people in it. One tool that is used to accomplish this is the Training Needs Assessment.

Experience refers to the nature of the events someone or something has undergone. Experience is what is happening to us all the time - as we long we exist. It can again be defined as acts that produce, create, and invent knowledge for effects upon the future.

The idea that past experiences influence future experiences was termed continuity by John Dewey. All experiences, argued Dewey, impact on one’s future, for better or worse. Basically, cumulative experience either shuts one

down or opens up one's access to possible future experiences. In organizational set-up, experience is the key element to being successful at a job or earning a more desired job. This refers to individual's ability coupled with organization's potential to offer career progression to its employees. Such growth potential promotes feeling of job satisfaction and motivates individuals to perform.

Growth potential of organization is its opportunity to grow as a result of a growing market and industry. This variable has an impact on employee performance on the ground that a prospect of high performance by the organization will in turn induce high expectation of employee performance. Salary is a form of periodic payment from an employer to an employee, which is specified in an employment contract. It is contrasted with piece wages, where each job, hour or other unit is paid separately, rather than on a periodic basis. From the point of a view of running a business, salary can also be viewed as the cost of acquiring human resources for running operations, and is then termed personnel expense or salary expense. Salary, in most of the cases, is directly related to the performance and better salary structure frequently influences individual productivity and thus performance. (Wikipedia.)

Financial benefits include cost-of-living adjustments (or COLAS), overtime, holiday and other premium wages, travel and apparel expenses, and a host of related forms of premiums and reimbursements. These benefits are used to compensate employees for work above and beyond their normal work schedules or to reimburse them for expenses related to their jobs. COLAS are usually across-the-board contractual increases tied to an economic indicator, such as the consumer price index, that reports and increase in the cost of living.<sup>6</sup> People usually consider compensation package in a combined form of absolute amount and other benefits. The opportunity of earning the aforesaid financial benefits can positively encourage people to be better performer.

Social status can be understood as the degree of honor or prestige attached to one's position in society. Social stratification is associated with the ability of individuals to live up to some of ideals or principles regarded as important by the society or some social group within it (Kerbo 1983). The stratification system, which is the system of distributing rewards to the members of society, determines social status. Social status, the position or rank of a person or group within the stratification system, can be determined two ways. One can earn their social status by their own achievements, which is known as achieved status, or one can be placed in the stratification system by their inherited position, which is called ascribed status.

### **3.0 METHODOLOGY:**

Both primary and secondary sources were explored for this study. Secondary sources include published and unpublished articles, conference papers, books and journals. Factors were also identified by talking to the employers and employees of various organizations in order to find out which factors they consider important and have seen to have an impact on performance.

Primary data were collected through a survey of 236 respondents performing in managerial capacity from 22 companies spanning various industries. These companies are from the pharmaceuticals, financial sector, telecom, toiletries, tobacco, real estate, paint and government agencies (Appendix A). The survey was conducted through questionnaires using seven-point multiple rating scale, where point 1 was the lowest in the scale indicating poor performance. The highest point in the scale was 7 indicating excellent performance.

The independent variables (factors affecting performance) were measured in terms of their degree of relevance / impact on the dependent variable (level of performance). Here also the multiple rating scale was used. Point 1 indicates that the variable has very little impact on performance whereas point 7 indicates that the variable is very much relevant to performance.

The ratings of the independent variables were filled in by the respondents while the first part of the questionnaire on performance, the dependent variable, was filled in by the supervisors of the respondents. Data were analyzed using SPSS (Statistical Program for Social Science) software. Multiple linear regression analysis was conducted on the variables to develop a model that can be applied in determining the level of employee performance based on the personal and environmental attributes that were identified as the dependent variables. Finally the model has been tested in Bangladesh context using sample data obtained from a separate questionnaire survey (Appendix B).

### **3.1 SAMPLING PLAN:**

The target population is management-level employees working in medium and large organizations both in the public and private sector at Dhaka city. The sample size constituted of 22 companies, chosen in a random manner; and subsequently, the respondents, a total of 236 employees, were also chosen randomly from these organizations.

### **4.0 ANALYSIS & FINDINGS:**

Data were analyzed using multiple regression' technique to develop a model for employee performance. The results of the regression analysis using identified nine dependant variables as detenninants of employee performance are given below:

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.864	.745	.734	.578

As the model summary shows, the developed model will explain 74.5% of employee performance. This value is satisfactory for the model.

It is to be noted that level of overall performance was used as the dependent variable. From the regression analysis, the following model can be developed. The basic data on the coefficients of the following model are given in Table 1.

**Table 1: Results of Regression Analysis**

Coefficients	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-.354	.307		-1.152	.251
Education	.030	.057	.019	.516	.606
Relevance of education	.169	.026	.254	6.621	.000
Experience	.094	.027	.142	3.482	.001
Training	.029	.020	.062	1.493	.137
Career opportunity	.175	.044	.175	3.975	.000
Growth of organization	.161	.036	.184	4.410	.000
Salary	.260	.045	.325	5.773	.000
Other financial benefits	.035	.035	.051	.998	.320
Social Status	.153	.053	.145	2.853	.005

Dependent Variable: Performance

From the table it is found that salary, career opportunity, relevance of education, growth of organization and social status is the independent

variables having the most impact on job performance. These are followed by experience. The impact of experience is seen to be quite low in this study; this may be owing to the fact that the level of performance of individual is marked on the basis of one's experience or tenure within the organization or respective position. Any significance level above .05 has not been included in the model. Such high significance level is dropped because we have taken an accuracy level of 95% or above ( $\alpha = .05$ ).

$$\text{Employee Performance} = -0.354 + 0.260S + 0.175C + 0.169R + 0.161GO + 0.153SS + 0.094E$$

Where

S	Satisfaction with Salary
C	Career Opportunity
R	Relevance of Education
GO	Growth of Organization
SS	Social Status
E	Experience

The independent variables: education, training and other financial benefits have no impact on employees' performance. This may seem a surprising revelation, especially, as a lot of emphasis is generally given to education while recruiting. In our study, from our findings, it can be attributed to the fact that the sample of respondents are mostly from Bachelors with honors /Masters background, which is somewhat an approximate representation of the population.

In case of training, it has generally been seen that the trainings employees receive follow more from a need to complete a training target or exhaust training budget by the organization than from actual needs identified from the appraisal process of the employees. This is not a universal fact i.e. true for all companies, rather the observation of industry specialists; this observation, however, was also reflected in our study by chance.

The last variable, satisfaction with other financial benefits has also failed to show much impact on employee performance, perhaps owing to the fact that satisfaction with salary already forms the attribute having most impact on performance and has high correlation with other financial benefits (0.708). Besides, the compensation and benefits policy varies from one organization to another - while some firms may prefer higher percent of take-home pay vs. annual / one-time lump-sum benefits, others may prefer lower basic with higher annualized benefits; this however is a speculation, which cannot be validated without further information.

#### 4.1 TEST OF THE REGRESSION MODEL:

To determine if the developed regression model works, responses of five additional samples were taken at random for testing the regression model. The level of employee performance measured from the model has been compared to the level of satisfaction as responded by the respondent. Following are the results of the tests.

##### Sample 1:

$$\begin{aligned}\text{Employee Performance} &= -0.354 + 0.260S + 0.175C + 0.169R + \\ & 0.161GO + 0.153SS + 0.094E \\ &= -0.354 + 0.260 \times 6 + 0.175 \times 7 + 0.169 \times 5 + \\ & 0.161746 + 0.153 \times 5 + 0.094 \times 1, \\ &= 5.101\end{aligned}$$

Respondent ranked employee's performance as 5.

##### Sample 2:

$$\begin{aligned}\text{Employee Performance} &= -0.354 + 0.260S + 0.175C + 0.169R + \\ & 0.161GO + 0.153SS + 0.094E \\ &= -0.354 + 0.260 \times 6 + 0.175 \times 5 + 0.169 \times 5 + \\ & 0.161 \times 5 + 0.153 \times 6 + 0.094 \times 2 \\ &= 4.837\end{aligned}$$

Respondent ranked employee's performance as 5.

##### Sample 3:

$$\begin{aligned}\text{Employee Performance} &= -0.354 + 0.260S + 0.175C + 0.169R + \\ & 0.161GO + 0.153SS + 0.094E \\ &= -0.354 + 0.260 \times 6 + 0.175 \times 5 + 0.169 \times 6 + \\ & 0.161 \times 6 + 0.153 \times 6 + 0.094742 \\ &= 5.167\end{aligned}$$

Respondent ranked employee's performance as 5.

##### Sample 4:

$$\begin{aligned}\text{Employee Performance} &= -0.354 + 0.260S + 0.175C + 0.169R + \\ & 0.161GO + 0.153SS + 0.094E \\ &= -0.354 + 0.260 \times 6 + 0.175 \times 6 + 0.169 \times 6 + \\ & 0.161 \times 6 + 0.153 \times 6 + 0.094 \times 4 \\ &= 5.533\end{aligned}$$

Respondent ranked employee's performance as 6.

##### Sample 5:

$$\begin{aligned}\text{Employee Performance} &= -0.354 + 0.260S + 0.175C + 0.169R + \\ & 0.161GO + 0.153SS + 0.094E \\ &= -0.354 + 0.260 \times 3 + 0.175 \times 3 + 0.169 \times 6 + \\ & 0.161 \times 4 + 0.153 \times 4 + 0.094 \times 3 \\ &= 3.503\end{aligned}$$

Respondent ranked employee's performance as 4.

From the comparison of the model result and the performance level of the employee, it is found that the model seems to reach a close value to what the actual customer satisfaction is. According to these tests, the model seems to hold for employee performance.

### **5.0 FURTHER SCOPE OF STUDY**

This study was carried out using companies chosen randomly. In future, similar studies may be carried out specific to different industries to check whether the model varies from one industry to another. Regarding the variables, our study identified only 6 variables having significance level above 5% with R square of the model being 74.5%. There is scope of further study here as well to identify whether there are other independent variables affecting performance. Also, some organizations look at employees' academic performance to predict future performance in their job. This may be looked into further in future studies as to the validity of such a hypothesis.

### **6.0 CONCLUSION**

Performance is a function of ability and motivation; each of which can be further broken down to include education and its relevance to job, experience and training in case of the former, and salary, other financial benefits, career opportunity, growth potential of organization, and social status for the latter. In our study, of these independent variables, six were found to be significant with R square of 74.5% for the model developed from this research. The three variables not passing the model criteria are education, lacking variation and being confined to only Bachelors with honors or Masters degree holders; training, not being effectively conducted in order to ensure relevance to job requirements as is the general scenario in most companies; and satisfaction with other financial benefits, which may be on account of varying compensation and benefits policy in different organizations resulting in respondents' perceptions to vary.

In our modern competitive world, performance is a key word, used often as a cliché; this concept, however, is stripped off all its merit when the variables affecting its level are not being considered / studied independently. The model developed from this study identifies the relevant variables having an impact on performance, can thus be used to predict performance of individuals in organizations by identifying their level of motivation and competency. It may also act as a test for validation of certain recruitment and selection criteria. It, however, is not an absolute model; there is scope for further study through identification of differences owing to variations in industries, levels of management etc.

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## Appendix A

### List of Companies

Type of Business	Name of Company
Pharmaceutical	1. Square Pharmaceutical Ltd.
	2. Eskayef Ltd.
Financial Institution	3. BRAC Bank Ltd.
	4. HSBC
	5. City Bank Ltd.
	6. Prime Bank Ltd.
	7. Eastern Bank Ltd.
	8. Jamuna Bank Ltd.
	9. Mercantile Bank Ltd.
	10. Standard Chartered Bank
Telecom	11. Banglalink
	12. GP
	13. Aktel
	14. Teletalk
	15. Ericsson
Paint	16. Berger
Tobacco	17. BATB
Real Estate	18. Buildtrade Ltd.
	19. Bangla Track Ltd.
Toiletries	20. Unilever
Government Agency	21. Public Service Commission
	22. BIAM Foundation

## Appendix B

### Questionnaire

Name of the Organization:  
Designation of the employee:  
Organization code:  
Questionnaire code:  
Research Asst. code:

1. Employee performance: *(To be filled by the supervisor)*

Outstanding						Poor
7	6	5	4	3	2	1

The following boxes should be filled by the individual employees

2. Education

Ph. D	M Phil/ MS	Masters	Bachelor with Hons.	Bachelor	HSC	SSC
7	6	5	4	3	2	1

3. Relevancy of education with the job:

Mostly related						Not Related
7	6	5	4	3	2	1

4. Numbers of years of experience:

5. Training:

- a. Number of training programs you attended: \_\_\_\_\_  
b. Total duration of those training programs: \_\_\_\_\_  
c. Were those training programs relevant with your job: Yes      No

6. Growth potential of yourself:

High potential						No growth
7	6	5	4	3	2	1

7. Potential growth of the organization:

High likelihood						Stagnant market
7	6	5	4	3	2	1

8. Satisfaction level by way of salary:

Highly satisfied						Not Satisfied
7	6	5	4	3	2	1

9. Satisfaction with other financial benefits:

Most satisfied						Not satisfied
7	6	5	4	3	2	1

10. Social status:

High						Low
7	6	5	4	3	2	1

## **Internet Banking: Development and Prospects in Bangladesh**

Neaz Ahmed<sup>1</sup>

### **ABSTRACT:**

*Internet banking applications offer wide benefits to customers and banks and it is now no longer a “nice to have ” but an "impossible to survive without” issue for all banks. “Internet Banking” refers to systems that enable bank customers to access accounts and general HUCOFIIGHIOH on ban/< products and services through a personal computer (PC), cell phone or other intelligent devices. Numerous factors including competitive cost, customer service, and demographic considerations - are motivating banks to evaluate their technology and assess their electronic commerce and internet banking strategies. The challenge is to make sure the savings from internet banking technology more than offset the costs and risks associated with conducting business in cyberspace. Bangladesh Government is developing the IT infrastructure, computer literacy, etc. This will encourage the banks to expand Internet Banking facilities from their current level of 12% of the services provided through internet. The latest and most innovative global e-solution to Citibank customers is CitiDirect Online Banking. This paper intends to give an idea of what a full fledged internet banking service may provide and find out its viability for local banks in Bangladesh. From the customers' point of view the overall improvement in education especially computer literacy and the expanding vast network of ISPs will make an enabling environment to make the customers feel safe for banking through internet.*

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## 1.0 INTRODUCTION:

For decades, banking analysts have been predicting the coming of the cashless and chequeless economy as more and more payments are made electronically. In the American Banker's Century Edition, Marianovic (2000) quoted, "Dale L. Reistad of the American Bankers Association (ABA), at the first ABA National Operations and Automation Conference in 1963 claimed that we would be a checkless society by 2000".

In fact, by the middle of the 1990s, internet fever was rampant in the United States and it intensified as the decade wore on. The exponential growth in internet-related, non-financial activities such as e-mail fueled dramatic future growth in internet-based banking and payments. A 1995 Business Week cover story, "The Future of Money" cited predictions that the number of electronic purchases would grow more than seven-fold by the year 2000 and that by 2005; nearly 20% of all purchases would be made electronically.

Internet Banking is one of the few web applications where benefits to customers and banks are already widely proven. It is now no longer a "nice to have" but an "impossible to survive without" concern for all banks. Internet Banking refers to systems that enable bank customers to access accounts and general information on bank products and services through a personal computer (PC), cell phone or other microprocessor devices. Internet banking means a kind of self-help financial services provided by the bank for its clients through the medium of internet, including account information inquiry, account transfer & payment, online payment issues, agency services etc.

Sound management of banking products and services, especially those provided over the internet, is fundamental to maintain a high level of public confidence not only in the individual bank and its brand name but also in the banking system as a whole. Key components that will help maintain a high level of public confidence in an open network environment include:

- **Security:** Banks must have a sound system of internal controls to protect against security breaches for all forms of electronic access.
- **Authentication:** Transactions on the internet or any other telecommunication network must be secured to achieve a high level of public confidence. In cyberspace, as in the physical world, customers, banks, and merchants need assurances that they will receive the service as ordered or the merchandise as requested, and that they know the identity of the person they are dealing with.
- **Trust:** Public and private key cryptographic systems can be used to secure information and authenticate parties in transactions in

cyberspace. A trusted third party is a necessary part of the process. That third party is the certification authority.

- **Non-repudiation:** Non-repudiation is the undeniable proof of participation by both the sender and the receiver in a transaction. It is the reason public key encryption was developed, i.e. to authenticate electronic messages and prevent denial or repudiation by the sender or receiver.
- **Privacy:** For the case of internet banking personal information is very confidential. So the information should be very much private. The banks should ensure the privacy of all these information.
- **Availability:** The bank should maintain their service round the clock. The customers of internet banking are time conscious and time is much more important to them. So the service should be available all the time.

### **1.1 OBJECTIVES OF THE STUDY:**

Banking sector has been growing in Bangladesh at a phenomenal rate. However, integrated internet banking has also started in a rapid pace. As such this area has become focus of attention from academics as well as bankers The specific objectives of the Study are:

- a. To assess the existing internet banking scenario in Bangladesh
- b. To explore the prospects of internet banking in Bangladesh context.

### **1.2 RESEARCH METHODOLOGY:**

#### **1.2.1 DATA:**

Secondary data was derived from various sources including Citigroup Annual Reports, Citigroup website and various statements of different banks in Bangladesh. Primary information was obtained from the specific persons dealing certain products. For the comparison of products, websites of different banks offering internet banking and some bankers working on those particular banks were consulted. For some specific information, officials of Bangladesh Computer Council and Bangladesh Institute of Bank Management provided necessary inputs. For the industry, legal, and infrastructure related information internet was found a good source.

#### **1.2.2 LIMITATION OF THE STUDY**

Interviewing target respondents adopted convenience sampling as alternative to random sampling, at some phases where respondents were inaccessible or not available. Bank officials were found too busy and also reluctant to talk without a proper written permission from the competent authority.

## **2.0 GLOBAL SCENARIO OF INTERNET BANKING:**

### ***2.1 Internet Banking Products and Services***

Internet Banking products and services can include wholesale products for corporate customers as well as retail and fiduciary products for individual customers. Ultimately, the products and services obtained through internet banking may mirror products and services offered through other bank delivery channels. Some examples of wholesale products and services include:

- Cash management
- Automated clearinghouse transactions
- Bill presentment and payment

Examples of retail and fiduciary products and services include:

- Balance inquiry
- Funds transfer
- Downloading transaction information
- Bill presentment and payment
- Loan applications
- Investment activity
- Various value-added services

Other internet banking services may include providing internet access as an Internet Service provider (ISP). Historically, banks have used information systems technology to process cheques (item processing), drive ATM machines (transaction processing), and produce reports (management information systems). In the past, the computer systems that made the information systems operate were rarely noticed by customers. Today, web sites, electronic bill presentment and payment systems are an important way for banks to reach their Customers.

### **2.2 GROWTH IN INTERNET BANKING:**

Numerous factors including competitive cost, customer service, and demographic considerations - are motivating banks to evaluate their technology and assess their electronic commerce and internet banking strategies. The challenge is to make sure the savings from internet banking technology more than offset the costs and risks associated with conducting business in cyberspace. Some of the market factors that may drive a bank's strategy towards internet banking include the following:

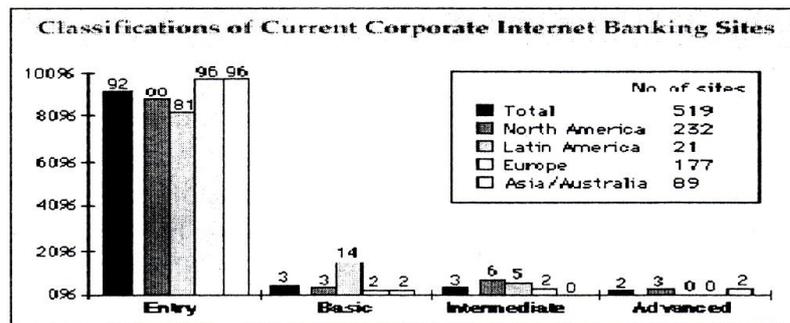
- **Competition:** The competitive pressure is the chief driving force behind increasing use of internet banking technology, ranking ahead of cost reduction and revenue enhancement. Banks see internet banking as a way to keep existing customers and attract new ones to the bank.

- **Cost Efficiencies:** Banks can deliver banking services on the internet at transaction costs far lower than traditional ways. The actual costs to execute a transaction will vary depending on the delivery channel used. These costs are expected to continue to decline.
- **Geographical Reach:** Internet Banking allows expanded customer contact through increased geographical reach and lower cost of delivery channels. In fact, some banks are doing business exclusively via the internet - they do not have traditional banking offices and only reach their customers online.
- **Branding:** Relationship building is a strategic priority for most banks. Internet banking technology and products can provide a means for banks to develop and maintain an ongoing relationship with their customers by offering easy access to a broad array of products and services. By capitalizing on brand identification and by providing a broad array of financial services, banks hope to build customer loyalty, and enhance repeat businesses.
- **Customer Demographics:** Internet banking allows banks to offer a wide array of options to their banking customers. Some customers will rely on traditional branches to conduct their banking business. Other customers are early adopters of new technologies that arrive in the marketplace. The challenge to banks is to understand their customer base and find the right mix of delivery channels to deliver products and services profitably to their various market segments.

As use of the internet continues to expand, more banks are using the web to offer products and services or otherwise enhance communications with consumers. The internet offers the potential for safe, fast, and convenient new ways to shop for financial services and conduct banking business, any day, any time.

### **3.0 EXTENT OF INTERNET BANKING SERVICES:**

A clear idea about the availability of internet banking level (location wise) can be obtained from the graph below.



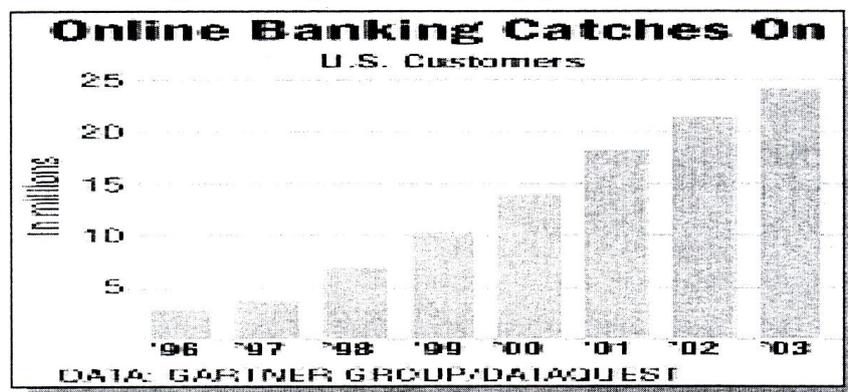
Source: BAH Corporate Internet Banking Survey  
**Figure 1: Classification of Current Corporate Internet Banking Sites**

Most of the Internet banks are in the entry level out of the four levels defined as below:

- Entry: The bank is offering informational services only
- Basic: The bank is offering communicative services only
- Intermediate: The bank is offering some specific transactional services such as fund transfer, remittance etc.
- Advanced: The bank is offering all the transactional services a customer needs.

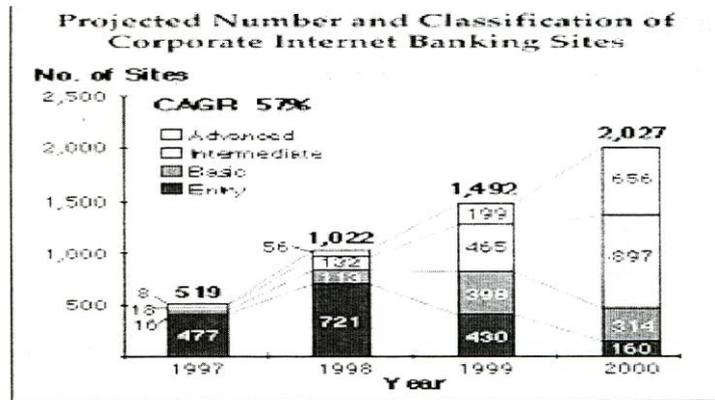
### 3.1 TRENDS OF INTERNET BANKING:

In the United/States of America, in the recent years, there was a sharp rise in internet banking. The US customers are very much technology conscious. So the Internet banking took away the market very quickly.



Source: BAH Corporate Internet Banking Survey  
**Figure 2: The Trend of Internet Banking in USA**

From Internet Banking Survey it is evident that the advanced and intermediate level internet banking service providers are increasing at a faster rate.



Source: BAH Analysis, BAH Corporate Internet Banking Survey  
**Figure 3: Projected Number and Classification of Corporate Internet Banking Sites**

#### **4.0 INTERNET BANKING AND ICT INFRASTRUCTURE IN BANGLADESH:**

##### **4.1 INTERNET BANKING OFFERINGS IN BANGLADESH:**

###### **4.1.1 CITIDIRECT®**

To gain more control over ones cash positions, one needs easy access to accounts and information in real time. One needs an application that is easily customized by individual users and streamlines day-to-day operations. Citibank NA offers such a solution called CitiDirect® with the motto “Money isn’t everything but it can be everywhere”. The facilities available are:

- Online Direct Debit Transaction Process
- Information Reporting
- Real-time information reporting for more effective cash management
- Delivered with the highest level of security
- Easy-to-use application
- World Link through CitiDirect
- comprehensive payment transaction solution
- Flexible, streamlined functionality
- Reliability, speed and information
- Payments through CitiDirect

- A comprehensive payments solution globally and locally
- Simplified, secure transaction management
- Timely, accurate information
- E-mail and Wireless Banking Alerts by CitiDirect

#### **4.1.2 OTHER BANKS OFFERING INTERNET BANKING SERVICES:**

Out of some 50 commercial banks, only a few offer internet banking services at different levels, in a lesser scale than the CitiDirect does as described below.

##### **Eastern Bank Limited**

Eastern Bank Limited internet banking application addresses the needs of small, individual and corporate account holders of the bank. This application provides a comprehensive range of banking services that enable the customer to meet most of their banking requirements over the net such as Account operations and Inquiries, Fund Transfers and Payments, Utility Bill Payments, Deposits, Loans, Session Summary etc.

##### **Bank Asia**

Bank Asia symbolizes modern banking with innovative services in Bangladesh. It has centralized Database with online ATM, SMS and Internet query service. The significant delivery channel of Bank Asia is the shared ATM Network. Bank Asia has 25 ATMs (six of its own and the remaining 19 as a member of Elecroway Transaction Network - ETN along with eleven other banks). Bank Asia is maintaining its competitiveness by leveraging on its Online Banking Software and modern IT infrastructure. It is the pioneer amongst the local banks in introducing innovative products like SMS banking, and under the ATM Network the Stellar Online Banking software enables direct linking of a client's account, without the requirement for a separate account.

##### **BRAC Bank**

BRAC Bank deployed a layer of security system for its Internet Banking. These measures extend from data encryption to firewalls. BRAC Bank uses the most advanced commercially available Secure Socket Layer (SSL) encryption technology to ensure that the information exchange between the customer's Computer and BRACBank.com over the internet is secure and cannot be accessed by any third party. SSL has been universally accepted on the World Wide Web for authenticated and encrypted communication between customers' computers and servers.

##### **AB Bank Ltd.**

The first private bank of Bangladesh Arab Bangladesh Bank Ltd, now renamed as AB Bank Ltd has a long standing experience in domestic and international banking. Its 153 branches in all the major commercial centers of the country

and 152 correspondents worldwide provide proficient banking services to its customers.

### **DBBL**

Dutch-Bangla Bank Limited is only ten years old, but highly progressive international joint venture bank. The bank has invested Taka one billion for total automation so that all 49 of its branches are offering total on-line banking. The bank has set up 240 ATMs, 700 POS terminals, offering internetbanking, SMS banking, debit cards, OD cards, utility bill payments etc. Their ATMs provide services to ten other banks at nominal fees.

### **HSBC**

Business Banking Account enables a person to receive credit of all the cash or cheque deposits along with inward remittance and make all local payments and provide access to the wide range of services for the business requirements. A person may deposit up to BDT 50,000 cash per transaction and any BDT amount in cheque 24 hours a day, 7 days a week through the ATM Machines, conveniently located Sales and Service Centers. EasyPay Machines are also available for deposit of BDT 50,000 cash per transaction and any BDT amount in cheque to the Business Banking Account. With EasyPay Machines both HSBC and Non-HSBC customers can make deposits and pay their utility bills, credit card payments and etc.

### **SCB**

Standard Chartered Bank offers the client a comprehensive range of Cash Management services. Whether it is a financial institution, a multi-national corporation or a domestic company, Electronic Banking application has the capability to support full range of Cash Management reporting and transaction initiation needs. It provides the secure, reliable and effective link between the client and client's accounts anywhere across the Standard Chartered network. Electronic Banking provides various types of support through a wide range of operating systems, sweeping transaction accessories with the provision of reporting features or other special functions.

## **4.2 INFORMATION COMMUNICATION TECHNOLOGY (ICT) POLICIES:**

Information Communication Technology (ICT) encompasses the broad fields of data or information processing, transmission and communications by means of computer and telecommunication techniques and these modern tools are being increasingly used for organizational or personal information processing in all sectors of economy and society. A dependable information system is essential for efficient management and operation of the public and private sectors. But there is a shortage of locally generated information needed for efficient performance of these sectors. In order to meet this objective, ICT use

in every sector shall have to be accelerated in terms of information generation, utilization and applications.

This Policy aims at building an ICT-driven nation comprising of knowledge- based society by the year 2010. In view of this, a country-wide ICT-infrastructure will be developed to ensure access to information by every citizen to facilitate empowerment of people and enhance democratic values and norms for sustainable economic development by using the infrastructure for human resources development, governance, e-commerce, banking, public utility services and all sorts of on-line ICT-enabled services. The policy statement set by the Ministry of Science, Information & Communication Technology, and Government of the Peoples' Republic of Bangladesh are based on the following areas:

- Human Resources Development through Education and Training
- ICT Infrastructure
- Research and Development in ICT
- Development of ICT Industry
- Development of E-Commerce, E-Government / E-Governance
- Establishment of Legal Issues

#### **4.3 THE SUPPORTING IT INFRASTRUCTURE:**

##### **4.3.1 COMPUTER TECHNOLOGY:**

Though the first main frame computer came to Bangladesh in 1964, but the usage of PC became popular very late to the common people. Several large banks and private entrepreneurs in industrial sectors are the path makers of achieving benefits from computer and computerized applications. Bureau of Statistics and a few nationalized banks are the leaders in using computer in government sector by processing data and information, while industrial concerns in private sectors are the leaders in applying computer for their accounting, payroll and inventory related applications.

##### **4.3.2 THE INTERNET ERA:**

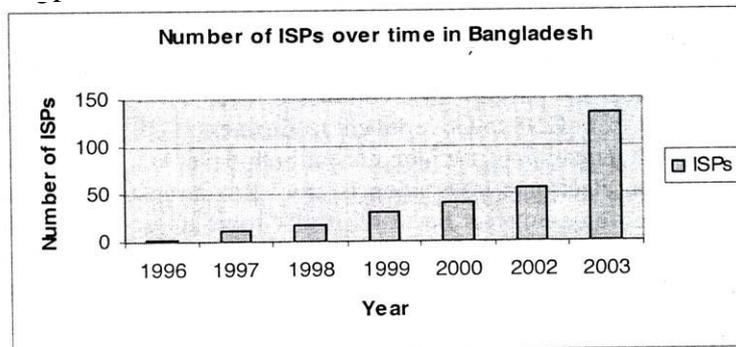
The Internet came late in Bangladesh, with UUCP e-mail beginning in 1993 and IP connectivity in 1996. By July 1997 there were an estimated 5,500 IP and UUCP accounts (Press, L., 1999) in the country and by the end of 2000 it has been forecasted that the account holder could reach more than 50,000 through different Internet Service Providers (ISP), who are offering Internet services with bandwidth ranging between 65 Kbps and 2 Mbps through VSAT, Broadband. In June 1996, the government decided to allow private entrepreneurs to act as ISPs using VSAT (Very Small Aperture Terminal). Bangladesh Telegraph and Telephone Board (BTTB) already established a network for high bandwidth Internet connectivity through offering commercial

services. BTTB has established a fiber optics backbone throughout the country and has a plan to offer ISDN (Integrated Services Digital Network) service in Dhaka and Chittagong cities.

#### 4.3.3 NEW ISPS ARE EMERGING:

After the withdrawal of imposition on VSAT in April 2000 the internet scenario of the country has been changed drastically. An entrepreneur only need to obtain a simple permission from the government run BTTB with an annual mandatory fee of US\$ 3,500 and can choose any globally available transponder services. Breaking of this monopoly has increased competition in the market with rapid reduction of equipment cost and cost of satellite services, reflecting abrupt reduction of Internet usage fee. Legal framework now also permits ISPs to float public share in the stock exchange (Rahman, H., 2000)

Current bandwidth of Internet backbone ranges between 64Kbps and 2Mbps through dedicated full-duplex VSAT links.



Source: Bangladesh Computer Council, 2004

Figure 4: Trend of the increment of the number of ISPs

Concentration of ISP is the most in Dhaka city, where more than 80% of them are located. Only three have been established in Sylhet, three in Chittagong and one each in Rajshahi, Khulna and Bogra.

Today people are getting more technology conscious, well aware of its benefits and becoming users of Internet facilities. The number of internet users in Bangladesh has jumped by more than 150% in a year to over one million, partly due to lower tariffs. This will form a strong background in favor of internet banking in Bangladesh.

## **5.0 ICT AND INTERNET BANKING PERSPECTIVE:**

### **5.1 RESEARCH AND DEVELOPMENT IN ICT:**

Research and development in ICT will focus on need based fundamental and applied research contributing to the improvement of quality and efficiency of the application to ICT industry. Bangladesh Computer Council encourages R&D activities of the public and private sector organizations along with ICT industries, Universities, and encourage the younger generation in these activities. The ICT industry may fund for R&D activities for new ICT products and services through Industry-Academia collaboration. R&D efforts on Bangla text processing, Bangla voice recognition, translation and synthesis will be intensified. Technology Corporations such as Microsoft, IBM, Computer Associates, Oracle, SAP etc. will be approached to set up their R & D Centers in Bangladesh. Contents for Internet and Intranet will be developed in Bangla.

### **5.2 E-COMMERCE:**

The Government and the private sector will promote business in electronic form and create an environment in which it will be well secured. Government will take initiative to introduce and promote Government-to-Government (GZG) transaction under the purview of e-commerce. Gradually this initiative will also be extended from GZG to Government to Business (GZB) transaction in the same line.

Authentication of the identities of both buyer and seller or the involved parties in an electronic transaction is crucial to promote inter-bank transaction, encryption e-commerce. Security of electronic transaction should be ensured through appropriate measures for inter-banking payment system in electronic form. Legal framework to provide the guiding principles, rules and legislation for e-Commerce shall be put in place.

### **5.3 SWOT Analysis:**

For analyzing the performance of Internet Banking in Bangladesh the following SWOT Analysis is considered:

#### **5.3.1 STRENGTHS: .**

- Internet Banking is new in Bangladesh market. Only a few banks are now offering Internet services in solving banking problems. Most of the banks are offering only accounting information online. Actual fund transfer and fund disbursement is not possible in all the banks that are offering internet services. So this product will enjoy the benefit of a first mover.

- It is cheap both for the banks and the customers. The bank will be able to lower down the overhead costs and make more profit out of it. Internet banking will require less manual workers. Again the customers will be able to save time as well as money for their transaction needs.
- Internet banking is convenient as the service is available all the time at just a click away.

### **5.3.2 WEAKNESSES:**

- Security breakdown: The system “will have a problem with the identification of the individual who is initiating the transaction. In Bangladesh, the identification of an individual is not yet supported digitally. So there will be a problem in moving to the Internet era for banking purposes just now. First we will have to develop a digital database of the users of the internet banking services.
- The transaction can be cancelled only via internet. The internet infrastructure of our country is not that much supportive to provide all time access to the web. So there will be a problem in executing the service with its full functionality.

### **5.3.3 OPPORTUNITIES:**

- Non-branch banking is becoming popular in our country. Many banks are now offering non-branch banking facilities. A person can withdraw or deposit money in any branch of the bank he has account with. So moving to internet banking will allow the banks to offer non-branch banking facilities.
- The Internet services are becoming very common to us. So a service offered through the internet will be widely accepted in the near future.

### **5.3.4 THREATS:**

- Many people have concern about security and privacy. They like to feel their money with their hand. They actually don't believe in virtual money transfer.
- In the field of IT new technology is coming everyday. The one which is very popular today might get obsolete tomorrow. So to have a competitive edge over the competitors the banks must always update their services.
- The movement towards online banking might marginalize the customers who do not have Internet access or who are not technologically sound.

Despite the presence of online Internet service in Bangladesh, its scope is largely underutilized. The reasons include high service charges, lack of awareness, poor telecommunication systems, government policy, low buying power of potential clients, and lack of institutional support.

#### **5.4 COST BENEFIT ANALYSIS:**

The main benefit of Internet banking is the amount of time it saves (resulting in cost reduction) in effecting banking operations. Although Internet banking is restricted to managing accounts and making on-line transactions, it cuts out much of the need to personally visit the bank. Using Internet banking will also increase the efficiency of paying money (bills, debts, wages, etc) as it can reduce the need for writing and sending cheques (which can take up to 5 days to clear). Wages and Salary payments can be created via internet banking to pay such money, which is also an efficient way of paying staff wages. On-line banks are able to offer their customers higher interest rates than high street banks due to their reduced overheads. If the popularity of Internet banking takes off as predicted the banks may also be capable of offering their Internet banking customers higher interest rates (due to reduced overheads or as an incentive). Though Internet banking will require a higher initial investment, the operating expenses will be much lower. Again customers will be satisfied through fast, accurate, easy-to-use, comprehensive delivery of the services. So internet banking will be much more beneficial to banks as well as customers.

#### **6.0 FINDINGS: -**

A broad spectrum of electronic banking services, a subset of e-finance, is available in Bangladesh with various degree of penetration. Credit card and POS services are provided by 23 percent Private and Foreign commercial banks (PCBs and FCBS). Several thousands of POS terminals have been set up in major cities of the country. Tele-banking is second most penetrated e-banking service in Bangladesh. ATM is expanding rapidly in major cities. A group of domestic and foreign banks operate shared ATM network, which drastically increase access to this type of electronic banking service. The network will gradually be extended to other parts of the country. Credit card is also becoming very popular 'service in major cities of Bangladesh; during 1999-2005 the growth of credit card market is more than 100 percent. The credit card service is available from VISA, MasterCard and VANIK (now LankaBangla). Some foreign banks provide electronic fund transfer services. Microchips embedded Smart Card is also becoming popular in the country, particularly for utility bill payment. The table shows extent of internet banking in Bangladesh.

**Table 1: Electronic Banking Services in Bangladesh (percentage of Banks)**

<b>Products/Years</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Tele Banking	20	24	25	28	30	32
Online Corporate Banking	8	12	14	15	18	25
Electronic Fund Transfer	15	18	20	22	25	30
ATM	15	28	28	30	35	40
Credit Card	23	22	20	25	28	24
Debit Card	8	18	22	28	33	40
Merchant Account Service	8	12	15	18	18	20
Internet Banking	7	12	15	22	35	45

Source: Development & Prospect of Internet Banking in Bangladesh, Competitiveness Review, Jan 2007

Last few years show dramatic improvement in the awareness situation in the banking community regarding the comprehensive application of ICT. The experts forecast that ICT' penetration in the banking sector will improve dramatically by 2010. Majority of banks is planning to introduce ICT for integration of banking services and new e-finance services, which will play a vital role in bringing efficiency in the financial sector. Among the banks surveyed 75 percent of banks have strategic plan to implement ICT and internet banking.

The foreign banks are the pioneers in adopting electronic finance in Bangladesh. Most of the foreign banks are using the computerized transaction system and taking advantage of the superior technology by attracting customers and providing inter-branch and inter-bank linkage. Foreign banks through successful use of a global network, has increased the timeliness and accuracy of information, benefiting its customers, its employees and also its management.

Bangladesh Bank is now moving to the era of technological advancement. Bangladesh Bank is planning to have Automated Clearing House (ACH) which will automate the processing of checks by MICR coding. This shows the intention of Bangladesh Bank to the betterment of the services. This will eventually lead to Internet banking as a requirement for all banks in the near future.

## **7.0 CONCLUSION:**

Internet Banking is one of the few web applications where benefits to customers and banks are already an accepted reality. It is now no longer an extra feature but a necessary business process for all banks. Internet Banking products and services can include wholesale products for corporate customers

as well as retail and fiduciary products for consumers. Numerous factors including competitive cost, customer service, and demographic considerations, ICT infrastructure - are motivating banks to evaluate their technology and assess their electronic commerce and Internet banking strategies. The challenge is to make sure the savings from internet banking technology more than offset the costs and risks associated with conducting business in cyberspace.

Although there are 48 different commercial banks in Bangladesh, only a select few have internet banking. However, most of these banks do not offer comprehensive online or electronic services. ATM machines have become popular with most banks and have been set up in many locations, though not as concentrated as in a developed economy

Internet is a new product in Bangladesh. The extent of Internet is not that vast in our country. But a section of the financial market is technologically aware and they are the early adopters and customers of internet banking. The impediment to growth is lack of IT infrastructure and proper security features.

The Government spending in ICT is going to increase by at least 2% of ADP in coming years. The new budget provision encourages the investment in the application of ICT in trade and finance. The software support for internet banking, i.e. FLEXCUBE is now available in Bangladesh. Again Bangladesh Government is working on the copyright law and the preservation of intellectual property act. After successful implementation of all these policies and strategies more than 50% of the banks are expected to offer internet banking facilities which now stands at 12% only. Bangladesh Bank is now moving ahead towards technological advancement. They are planning to have Automated Clearing House which will automate the cheque clearing process. This will eventually lead to internet banking a requirement for all banks in the near future.

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## **Impact of Backward-Linkage Industry on Productivity of Export - Oriented RMG Industry in Bangladesh.**

Uttam Kumar Datta<sup>1</sup>

### **ABSTRACT:**

*The export-oriented Garment Industry of Bangladesh is one of the most important industries in terms of foreign exchange earnings and employment. But this industry is facing a global competition from the expiry of post MFA, January 1<sup>st</sup>; 2005. The product quality of Bangladeshi garments is typical among her nearest competitors. In this competitive situation, production cost leadership is the key to win the international competitiveness. In this connection strong Backward-Linkage industry and productivity can help Bangladesh to reduce production cost for competitiveness. There is a strong relationship between Backward-Linkage and Productivity. The term backward-linkage industry refers the inbound supply related raw materials based industries. On the other hand, Productivity means the ratio between outputs and inputs, in turn, efficient use of inputs to increase production. In both aspects, productivity depends on uninterrupted supply of raw materials. In this view, a complete supply chain and efficient use of inputs of production can play an important role to enhance productivity. Basically, there are three sectors of garment industry. They are Knit, Woven and Sweaters. The main stages of backward-linkage of this industry are Spinning, Knitting, Weaving, Dyeing & Printing, Finishing and Packaging and Accessories. The productivity depends on the relationship of these stages and the efficient use of raw materials in every stage of backward-linkage industries. Meanwhile, backward-linkage of Knit sector and Packaging & accessories industries has already been established. But the woven sector is gradually losing its competitive advantages lack of strong backward-linkage industries. The woven garments exporters are dependable on importing raw materials. It causes long lead-time and buyers are concentrated where shorten lead-time is available. Long lead-time also causes inefficient use of inputs materials and short run production. So that, it is very important to identify the opportunities of setting up a complete supply chain of woven sector to boost the slamming woven garments export of Bangladesh.*

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## INTRODUCTION:

The export-oriented Garment Industry of Bangladesh is one of the most important industries in terms of foreign exchange earnings and employment. But this industry is facing a global competition from the expiry of post MFA, January 15<sup>th</sup>; 2005. The product quality of Bangladeshi garments is typical among her nearest competitors. In this competitive situation, production cost leadership is the key to win the international competitiveness. In this connection strong Backward-Linkage industry and productivity can help Bangladesh to reduce production cost for competitiveness. There is a strong relationship between backward-linkage and productivity. The term backward-linkage industry refers the inbound supply related raw materials based industries. On the other hand, productivity means the ratio between outputs and inputs, in turn, efficient use of inputs to increase production. In both aspects, productivity depends on uninterrupted supply of raw materials. In this view, a complete supply chain and efficient use of inputs of production can play an important role to enhance productivity. Basically, there are three sectors of garment industry. They are Knit, Woven and Sweaters. The main stages of backward-linkage of this industry are Spinning, Knitting, Weaving, Dyeing & Printing, Finishing and Packaging and Accessories.

The productivity depends on the relationship of these stages and the efficient use of raw materials in every stage of backward-linkage industries. Meanwhile, backward-linkage of Knit sector and Packaging & Accessories industries has approximately been established. But the woven sector is gradually losing its competitive advantages for lack of strong backward-linkage industries. (Knit Exposition, December, 2005, page no.38) The woven garments exporters are dependable on importing raw materials. It causes long lead-time and buyers are concentrated where shorten lead-time is available. Long lead-time also causes inefficient use of inputs materials and short run production. So that, it is very important to identify the opportunities of setting up a complete supply chain of woven sector to boost the slamming woven garments export of Bangladesh.

On the other hand, per dozen garments price has been declined. Once upon a time, this industry was a cheap labor intensive industry. But this advantage is gradually losing because of increasing labor movement for higher wages and maintaining rules and regulation of different international agencies. In this context, Bangladesh should give more emphasis on setting up well established backward linkage industry to increase productivity.

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*1.(Papers and proceedings of the National Tripartite Meeting on Enhancing Employment, Global Competitiveness through Decent Work: Post-MFA Challenges and Opportunities, Dhaka: August, 2005)*

Then this country will be able to win the competitive advantage based on low cost in the international competitive market. It is a very important aspect of this industry. So, Government and related organizations should take necessary measures to survive this industry in the international era.

### **OBJECTIVE OF THE STUDY:**

The main objectives of this paper are to

1. identify the relationship between backward linkage and productivity of export oriented ready-made garment industry in Bangladesh.
2. reduce production cost opportunities to win cost based competitive advantage in international competitiveness.
3. examine the impact of backward linkage industry on productivity and production cost.
4. measure the strength and weakness of backward linkage industry to boost up the export oriented garment industry in Bangladesh.

### **METHODOLOGY:**

This paper has identified the relationship based on primary data collected from ten composite and finished garment producing factories in Dhaka and semi urban area of Dhaka by using justified method under non-random technique of sampling. Data has been collected under survey method and observation from the sample size. Instructed questionnaire used to conduct field work over telephone and face to face methods. Out of ten units, four units were composite knit consisting into two, three or four stages and other four units were woven and rest two was sweaters. These units were chosen as they supplied all required information about the topic of investigation. In spite of primary data, secondary data are also collected to evaluate the present position of backward linkage industry at a glance. Arithmetic mean as a part of statistical tools has been utilized to work out the cost differences between the independent factory and composite backward linkage chain system factory. The selected ten respondents are asked about the average prices of concern garments in their factories. Their given answers are used to analyze the per dozen garment prices and examine the impact of backward linkage industry on productivity in average.

### **FINDINGS OF THE STUDY:**

#### **Present position of Backward-Linkage Industry of Bangladesh in brief:**

There are three types of backward linkage industries are being established in Bangladesh to support the 100% export oriented garment industry. They are **Woven, Knit and Sweaters** oriented industries. In spite of these, two more additional industries are also set up, **accessories and packaging** industry.

### **BACKWARD-LINKAGE OF WOVEN SECTOR:**

At present, the backward-linkage of woven sector can supply only 30% of total demand of fabrics (Annual report of BTMA, 2005). This gap is a crucial for this sector. Due to this gap from the expiry of quota system, export of woven items growth has been decreased and the growth rate of knit garments has been increased. The following table-1 shows the total garments exports over five years from Bangladesh,

**Table no. - 1: Garments Exports over Five Years from Bangladesh**

#### **Year Total Garments Export from Bangladesh ( MN Dozen)**

	<b>Woven</b>	<b>Knit</b>	<b>Total</b>
2003 2004	3538.07	2148.02	5686.09
2004 2005	3598.20	2819.47	6417.67
2005 2006	4083.82	3816.98	7900.80
2006 2007	4657.63	4553.60	9211.23
2007 2008	5168.66	5532.99	10701.65

**Source: BGMEA, website**

It causes long lead-time and buyers are concentrating to other countries like India, China where a complete supply chain is available. BGMEA is pursuing the Movement to develop backward linkage for the woven sector by providing interest free loans or at least at very low rates so that the woven sector can boom and compete the global market. To close the gap between demand and supply of woven fabrics, Bangladesh is importing fabrics at a higher importing cost. As a result, Bangladesh is producing woven garments at a higher cost. So the country is losing its competitive advantage,

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2. (Papers and proceedings of the National Tripartite Meeting on Enhancing Employment, Global Competitiveness through Decent Work: Post-MFA Challenges and Opportunities, Dhaka: August, 2005, page no. 92)

### **BACKWARD-LINKAGE OF KNIT SECTOR:**

The knit sector is comparatively well established, the backward linkage industry of this sector can supply 90% of total knit fabrics demand of the country (**BAT Expo-2006**). In the quota free era, the exports of knit garments are being increased over woven garments because of stronger backward linkage industry. Especially the sweater industry has enjoying an investment boom in recent times and showed tremendous export performance, **according to the industry's insiders and EPB**, approximately 20,000 million has been invested in new sweater and backward linkage factories in the last few years with nearly 200 new factories being built after post MFA up to 2006 as mentioned by industry leaders. Bangladesh earned US\$5.6 billion through RMG on last 2005 to 2006 year with US\$3.5 billion from woven items and US\$ 2.1 billion from knitwear including sweater. Woven is the lowest value added items as fabrics and accessories are mostly imported while sweater has an average of 60 percent value addition. Investment in sweater industry is booming because of the backward linkage industry. At present, there are 12 yarn-dyeing factories in operation and 15 more in the pipeline. Yarn dyeing is intermediate backward linkage in the sweater industry and a factory generally requires an investment of 20-30 cores. Bangladesh has achieved competitive and qualitative advantages over other sweater exporting countries. More than 70 percent of the sweaters exporting from Bangladesh are acrylic yarn based and at present nearly 70 percent of cotton and acrylic yarn are dyed in local factories. However acrylic and non-acrylic wool and mixed yarn are still dependent on import.

### **BACKWARD-LINKAGE OF ACCESSORIES AND PACKAGING SECTOR:**

Accessories and packaging industries of textile and clothing sector have already been well established. Bangladesh is after all capable to supply all types of accessories and packaging materials to make balance with domestic demand. But sometimes exporters are bounded to import some accessories from country abroad.

#### **The Relationship between Backward-Linkage Industry and Productivity**

A complete supply chain of raw materials is needed to ensure efficient use of production factors. Productivity means the efficient use of inputs to increase production. Productivity can be defined from this viewpoint in mathematically:

$$\text{Productivity} = \frac{\text{outputs}}{\text{inputs}} = \frac{\text{valu of production}}{\text{cost of inputs}}$$

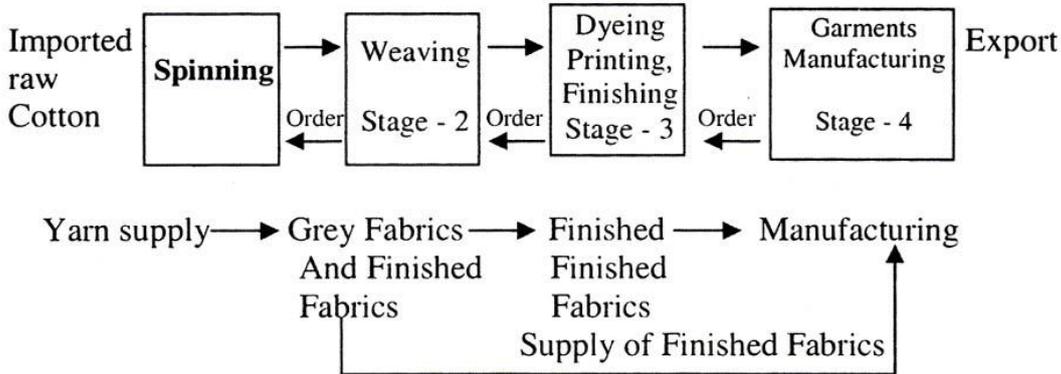
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**Source:** Operation Management and Competitive Advantage.

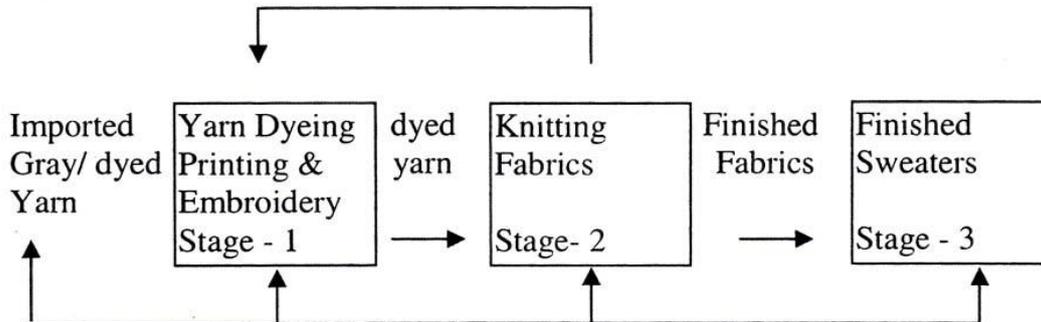
By - **Chase, Aquilano and Jacobs.**



**Figure no – 2: A Four Stages Supply Chain of Woven Sector**



**Figure no– 3: A Three Stages Supply Chain of Sweaters Sector**



**Source: observation by the Researcher**

**Production Cost Differences Between Composite Textile and Independent Garment Factory**

Composite textile and clothing unit is a high value added process of production. Earlier it has been defined that well-established backward linkage industries reduce production cost through increasing productivity and maximize the profit. In this contest, a survey has been conducted over telephone interview on ten production units of different levels of textile and clothing about per dozen-production cost and profit. They are also asked the production cost differences between composite and independent garment industry. The list of ten production units is:

**Cost Differences between Composite and Independent Garments of per Dozen T-Shirt:**

**The sample Respondents said about the average per dozen material costs at different stages are given below:**

**Figure no. - 4: Sample Respondent's Data about Cost Composition of Knit Garments**

Yam require for per dozen T-Shirt = 3.21 Kg (Average count & Average size)  
 Fabrics require for per dozen T- Shirt = 3.21 Kg (Average count & Average size)  
 Spinning cost per Kg gray fabrics = 2.75 US\$ (Average)  
 Gray fabrics cost for per dozen T- Shirt = (3.21kg x 2.75US\$) = 8.83 US\$  
 Finished fabrics cost for per dozen T- Shirt = (gray fabric 8.83 + dyeing charge 7.67 US\$= 16.5 \$) Average.

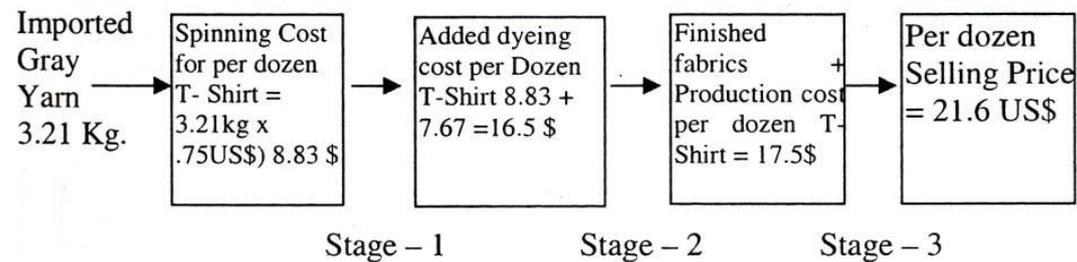
**Per dozen materials cost: (Finished Fabrics 16.5\$ + Accessories & Packaging 1\$) =17.5\$**

**Per dozen Selling Price = 21.6 US\$.¢(FOB) price quotation.**

**Making Charge M C Price = (21.6 - 17.5\$) = 4.1 US\$ (Average)**

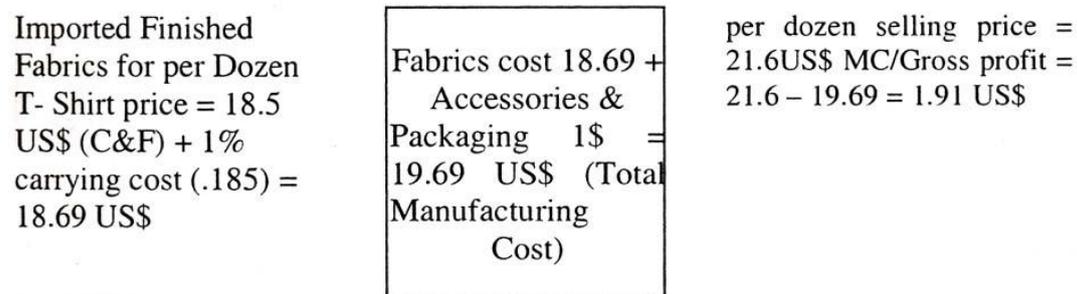
**Costs at different Stages of a Composite Textile of per dozen T-Shirt**

**Figure no- 5**



**Profit of Composite Textile = Per Dozen M.C Price 21.6 - P. Cost 17.5 = 4.1 US\$**

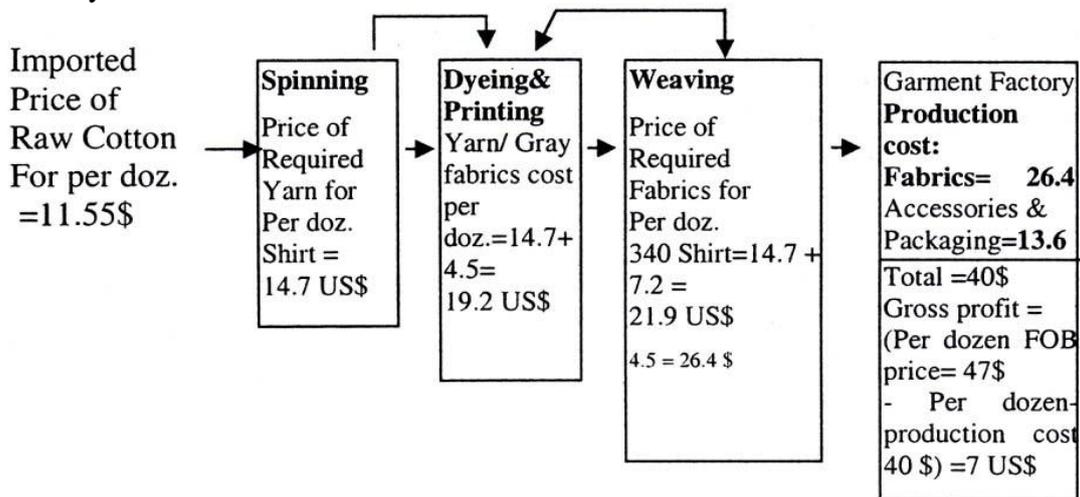
**Figure no. - 6: Cost Composition of Independent Garments**



**Hare, 4.1 - 1.91 = 2.19 US\$ is the benefit of well-established backward- linkage or composite textile and clothing.**

**Impact of Well Established Backward-Linkage on Production cost at Woven Sector and International Competitiveness.**

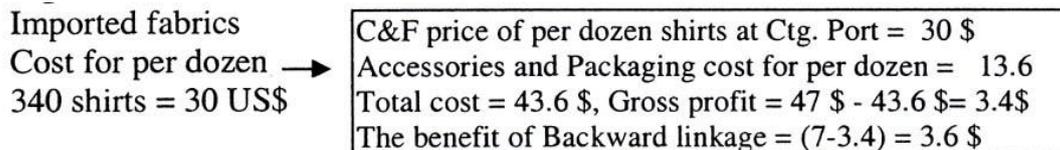
Lower production cost depends on productivity and cheaper material costs. Cheap material cost and productivity depends on uninterrupted supply flow of raw materials. So low production cost depends on well-established backward-linkage industry. The following figure- 7 shows the cost differences between strong backward linkage textile and clothing industry and imported raw materials oriented industry.



**Figure no- 8: Sample respondent’s data about Cost Composition of Woven RMG**

Per kg. Imported cotton price =1.75 US\$ (including all costs)  
 Per kg. Cotton can produce .9 kg. Yarn  
 Cotton required for per dozen Shirt and its price = 6 kg. + .6 kg. = 6.6 kg x 1.75 = 11.55 US\$  
 Per kg. Yarn can produce 3 mtr gray fabrics.  
 Fabrics required for per dozen 340 (Men’s Shirts) = 18 mtrs  
 Yarn required for per doz. 340 Shirt and its price = 6 kg. X 2.45 \$ =14.7 US\$  
 Dyeing and printing charge of per dozen shirt: 18 mtrs x .25 \$ = 4.5 S  
 Weaving Charge for per mtrs=.40\$, Price of weaving charge for 18 mtrs =7.2\$

**Figure no.-9: Production Cost of Independent Garment Factory**



**Table – 2: Present Structure of Bangladesh Textile Industry at a Glance**

SL No	Sub-Sector	No. of Units	Capacity	Production Capacity (in Crore)	Manpower
1	Textile Spinning (Cotton Yarn) Ring Spinning: 1. Public 2. Private-Ring Spindle 3. Rotor	23 222	490000 Lakh Spd 4857925 Lakh Spd 112000 LakhRoter	4.00 Kgs 60.00Kgs 6.00Kgs	9,500 175,000
	Sub- Total	245	44.90 Lakh Spd	70.00Kgs	
2	Synthetic Yarn Mfg.(yam)	11	--	5.00Kgs	2,500
3	Silk Yarn	---	2,888 Reeling	0.006Kgs	175,000
4	Weaving (Large Mill) (GF) Private sector	356	22,000 SL / SLL	90.00 Mtr	70,000
5	Spl.Textiles & Powerloom (Fabric): Public sector:(Valika Woolen mills) Private sector	11,065	a) Loom 22,960 SL /SLL	0.03 Mtr 30.00 Mtr	150 25,000
	Sub- Total	1066	23,000 SL /SLL	30.03 Mtr	
6	Hand loom (GF/F)	148,342	498,000 Hand loom	83.70 Mtr	800,000
7	Knitting ,Knit Dyeing (GF) a)Export-oriented b)Local market	700 2000	10,000 Knit/Dy/Mch 5,000 Knitting Mch	165.00Mtr 45.00Mtr	300,000 20,000
	Sub-Total	2700	15,000 Knit/Dy/Mch	210.00Mtr	
8	Dyeing and Finishing(FF)				
	Semi Mechanized	178	--	10.00 Mtr	10,000
	Mechanized	115	--	90.00 Mtr	23,000
	Sub Total	293	--	100.00 Mtr	
9	Export oriented RMG	4000		20.00 Doz	1,90,000

**Source: BTMA Annual Report–2005**

**Table no- 3: Present Position of Accessories and Packaging Industries at Glance.**

**Item -Wise Members:**

Button	5
Carton	388
Drawstring	6
Elastic	29
Embroidery	1
Hanger	3
Interlining	2
Label	12
Multi items	53
Packaging	8
Padding	3
Ploy	58
PP Brand	1
Quilting	1
Resin	1
Sewing thread	24
Zipper	4
Total	599

**Source: International plastic fair 2004 by BCCAMEA**

**Table no- 4: Geographical Dispersion of member factories:**

District	No
Barishal	1
Chittagong	87
Dhaka	346
Gazipur	64
Mymensing	1
Khulna	5
Narayangonj	93
Tangail	2
Total	599

**Source: International plastic fair 2004 by BCCAMEA (Bangladesh Carton and Corrugated Accessories Manufacturing and Export Association).**

## **GROWTH OF RMG INDUSTRY IN BANGLADESH:**

The export-oriented garment industry has been one of the most notable success stories of Bangladesh. From about US\$ 1 billion in the mid -1980s, the country's exports crossed US\$ 8 billion in the fiscal year of 2004-05. Between 1990 and 2004, real exports grew at a rate of 12.8 percent per annum as against of the corresponding GDP growth of 4.8 percent. The role of the RMG sector as the only driver to this apparently spectacular performance is reflected in the fact that RMG exports were just over US\$ 10 million in 1985 (or 10 percent of total exports), but within the next two decades they increased to US\$ 6 billion, accounting for about three -quarters of the country's total export receipts. (Papers on National Tripartite Meeting arraigned by International Labor Organization, Dhaka: 24 August 2005). The following table-4 shows the growth of garments exports in Bangladesh.

**Table – 5 : growth of garments exports in Bangladesh.**

<b>Year</b>	<b>Number of Garments Factory</b>	<b>Employment in MN. Workers</b>	<b>Exports of RMG in MN US\$</b>	<b>Total Export of Bangladesh in MN US\$</b>	<b>% of RMG to National Export</b>	<b>% of Value Addition</b>
2003-04	3957	2.0	5686.09	7602.99	74.79	55.59
2004-05	4107	2.1	6417.67	8658.52	74.15	54.67
2005-06	4220	2.2	7900.90	10526.15	75.06	65.57
2006-07	4490	2.4	9211.23	12177.86	75.64	69.59
2007-08	4740	2.5	10699.8	14110.80	75.83	70.00

**Source: BGMEA, website**

## **PROBLEMS FACED BY THE GARMENTS INDUSTRY:**

It has observed several problems of Bangladeshi garments industry through literature review and analytical collected data. The identified problems during this study period are mentioned below.

- This study is pointed out that the decent working environment is not satisfactory. Lack of favorable working environment, productivity is not being increased.
- A structural change has founded during the early stage of post MFA that the woven garments export is sharply declining. But the knit items export is increasing. But the knit items export is increasing gradually (see table- 1).
- The technological environment has changed but the factory owners have not yet been adopted. It is found that a high productive new sewing machine named DDL-9000(Computerized Programmable) introduced by Juky Company, Japan.

- Due to importing raw materials, lead time is too long. On the other hand, additional importing cost is increasing production cost.
- Lack of proper layout chain based factory, productivity is not being increased. Unplanned factory causes low productivity.
- Inadequate supply capability of fabrics producing linkage industry for woven garments factories.
- Labor cost has increased recently to solve the labor movement for minimum wages. It resulted higher production cost
- Many garment companies are dependent on the inputs of the contracting party.
- Unskilled and illiterate workforces are a constraint to adopt more productive new technology.
- Due to a relatively high corruption and instable political situation the country faces high-risk premiums in international credit markets; hence local enterprises find it difficult to borrow capital abroad. More importantly, the highly unpredictable climate deters foreign direct investment.
- In every factory, production gap between standard and actual production has founded. Labor absenteeism and turnover rate results this gap.
- From the expiry of quota restriction, per dozen garments of different items have decreased in the global competitive market.
- Pollution management is an important constraint of setting up the dyeing, printing and finishing industry to support the garment industry. Because it requires huge investment that affects the fabrics production cost.
- The long-term interest rates on loan for new industries in Bangladesh are very high Bangladesh 9-12 %, Pakistan 5 %, India 6 % compared to competing countries. (Bangladesh Investment Handbook, 2005, Board of Investment)

### **RECOMMENDATION:**

To establish a strong backward linkage and increase productivity the following measures need to implementation.

The main production factor as capital is not enough to strengthen the backward linkage at export oriental garment industry in Bangladesh. So, the foreign investment is a curtail in that connection, Government of Bangladesh has to provide attractive inactive and facilities to encourage foreign investment of backward linkage industry.

For the greater interest of the country, political parties should ensure a political stability. On the other hand, political lobbying is important for favorable marketing. To produce garments at a lower production cost to win the competitiveness, Bangladesh has to enlarge its EPZ area where composite textile and clothing could be established. The complete factory can help to increase bargaining power to the global market in any competitive market; to achieve cost leadership is better to win the target market. The independent stage of primary textile or backward linkage industry sells their outputs as the raw material at a profit. So those profit margins at every stage maximize the production cost at the finished goods.

Power supply is a regular constraint to enhance productivity. Introducing measures to ensure uninterrupted power supply to all export oriented garment factories, so that they can operate normally and at its full potential and capacity. The efficient use of labor, land and capital depends on stand by power supply.

Establishing ready made garments villages so that unhindered operating of the export oriented RMG enterprises can be ascertained and the productivity increased by providing healthy accommodation to the employees of these enterprises. Creating educational facilities for the labor force from export oriented RMG enterprises providing training opportunity for labor and management from export oriented RMG sector. Organizing workshops, seminars and symposiums to explain the necessity and importance of disciplines, qualified workers and improved productivity for sustainable long terms export.

New product development is a process by which a firm can improve productivity. There are several types of new product, continuous changing design of a garment can create more demand through shifting needs. It creates new opportunity to more production by using some inputs. On the other hand, developing new process of technical know how may help to enhance productivity. The new innovative process of production may be more productive than previous productivity. In spite of this, improvement of present production process can also increase productivity. As a result production cost reduces and it helps to win foreign market.

## **CONCLUSION:**

Through the above analytical discussion, it is identified that the Textile and Clothing sector of Bangladesh is an important sector from the viewpoint of the growth rate of Gross Domestic Production of Bangladesh. A complete supply chain can help to boost the economic growth of Bangladesh. From the expiry of quota system on 1<sup>st</sup> January 2005, this sector has entered into the

international market competition. To sustain this industry, a complete supply chain as the backward linkage industries is essential to back up the 100% export-oriented garment industry for its competitiveness.

At present, in the international markets, garments are almost same of all exporting countries. In this situation, cheaper production cost is the only one competitive advantage to win the markets. The cited analytical price calculation (**figure 4 and figure - 5**) shows to compete the international market, Bangladesh has to establish composite (like four stages, three stages) textile as a part of strong backward linkage industries. In this study, it is examined that the well established complete supply chain based production cost of per dozen garments would be cheaper than the imported based production cost. The Government of Bangladesh has announced liberal facilities to encourage the foreign investors to invest in this sector lack of enough, domestic capital for this sector. (**Bangladesh Investment Handbook, 2<sup>nd</sup> edition, May 2004**) By this time, the knit sector has already been well established. The present structure of the backward linkage industries also shows that very soon Bangladesh would be able to set up the Woven sector as like as the Knitting garment sector. This economic tendency will help Bangladesh to win the competitive position in the international markets.

**Appendix:**  
**List of Sample Respondents:**

No	Name of the Organization	Address	Type of Organization	Name of the Respondents
1	Textown Limited	374, New DOHS	4 Stage Knit Composite	Mr. Anowar Hossain
2	Multifabs Limited	Kashimpur, Nayapara, Gazipur.	4 Stage Knit Composite	Md. Assaduzzaman Sheikh.
3	New Rakhi Textile Mills	351, New DOHS	2 Stages Knit	Mr. Abdul Rob
4	Abanti Colour Textile Ltd	SA- 646, Fatulla, Narayanganj	3 Stages Knit	M. H. Aslam Sunny
5	A J I Apparels industry Ltd.	25/2 Shaha Alibag section-1 Mirpur- 1	Independent Woven	M. A. Jalil
6	A R A Garments & Textile Ltd.	39, Kawran Bazar, Dhaka	2StagesCompo site Woven	Mr. Anwarul Kabir
7	Adeeba Apparels Ltd.	House- 19,Road-13/C Block- E, Banani	Independent Woven	Mr.Ziaul Amin
8	Alif Apparels Ltd.	21/22,Babar road /Block- B Mohammadpur	Independent Woven	Mr. Azizul Islam
9	Adnan Sweaters Ltd.	H-19, R- 13/C,Banani	2 Stages Sweaters	Mr. Ziaul Amin
10	AB Sweaters Ltd	67, Naya Paltan Dhaka	2 Stages Sweaters	Mr. Mahabub Alam

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## **Cash Incentive in the RMG Sector of Bangladesh: Impact & Implication**

Riad Hassan<sup>1</sup>  
Mohammed Belal Uddin<sup>2</sup>

### **ABSTRACT:**

*This paper is an attempt to find out whether the Government of Bangladesh should continue the present cash incentive facilities in the Ready-made Garments (RMG) sector in future. From the last few years, the government has been reducing the rate of incentive and presently is considering stopping this scheme. However the findings of this study reveal that there is positive correlation between cash incentive and export earnings from this sector, and in this quota-free market of RMG, such incentive should be continued to retain the competitive edge of our products in the world market.*

Key Words: Alternative cash incentive, Ready-made garments (RMG), Global competition, Competitive edge.

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## **INTRODUCTION:**

Since last several years, export of ready-made garments (RMG) has been the most significant source for Bangladesh to amass foreign currencies. But Bangladesh is not a commercial cotton-producing country. The irony of fate is that, every year we need to import this basic raw material from countries like India, a major competitor of Bangladesh in the global market of RMG. So, our fate as a RMG exporter is, by and large, sealed in the hand of our competitor. Importance of establishing strong backward linkage needs no mention. Hence, in order to boost the production and export of garments, and to strengthen the back-ward linkage of RMG sector, the Government of Bangladesh (GOB) has offered cash incentives, duty drawback facilities, bonded warehouse facilities etc.

Cash incentive was introduced for the exporters of RMG of Bangladesh from 1986. The cash incentive facility is given to those producers of fabrics or garments in Bangladesh who produce and export their products according to the Bangladesh Bank (BB) Circular No. 05 (1997), 09 (2001), and 07 (2003) etc., which are tailor-made to ensure safe and sound remittance of foreign currencies to the country.

The cash incentive scheme in the RMG sector of Bangladesh has been introduced predominantly to boost the export of garments and to strengthen the backward linkage of this prospective industry. But over the last few years, the government has been reducing the rate of incentive consistently, and from fiscal year 2005-'06 is thinking of stopping this facility. In fact, during preparation of the draft budget for 2005-'06 fiscal, the then Finance Minister proposed for abandonment of this facility. But eventually it was put down for the moment.

From January 2005, the Generalized System of Preference (GSP) facility has been withdrawn by the European countries who were the major importers of Bangladeshi RMG. In this quota-free world of RMG, with the absence of GSP facilities, Bangladesh has started facing difficulties retaining its competitive edge in the global RMG market. Export earnings have been consistently falling from 2005. As per Bangladesh Economic Survey of respective years, in 2005, it was 77%, in 2006, it reduced to 76%, and in 2007 it has further dropped to 75% of our total foreign currency earning. With this end in view, RMG sector of Bangladesh needs financial assistance to withstand the surge of inexpensive products of China, India and the like in the global market.

## **WHAT IS CASH INCENTIVE?**

Cash Incentive is the assistance in the form of "Cash" given to any party on its fulfillment of certain conditions. In the readymade garments sector of

Bangladesh, cash incentive is given as a refund of part of the production cost of the Bangladeshi exporter (incentive receiver) when he completes the export process complying with all the requirements of the Government (mentioned in the Bangladesh Bank Circulars). In most of the cases, there are special motives behind giving cash incentive. It may be given to nurture the child industry, to strengthen the backward or forward linkage of an industry, to make the products of the industry more competitive in the local and foreign market. etc. Cash incentive is also used as a counter weapon against the unethical practice of dumping by foreign countries. In Bangladesh, cash incentive is mainly given to export oriented sectors to boost the export thereby earning foreign exchange.

#### **LITERATURE REVIEW:**

Yusuf and Nasrin (2006) explained that the exporters who do not qualify for duty draw-back and bonded warehouse facilities are entitled to such incentives to cover the cost of handling, processing, upgrading, and freight charges (domestic and international transports).

Bala, Yusuf, and Karmaker (2004) found that the cash incentive scheme is an incentive to the exporters of RMG, fabrics and yarn introduced in 1986. This incentive is given to those who have produced and exported yarn, fabrics and RMG using local yarn in the production of such things. However, no duty draw-back facilities and bonded warehouse facilities have been taken and will be taken by any person for the materials i.e., yarn and accessories used in production. They also found that the objectives of cash incentive scheme has been achieved a lot, although in the previous years, a bulk amount of our invaluable public money has been drained out from the treasury with the use of false documentation and counterfeit arrangements. However the introduction of audit on cash incentive files by selective professional audit firms has reduced such corrupt incidences.

According to FE Circular No. 05 (April 20. 1997), the following things were found:

- (1) For fabrics produced in Bangladesh (Woven/Knit), incentive amount will be 25% of net FOB (free on board) value.
- (2) For fabrics related other productions in Bangladesh (towel, duster, bed-sheet, bed-cover), socks, gloves etc.; incentive amount will be 25% of net FOB (free on board) value.
- (3) For RMG (ready made garments) / T-shirt produced in Bangladesh from Bangladeshi fabrics, cash incentives will be available for the native fabrics used in the production to the producer-supplier. Net FOB (free on board) value net of value addition (calculated as per Commerce Ministry Circular

regarding product-wise value addition) and cost shown by the applicant whichever is lower will be allowed for 25% cash incentive.

According to FE circular no.-05, Dated April 20, 1997, Bangladeshi Fabrics, RMG (ready made garments), and other related productions that are exported are subject to cash incentives. It is given for the inputs used in production if those are not used to get Duty Drawback facility and Bonded warehouse facilities.

To encourage value addition within Bangladesh by this cash incentive facility, it has been decided in this circular (circular no. 09, dated March 5, 2001) that-

- (a) only when the production of yarn cotton and all other stages of production afterwards are made within Bangladesh, cash incentives will be applicable and
- (b) this facility will not be available for any export of Grey-cloth (in foreign countries or Export Processing Zone).

It has also been decided that producer of yarn / fabrics or RMG (ready made garments), only one of these parties will be eligible to enjoy cash incentive in every single case of export.

The name and address of that very party must clearly be mentioned in the Back to Back LC which has been opened against the Export LC / Contract.

#### **OBJECTIVES OF THE STUDY:**

This paper is prepared to fulfill the following objectives:

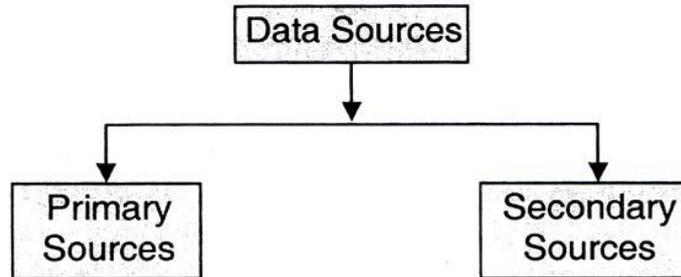
- 0 To assess the cash incentive facilities given in the Textile, and RMG sector of Bangladesh.
- 0 To evaluate whether the cash incentive facilities should be continued in the RMG sector in near-future.
- 0 To examine whether the cash incentive scheme has increased the backward linkage (Yarn in exporting Fabrics and Fabrics or Yam in exporting Garments) of Garments sector.

#### **METHODOLOGY:**

##### **DATA COLLECTION & ANALYSIS:**

This paper is prepared based on both primary and secondary data. Primary data was collected through face-to-face conversation with concerned staffs and seniors of audit firm, informal interview with clients of audit firm, discussion with commercials of the applicants (different RMG firms) of incentives, sharing views with the bankers, and observations during physical factory visit. Sources of secondary information included circulars published by Bangladesh Bank, publications of BGMEA and CPD, relevant statistics of EPB, various

websites, different journals, and magazines. According to the sources of data, we can classify those as follows:



**THE PRIMARY SOURCES OF INFORMATION:**

1. Face to face conversation with concerned staff and seniors of the firm.
2. Informal interview of client.
3. Discussion with the commercials of the applicant.
4. Sharing views with the banker.
5. Observation during physical factory visit.

**THE SECONDARY SOURCES OF INFORMATION:**

1. Writings by the BGMEA.
2. Circulars published by Bangladesh Bank.
3. Journals published from Board of Investment (BOI).
4. Journals disclosed in Website about cash incentive program.
5. Books of Institute of Chartered Accountants of Bangladesh (ICAB) and Institute of Cost and Management Accountants of Bangladesh (ICMAB).
6. Relevant statistics of Export Promotion Bureau (EPB) and Bangladesh Bureau of Statistics.
7. Web site search.

In analyzing the data, we have used several computer programs like MS Excel, and statistical tools like correlation analysis. We have used Karl Pearson’s coefficient of correlation. The coefficient of correlation is denoted by “r”. In this study, we have used “X” and “Y” as two variables representing amount of cash incentive given in RMG sector and amount of export earnings from RMG respectively for measuring the degree of relationship between these two which is as follows:

$$r = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2} \sqrt{\sum (Y - \bar{Y})^2}}$$

**Sectors Eligible for Cash Incentive in Bangladesh:**

The GOB (Government of Bangladesh) has offered cash incentive facility to the following sectors:

RMG (Readymade Garments), Fabrics produced by- using local Hand-Loom (loongi, gamcha etc.) Frozen Shrimps, Vegetables, Agro-based goods, etc.

**CASH INCENTIVE IN THE GARMENTS SECTOR OF BANGLADESH:**

The GOB has offered Alternative Cash Incentive for the Bangladeshi exporters (both direct and deemed exporters) of readymade garments and fabrics. Since 1986, this has been offered as per the Bangladesh Bank Circulars issued from time to time (FE Circular No. 05, 09, 24, 10, 291, 07 etc.).

**ALTERNATIVE CASH INCENTIVE IN THE GARMENTS SECTOR OF BANGLADESH:**

This term “Alternative Cash Incentive” is specifically used for the cash incentive given in the Garments sector of Bangladesh. The GOB has mentioned that cash incentive will be given to the exporters of RMG (readymade garments), and fabrics if and only if no duty-drawback facilities and bonded warehouse facilities have been taken and will be taken by any person for the materials i.e., yarn and accessories; used in the production. That is why it is called Alternative Cash Incentive as it is given as an alternative to duty-drawback facilities and bonded warehouse facilities.

**Table 01: Yearly Rate of Cash Incentive in the RMG Sector of Bangladesh**

Period	Rate of Cash Incentive
1. If the RMG or fabrics or other is exported and shipped from 1 August 1994 to 9 May 2002	25%
2. If the RMG or fabrics or other is shipped:	15%
• After 9 May 2002 (effective up to June 2003)	10%
• During fiscal year 2003-2004	10%
• During fiscal year 2004-2005	5%
• After 30 June 2005	5%

Source: FE Circular No.10 of Bangladesh Bank, 2002(b) dated 05 June 2002.

**REASONS FOR GIVING ALTERNATIVE CASH INCENTIVE IN THE GARMENTS SECTOR OF BANGLADESH:**

RMG is the main contributor of our export income. At present, almost 75% of our total export income is earned by exporting RMG. But in phase of recent MFA (Multi-fiber Arrangement) and quota phase out, the RMG sector of Bangladesh will face alarming threat of losing foreign market. It is because the

competitive advantage of our RMG sector is the low labor cost compared to our competitors (China, India etc). But our material and other production costs are very high since we are to import almost all raw materials (Yarn, Fabrics) and accessories from abroad. The irony of fate is that, we have to import most of our raw materials from our rival countries (in foreign market) like India and accessories from China. In the phase of quota phase out, they might stop supplying those inputs to Bangladesh and start using those for additional production to capture our market abroad. So, our garments sector is very much vulnerable as long as we can not establish a strong backward linkage for garments sector within Bangladesh.

Stepping into the shoes of the Bangladeshi exporters of RMG, the GOB has offered Alternative Cash Incentive to the garments sector of Bangladesh for the following reasons:

As per FE Circular No. 09 (dated March 5, 2001), Alternative Cash Incentives are given to encourage the value addition in the garments sector within Bangladesh. There are several other reasons for giving Alternative Cash Incentives which are as follows:

To establish and strengthen the backward linkage of readymade garments (RMG),

To boost the production and export of fabrics and readymade garments (RMG) as these are the highest contributors of foreign currencies in Bangladesh nowadays,

To encourage to establish more yarn producing factories in Bangladesh,

To motivate the producers of fabrics and readymade garments of Bangladesh to use local yarn instead of foreign ones since it costs a great deal of our hard- fought foreign currencies,

To establish market for the local yarn producers,

To make our fabrics and readymade garments more competitive in foreign markets in the phase of recent quota phase out,

To enable the producers of fabrics and readymade garments (RMG) to cope with the extra cost incurred by using the locally produced yarn since it costs approximately 30% higher than that of foreign,

To discourage the use of foreign yarn which can potentially endanger the future of our garments sector as we are to buy yarn from most of our rival countries in the foreign market of fabrics and readymade garments,

To make our garments sector more established and competitive both in local and foreign markets.

**CONDITIONS FOR ELIGIBILITY OF ALTERNATIVE CASH INCENTIVE:**

Alternative Cash Incentives will be payable only if the exported products are produced within Bangladesh using yarns collected from member mills of BTMA (Bangladesh Textile Mills Association), and no Duty Drawback facility or Bonded Warehouse facility is enjoyed at any stage of production.

Alternative Cash Incentives will be payable only after the export price is received in foreign currency.

Application for Alternative Cash Incentives will have to be submitted within 180 days from the date of Proceeds Realization.

If the name of the applicant as the incentive receiver is not mentioned in the Back to Back LC, the application will be rejected immediately.

Authorized dealer, after receiving all necessary information and certificates, will compute the payable amount as Alternative Cash Incentives to the applicant.

As soon as the Alternative Cash Incentives is approved, the Proceeds Realization Certificate will be sealed with “Alternative Cash Incentives Paid” and signed by the very personnel who has approved the payment. It is done so that the very Proceeds Realization Certificate can not be misused otherwise.

All the cases of the payment of Alternative Cash Incentives will be examined by the Internal Audit Team of the concerned Bank. Apart from this, all documents will have to be preserved for at least 3 years by the Bank for the examination of Bangladesh Bank Visiting Team/ Government Audit Team.

**FINDINGS:**

In deciding whether the cash incentive facility acts as a catalyst in increasing the export of RMG of Bangladesh, we find positive relation between the amount paid as cash incentive and the amount of total export. Using Karl Pearson’s coefficient of correlation, we have found highly positive relationship between amounts of cash incentive paid and amount of RMG export. Precisely, the correlation coefficient is 0.9477.

**Table 02: Cash Incentives for RMG Sector of Bangladesh**  
(Figures are in million US Dollar)

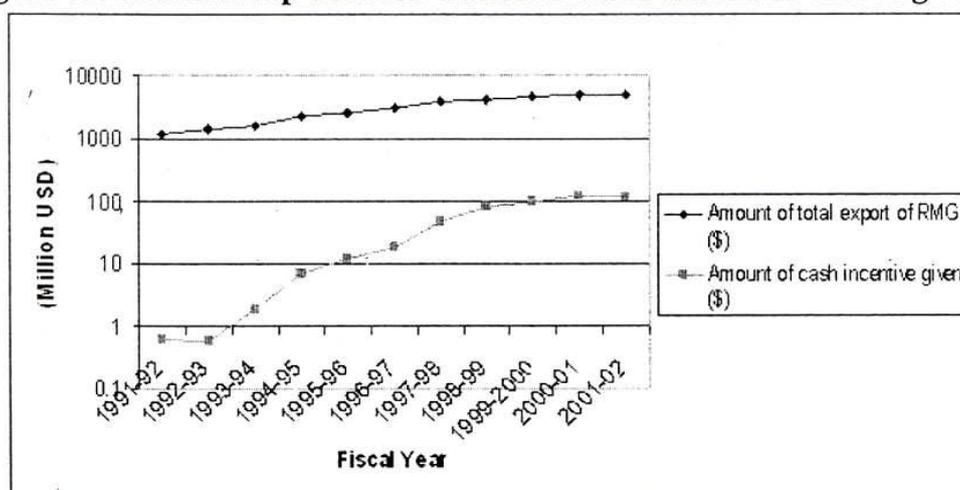
Fiscal Year	Cash Incentive Amount	% increase/(decrease) in cash incentive	Total amount of RMG Export	% increase/(decrease) in export amount
1991-92	0.64		1182.57	
1992-93	0.58	-9	1445.03	22
1993-94	1.94	234	1555.79	8
1994-95	7.21	272	2228.35	43
1995-96	11.94	66	2547.13	14
1996-97	18.74	57	3092.63	21
1997-98	49.19	162	3874.28	25
1998-99	83.22	69	4146.41	7
1999-2000	98.54	18	4495.47	8
2000-01	121.05	23	5024.41	12
2001-02	120.00*	-0.8	4812.03	-4

\*Estimated

Sources: 1. Bangladesh Bank (vide Bhattacharya, 2002)

2. Government of the Peoples Republic of Bangladesh, Export Promotion Bureau, Dhaka, June 1991 -August 2003

**Figure 01: Relationship between Cash Incentive and RMG in Bangladesh**

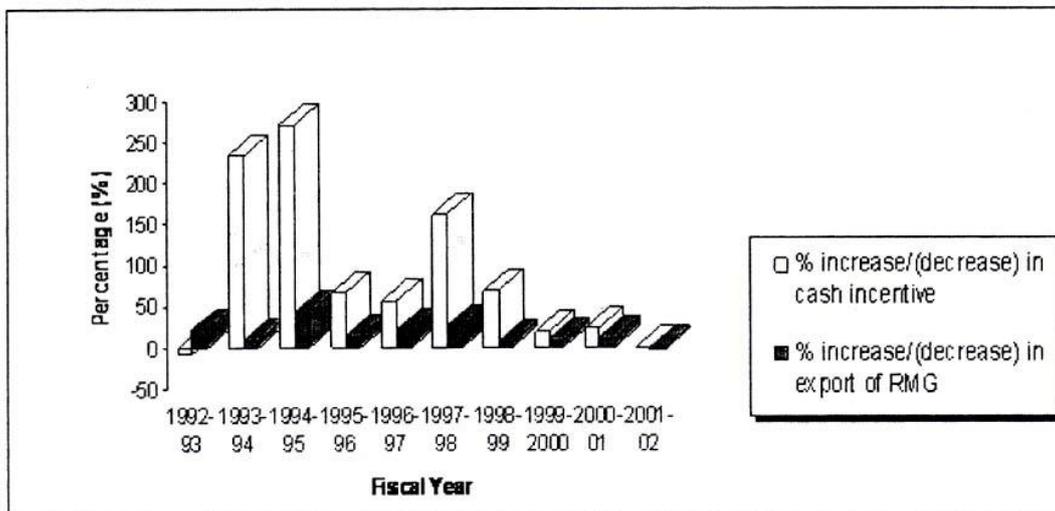


Source: Table 02 (Cash Incentives for RMG Sector of Bangladesh)

Export of RMG depends on many micro-level and macro-level factors. It depends on the availability of quality raw-materials, cheap & efficient labor, export policy and import policy of the government, competition in the market (both internal and external), compliance issues, and finally on the demand of RMG in foreign market.

Though it is true that the increase in the export of RMG is accelerated by several other factors, data from the primary sources dictate that cash incentive is one of the major motivating factors among them. Chance of getting back part of the production cost directly influences the exporters. Besides, it indirectly boosts export of RMG by insisting the exporters to set up more spinning and dying mills since the incentive facility is only available only if production of RMG is done using locally produced yarn. In fact, it is impossible to distinguish and evaluate the contribution of different motivating factors towards the export promotion of RMG separately.

Figure 02: Percentage Increase in Cash Incentive Disbursement Relative to the Increase in Export of RMG



**Source:** Table 02 (Cash Incentives for RMG Sector of Bangladesh)

The above figure reveals that during its inception when the rate of incentive was high, cash incentive scheme was able to uplift the export of RMG and consequently was able to increase foreign currency earning from this sector. But during recent times of reduced incentive rate, the scheme is not working that well in increasing the same.

In finding out whether the cash incentive facility has strengthened the back-ward linkage of RMG sector in Bangladesh, we have found that due to the conditions for eligibility of cash incentive imposed by the FE Circular No. 09

imposed by Bangladesh Bank (mentioned earlier), more than 50% of the following RMG producers of Bangladesh now have their own spinning mills (Cotton-Yarn Phase). So in effect, they are completing the Cotton~Yarn phase, Yam-Fabric phase, and Fabric-Garment phase. But at their inception, they used to complete only the last phase using imported fabric or yarn. This really will be instrumental in retaining the competitive edge of our product in foreign market.

**Table 03: Name of the RMG Exporting Companies**

Sl. No.	Name of the Company
1.	Flaming Fashion Ltd
2.	M/S C& A Fashion Ltd.
3.	M/S N & N Knitting Ind. Ltd.
4.	M/S Design Attires Ltd.
5.	M/S ACS Textiles (BD) Ltd.
6.	M/S AKH Knitting & Dyeing Ltd.
7.	M/S FM Knitwear Ltd.
8.	M/S Angels Composite Ind.(Pvt.) Ltd.
9.	Azad Knit Composite Textiles Mills (Pvt.) Ltd.
10.	Polly Cott Fibres Ltd.
11.	Fariha Knit Tex Ltd.

#### **CONCLUSIONS AND RECOMMENDATIONS:**

In the recent past, we have seen dramatic changes in the RMG sector of Bangladesh. Number of textile mills has increased. Another startling result around us is that a lot of spinning mills have been established recently even though Bangladesh is not a producer of cotton. All these are, to a great extent, results of cash incentive given in the RMG sector of Bangladesh. So backward linkage of RMG sector has been strengthened by the cash incentive. It is believed to have a lasting impact for the future growth of this sector in Bangladesh. In view of the abovementioned facts, we can conclude that cash incentive is a fair as well as a rewarding venture of the GOB in promoting the export of RMG. We can infer that in the forthcoming days of quota-free world, cash incentive will act as a catalyst to the survival of the RMG sector of Bangladesh in the global market. The correlation coefficient between cash incentive and export of RMG is highly positive indicating that apart from few misuses, cash incentive is bringing in huge foreign currencies for Bangladesh. Based on the findings above, some recommendations are mentioned below:

- ❖ The rate of cash incentive should be consistent with the neighboring/competing countries.

- ❖ In FY 2005-06 budget, India has offered a number of incentives to apparels/textile sector, for example created a Rs 435 crore Technology Up-gradation Fund, instituted a 10 per cent capital subsidy scheme, pronounced cluster development approach, made provision for more than Rs 4000 crore support for textile sector. Based on the incentive facilities offered by competitors like India, Cash incentive facility should be allowed to prevail and if possible, increased in percentage in the RMG sector for the sustainability of our producers to better compete in the changing scenario of global market.
- ❖ Bangladesh bank should keep proper liaison with the concerned auditors to make them updated every time it issues any new circular.
- ❖ Disbursement of cash incentive should be made immediately after the certificate is issued. Delay in disbursing incentive money hampers the spirit of this noble venture.
- ❖ In case of pro-rata allocation of incentive money, Bangladesh bank should give priority to small investors.
- ❖ Bangladesh bank should make sure that the cash incentive money is predominantly used for the development of purpose of the industry. Proper monitoring should be done in this regard.

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## VLSI Implementation of an Image Codec for Mobile Communication

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### ABSTRACT:

*Modified Set Partitioning In Hierarchical Trees (MSPIHT) is an efficient, low memory consuming, real-time image compression system. This paper describes the VLSI implementation of the MSPIHT codec for real-time mobile communication through a chip. A newly designed architecture is presented for the implementation of MSPIHT encoder and decoder using the IEEE standard VHDL language on Quartus II platform targeting the EP2S60F1020C-4 FPGA. The simulation result has shown that hardware implementation of the proposed design is 6903 times faster than that of its software implementation while this design used only 3% of total FPGA area. The designed prototype runs at 206.83 MHz. As the chip is exclusively designed for the compression, the high speed, low memory and power requirements constraints are met by parallel processing of the designed algorithm with less dedicated chip area. The simulation results of the implemented model regarding the visual quality have shown the performance with its software implementation.*

Keywords- FPGA, SPIHT, MSIHT, Absolute Zerotree, LPM RAM

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## 1. INTRODUCTION:

To save transmission time or storage space of an image, nowadays many people widely use image compression technique to transmit or to store an image. Among various compression techniques, “transform coding” is a favorite technique. To implement the coding algorithm in hardware, Field Programming Gate Array (FPGA) is the best choice of researchers and R & D Engineers which is reconfigurable, efficient, high speed, low cost design. The modern FPGA ICs are having higher density which is suitable to use in virtually any digital logic system by using the property of reconfigurability of FPGA.

In related work, Panigrahi et. al. [1] presented a hardware/software (HW/SW) reconfiguration methodology, considering co-design of adaptive algorithms and reconfigurable architecture of JPEG algorithm provided necessary flexibility and performance for adaptive image compression algorithms. Ismailoglu et. al. [2] developed a real-time image processing subsystem named GEZGIN, a highly flexible and reconfigurable signal processing satellite subsystem employing JPEG2000 compression algorithm. XCV300E device from Xilinx was used to implement the algorithm. Image compression time was reduced by run-time at the expense of reconstructed image quality. Lian et. al. [3] presented detailed analysis and dedicated hardware architecture of the block-coding engine to execute the Embedded Block Coding with Optimized Truncation (EBCOT) algorithm efficiently which is known as the heart of JPEG2000 standard. It is shown that about 60% of the processing time is reduced compared with sample-based straightforward implementation.

In the latest work, Gangadhar and Bhatia [7] proposed and implemented high speed FPGA based architecture for EBCOT Tier-I algorithm utilizing pipelined architecture implemented on XCZV1000 device. This architecture improved the processing time by more than 75% compared to a sample-based implementation by Adams and Kossentini [8] and by more than 34% when compared to the architecture proposed by J. S. Chaing et. al. [9].

In other work, V. Ritter [4] introduced the well-known state of the art image compression algorithm using partitioned wavelet-based transformation to avoid the drawback of higher memory requirement while it divided the image into small sub images with little modification of original SPIHT algorithm proposed by Said and Pearlman [13], which mainly consists of two one-dimensional DWT units (ID-DWT) for horizontal and vertical transforms. Fry and Hauck [5] demonstrated an implementation of the image compression routine SPIHT in reconfigurable logic by analyzing the range of data processed by implementing it as an Intellectual Property (IP) resorting to a VHDL description and the logical synthesis was carried out targeting an FPGA.

device Virtex-E from Xilinx. Low memory was used yielding efficient data transfers with Variable Fixed Point (VFP) presentation of data.

Corsonello et. al. [6] proposed a *Field-Programmable System-on-Chip* (FPSoC) for lossy image compression algorithm using wavelet based SPIHT. The higher frequency subband was eliminated by the first level of the wavelet decomposition which was not effective significantly on image quality. The advantage of the technique was significantly low memory requirement and encoding computational load. The system was not applicable for lossless image compression. The entire FPSoC was implemented on Virtex II board containing an XCZVIOOO device, synthesized using Xilinx ISE 5.2i tools. A complete review of articles regarding FPGA implementation of image compression techniques has been organized in the research work [10] by Akter et. al.

In this paper, an architecture and complete implementation has been demonstrated for hardware prototyping of the MSPIHT algorithm developed by Reaz et. al. [11] and Akter et. al. [12] approach for wavelet-based image compression for programmable hardware. All designs were specified using the hardware description language VHDL. The focus of this research is restricted to synthesizing the design targeting FPGA device, because of the synthesis and timing simulation results mainly show the strength of the MSPIHT algorithm. The entire system was coded in IEEE-compliant VHDL language on Quartus II version 6.0 platform from Altera Corporation targeting EP2S60F1020C4 FPGA device. This coding of the entire system provided an opportunity to detect and correct errors early in the design process.

The organization of this study is as follows. The following section describes briefly the algorithm of SPIHT and addresses the coding algorithm of MSPIHT. In Section III, the newly designed architecture of the MSPIHT algorithm is presented. Section IV discusses the simulation and synthesis results of the proposed methodology. Finally, we make the concluding remarks in Section V.

## **II. CODING METHODOLOGY:**

In SPIHT [13], it has been shown that the usage of three temporary lists is a powerful way to improve the codec's efficiency, but these lists 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 in real-time for

mobile communication, a successful fast and low-memory solution must be provided. In this algorithm, the sorting and refinement phase are combined as one scan pass. It is shown that co-ordinates of wavelet coefficients are never stored in List of Significant Pixel (LSP) and List of Insignificant Pixel (LIP). There are no such lists in this algorithm. In the MSPIHT [12] algorithm, the sorting pass and the refinement pass are combined as one scan pass. Below we present two concepts, called absolute zerotree and number of error bits to modify the original SPIHT algorithm.

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, it is shown that the coefficients in many sets that from partition 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 *List of insignificant Set* (LIS).

The introduction of absolute *zerotree* is a simple solution to this problem. We have defined to indicate the number of error bits. For a zerotree, if the magnitude of all its descendants are lower than  $2^{\mu_e}$ , it becomes an *absolute zerotree* and will never be significant in the next scan passes. The coordinates involves in the absolute zerotree need not be stored in the LIS. Obviously, as scanning among absolute zerotrees is not done any more, the length of the LIS is shortened. As a result, the coding time is also greatly reduced.

The *Number of error bits* defined before encoding will indicate the number of bits that will be omitted finally. During implementation, when a wavelet coefficient will be found as significant or insignificant, its last error bits will be omitted and rest of the bits will be outputted. In addition, the co-ordinates of the coefficient will not be stored in LSP and LIP for further processing. Therefore, MSPIHT is the low memory solution of SPIHT algorithm by eliminating the temporary list LSP and LIP.

### **III. HARDWARE IMPLEMENTATION:**

A MATLAB implementation of MSPIHT algorithm was done for the coding and decoding sequence of MSPIHT algorithm and the inputs of the raw image is extracted using MATLAB software used as the input data for the simulation of VHDL program. The simulation results of software implementation are used as reference for verification.

The four main blocks of proposed algorithm are designed individually with several numbers of sub-modules. The primary blocks are controlled by control unit with Finite State Machine (FSM) technology which is another important module of the architecture. Figure 1 shows the top level architecture of the proposed MSPiHT algorithm including Discrete Wavelet Transform (DWT), Encoder, Decoder, Inverse Discrete Wavelet Transform (IDWT) and Control Unit. While the DWT module calculates the wavelet coefficients, the encoder module waits for the data. After getting the coefficient from the DWT module, the control module sends a signal to encoder to start the coding. With a certain delay, the DWT module and encoder module work in parallel to reduce the total coding time.

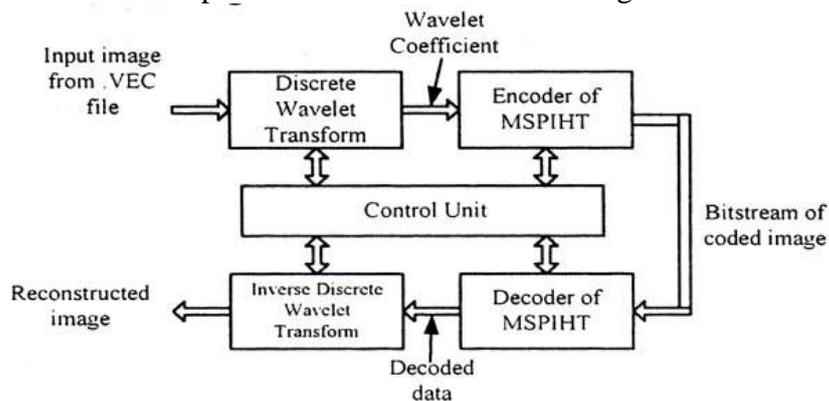


Figure 1: Block diagram of the top architecture of the proposed MSPiHT algorithm

Figure 2 : demonstrates the internal architecture of MSPiHT encoder consisting several modules including controller, MSPiHT core, address generator, Zerotree calculator, Decendant, and also contains Library of Parameterized Memory (LPM) RAM. By using the 8 bit data bus and 18 bit address bus, the data from LPM RAM to destination module are transferred. The LPM memory module embedded in the Stratix II FPGA IC are used to store the data in the different state of the architecture such as stored the wavelet coefficients. The sequence of the coding algorithm is executed in the module along with the other modules concurrently. The entire working sequence of the architecture is maintained and synchronized by generating the appropriate signal of controller at the right time.

The edge triggered clock signal is used globally for each module to activate the system. The address generator generates the address of the corresponding data in the data bus. Decendants of the hierarchical tree is calculated in the Decendant module and the data obtained are sent to the next module Zerotree Calculator to check out whether the related zerotree is absolute zerotree or not. The decision is sent back to the MSPiHT core to continue the execution of the algorithm. The output bits of the coded data are temporarily stored in a buffer memory which is included the encoder module as a sub-module.

Each block of the DWT, developed MSPIHT algorithm was designed and tested in isolation before being incorporated into the higher levels of the design. The simulation results of the modules will be presented and discussed in the following sections. In the next section, the comparison of output image will be shown. Besides that, the steps involved in hardware implementation will be outlined.

A visual performance comparison with its software implementation to determine the feasibility of this architecture by simulator will be presented.

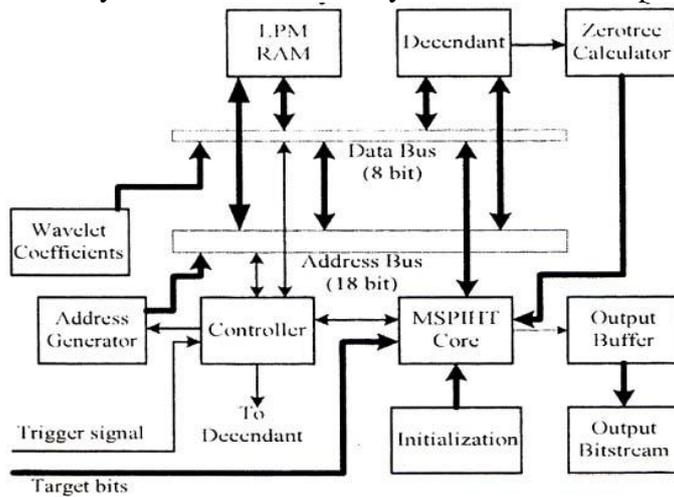


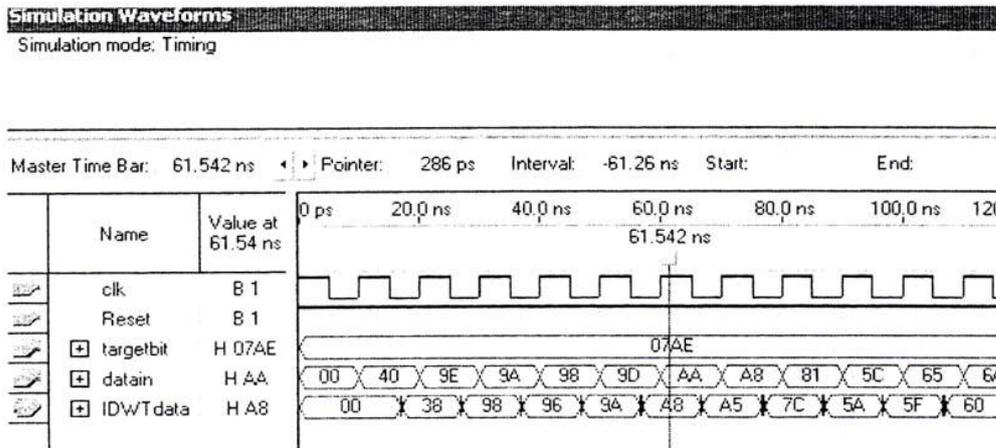
Figure 2: Block diagram of the internal architecture for the proposed MSPIHT Encoder Module

#### IV. SIMULATION RESULTS:

The results obtained from the simulation are verified manually to make sure that the components are functionally correct. For the sake of completeness, comparison with general-purpose processor has been made in terms of execution time calculated by timing simulation using simulator tools on Quartus II, targeting EP2S6OF1(20C4 FPGA device. The platform of simulation is the Pentium IV, 1.7GHz, 256 RAM.

The clk signal activates the system to start simulation. At the end of the processing, the results will be available on the bitstream output register. Reset resets the settings of the system.

Figure 3 shows the simulation waveform of the top architecture of the proposed architecture. User can control the coding by changing the value of targetbit (Total number of bit can be used). 'Datain' (original data) and IDWT are the input image data stored in the system and the reconstructed image data (decoded data) respectively. As shown in Figure 3, the original data and decoded data are nearly same with some error value.



From Figure 6 to Figure 9, it is noticed that the visual quality of the reconstructed image between software, hardware implantation is not different to be detectable by human eyes with respect to original image shown in Figure 4 and Figure 5. The difference can be calculated mathematically or shown graphically only.



Figure 4: Original Lena Image



Figure 5: Original Boat Image



Figure 6: Reconstructed Lena Image Using Matlab at bit rate 0.038 bpp



Figure 7: Reconstructed Lena Image Using VHDL at bit rate 0.038 bpp.



Figure 8: Reconstructed Boat Image Using Matlab at bit rate 0.038 bpp.



Figure 9: Reconstructed Boat Image Using VHDL at bit rate 0.038 bpp.

Figure 10, Figure 11 are the comparison of Peak Signal to Noise Ratio (PSNR) value among SPIHT, MSPIHT (Matlab) and MSPIHT (VHDL) implementation for Lena, and Boat image, respectively. In those figures, the

Flow Status	Successful
Family	Stratix II
Device	EP2S60F1020C4
Total ALUTs	1,380/ 48,352 (3%)
Total registers	1048
Total pins	34/719 (5%)
Maximum Frequency (MHZ)	206.83 MHZ

star, square, and triangle shape represent the PSNR value for MSPIHT of Matlab implementation, MSPIHT of hardware implementation, and SPIHT algorithm respectively. From the plots shown in Figure 10 and Figure 11. it is clear that the modeled architecture of this research work is working efficiently. as the PSNR value is found to be exactly same as the its software implementation with little reduction because of using the 8 bit integer data of wavelet coefficients instead of floating point data. The amount of memory saved by the designed MSPIHT algorithm is 2.09 MB for 512×512 gray-level image at the expense of the reduction of PSNR.

The distortion is measured by the PSNR as in (1).

$$PSNR = 10 \log_{10} \left( \frac{255^2}{MSE} \right) \quad dB \quad (1)$$

where MSE denotes the Mean Square-Error between the original and reconstructed images

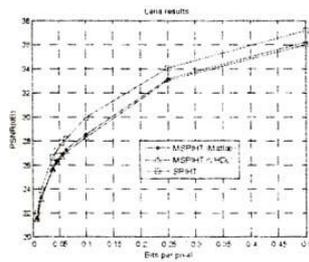


Figure 10: Comparison of PSNR value among SPIHT, MSPIHT (Matlab) and MSPIHT (VHDL) implementation for Lena image.

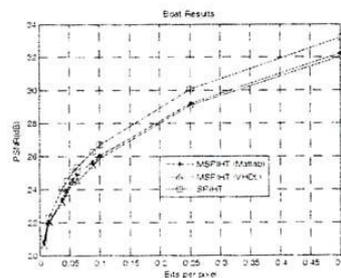


Figure 11: Comparison of PSNR value among SPIHT, MSPIHT (Matlab) and MSPIHT (VHDL) implementation for Boat image.

The above results validate the feasibility of VHDL design of developed MSPIHT image compression system.

## V. SYNTHESIS RESULTS:

In regard to the designated hardware of FPGA realization, in optimizing the design, a balance between frequency and area was taken into account to select a suitable device. The project was successfully synthesized using EP2S60 EP2S60F1020C4 device family from Altera Corporation on the platform Quartus II version 6.0. The successful compilation of the project on EP2S60F1020C4 is reflected in Table 1. Complete compilation of all modules is achieved when the progress bar is 100% The total number of *Adaptive Look-Up Table (ALUTS)* is 1,380 which is only 3% of total area of targeted FPGA area while the used pin number is equal to 34 (5%) for both input and output.

### Table 1: Implementation Performances:

Figure 13 shows the time taken for the full compilation processes. The total time elapsed to compile the whole project is 2.52s that takes into account the times for the Analysis & Synthesis (0.37s), Place & Route or Fitter (1.25s), Assembler (0.46s) and Timing Analyzer (0.04s).

Flow Elapsed Time		
	Module Name	Elapsed Time
1	Analysis & Synthesis	00:00:37
2	Fitter	00:01:25
3	Assembler	00:00:46
4	Timing Analyzer	00:00:04
5	Total	00:02:52

Figure 13: Flow elapsed time of Full Compilation.

After successful compilation of the project that includes Analysis and Synthesis, Place and Route, Assembler, Timing Analyzer, the speed of the designed codec is necessary to calculate for measuring the performance of the algorithm.

For the sake of completeness, comparison with general-purpose processor has been made in terms of execution time calculated by timing simulation using simulator tools on Quartus II, targeting EP2S60F1020C4 FPGA device. The simulator takes 88.956 ps at 0.038 bpp; the other parameters of simulation are the total number of transition occurred during simulation (180484), simulation coverage (61 .37%) and simulation netlist size (2316 nodes).

In general, 88.956 us taken by the developed MSPIHT image compression system is enough low processing time to process an image. If this obtained result compares with its software implementation, it is possible to say strongly

that this compression system is faster and efficient. Because, the MSPIHT [12] has proved that software implementation of the algorithm is faster than its original SPIHT [13] algorithm.

**HARDWARE VS. SOFTWARE IMPLEMENTATION:**

For an image size of 512×512 Lena Image, the software implementation took 296.9 ms at 0.038 bpp MSPIHT(12). For the same image, the time taken for the hardware implementation was calculated using the results obtained through simulation. The total time taken by the simulation was noted as 88956 ns, from this, the total number of clock cycles can be calculated as shown below.

1 clock cycle (clk of Quartus II) = 10 ns.

$$\text{Total number of clock cycled for MSPIHT Encoder} = \frac{88956}{10} = 88956$$

The Stratix II MSPIHT Encoder uses a clock rate of 206.83 MHz. Thus,

$$L \text{ clock cycle (clk of Stratix II)} = \frac{1}{206.83 \text{ MHz}} = 4.835 \text{ ns}$$

The expected total time is taken by the MSPIHT Encoder for an image size of 512x512 is calculated as shown below.  $T_{\text{Software}}$  and  $T_{\text{Hardware}}$  are simulation time for Matlab implementation and VHDL implementation respectively.

$$T_{\text{Software}} = 296.9 \text{ ms}$$

$$T_{\text{Hardware}} = \text{Total Number Of Clock Cycles} \times \text{Clock Period} = 8895.6 \times 4.835 \text{ ns} \\ = 0.04301 \text{ ms}$$

$$\text{Speed Up} = \frac{T_{\text{Software}}}{T_{\text{Hardware}}} = 6903$$

Table 2 shows the ccomparison of execution time in milliseconds on the system platform Pentium IV, 1.7 GHZ, 256 RAM at different bit rate for Lena image of 512×512, 8 bit, gray-gevel image.

**Table 2: Execution time in different bit rate**

Bit rate in bpp	CPU time of MSPIHT [12] in ms	Execution time in ms
0.0075	0.1094	0.01405
0.0154	0.2813	0.01802
0.0380	0.2969	0.04301
0.045	0.5060	0.05303
0.055	0.5581	0.05912

Table 3 shows the comparison of the execution times and speed-up value of hardware and software implementations of MSPIHT algorithm at bit rate 0.038 bpp for different test images. This table also shows the relative value of execution time of MSPIHT and original SPIHT algorithm and the assessment between the FPGA implementation of MSPIHT and original SPIHT [4] algorithm proving that the processing speed of the proposed architecture is much higher. The computational power of the programmable hardware is promising for real-time mobile communication.

**Table 3: Execution times of hardware and software at bit rate 0.038 bpp.**

Image	Software implementation in second		Hardware Implementation (FPGA) in millisecond		Speed Up (FPGA)= MSPIHT[12]/ MSPIHT
	MSPIHT[12]	SPIHT [13]	MSPIHT	SPIHT [4]	
Baboon	0.21	0.54	0.0456	204.0	4605
Barbara	0.30	0.50	0.0452	203.1	6637
Goldhill	0.23	0.44	0.0445	195.8	5168
Lena	0.29	0.54	0.0430	192.5	6903
Peppers	0.26	0.44	0.0450	245.0	5777

## V. CONCLUSION:

This paper presents the architecture model of MSPIHT, synthesis and simulation results of all the components as well as the combined system. The simulation result has shown that hardware implementation of the proposed design is 6903 times faster than that of its software implementation as well as this design used only 3% of total FPGA area. The designed prototype runs at 206.83 MHz frequency. The proposed codec preserves most of the merits of SPIHT (such as simple computation, effective compression, and embedded coding). Thus, the proposed MSPIHT is highly promising image compression system for real-time mobile communication. The synthesis and timing simulation proofs that the processing speed of the new design. Moreover, the utilization of Mega Function for the module of DWT and Inverse DWT from Alter Corporation can increase the overall performance of the design.

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**Shakespeare's Macbeth and Bengali dramatists  
from Michael to Rabindranath**

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**ABSTRACT:**

*Shakespeare's kingdom extends as far as literature exists and as such it is no exaggeration that this unrivalled dramatist's works exert abiding influence on modern Bengali plays, no less developed as the latter are in comparison with those in the standard languages of the world. The paper seeks to assess how his great tragedy Macbeth annexed the domain of modern Bengali dramas of the more celebrated dramatists. The preference for selection of Macbeth to the other three great tragedies is that of the four it was Macbeth that first saw its translation into Bengali. The choice gained further stimuli from the fact that the greatest Bengali poet Rabindranath Tagore made its full length translation while a mere boy of fourteen prioritizing this 'noble' piece of work' as well as its frequency of appearance in Bengali dramas outnumbers the others. This article captures how the transformation and transcreation of this great tragedy, and not its translation along with imitation and adoption that has been dealt with in another article, led to the production of the original Bengali dramas which drew upon its form and structure, style and diction, characterization and verification, imagery and poetry.*

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The history of Bengali literature records that Shakespeare entered into the Bengali dramatic arena first through stage production and then translation. The unrivalled genius did not, however, remain complacent with the limited expanse of this secondary creation. The pervasive power of the great poet could not but permeate into the original works of the most distinguished Bengali dramatists. Frankly speaking, the peculiar Shakespearean dramatic art could not have been so ingrained in the texture of Bengali drama that the absorption through adaptation and translation could turn out a species with independent vigour and spirit of its own having the semblance of an entirely original variety till Michael Madhusudan Dutt appeared on the Bengali literary scene.

It was in Michael Madhusudan (1824-1873) that we could trace the emergence of that unique genius which with unprecedented art of construction utilized its power not in translation and imitation but in producing original works of art that reflected the luxuriant growth of the independent spirit of creation. The firm determination and spirit of individualism that the Bengali renaissance gave birth to could find adequate expression in him so much so that he could utilize his newfound knowledge and learning of the western world in addition to his traditional eastern lore to the production of what was precedentless, be it drama or poetry or farce. Madhusudan's unique genius could astonishingly assimilate Shakespearean elements with the essence of Greek tragedy coupled with the Indian traditional dramatic style and together they turned out the new Bengali drama. Of course, there was none to precede him successfully in the field of original dramatic literature; he is doubtless the pioneer of the new Bengali drama -it is with him that our dramatic literature could acquire its own independent identity transcending the bounds of translation and imitation.

Madhusudan's Padmabari (1860) invests Shachi with the same firm determination and sharp intellect, the same dexterous ingenuity and hard heartedness as of Lady Macbeth<sup>1</sup> There are, however, critics who comment. "Infused though with the same commitment, Shachi lacks in positive efforts and actions of Lady Macbeth that induced, lured and incited Macbeth into murderous deeds resulting in the catastrophe - a factor that fails to elevate Shachi to the status of the Shakespearean heroine."<sup>2</sup>

Michael's teacher, Richardson of the Hindu College, inculcated in him such a strong love for Shakespeare that under its spell he was so enamored that he went to the extent of proving that he, essentially a poet, could be a mathematician in support of his thesis that Shakespeare could have been Newton, the scientist, if he so desired, but it was not at all possible for Newton to become Shakespeare, the poet.<sup>3</sup> Michael was so impressed with

Shakespearean works that they almost partook his daily life inspiring him to quote Shakespeare every now and then, no less fantastic that Macbeth's soliloquy "To-morrow, and to-morrow, and to-morrow" was unmistakably on his lips even at his dying moment. In addition, the Blank Verse that he introduced in Bengali poetry was drawn as much from Milton as from Shakespeare "The language of Shakespeare, his characters and imageries that Madhusudan has made use of in his dramas are singularly remarkable".<sup>5</sup> Yet he has his own way of creation, prompting him to write to his friend Rajnarayan, "I write under different circumstances. Our social and moral developments are of different character", thereby entreating him not "to apply the canons of criticism that have been given forth by the masterpieces of William Shakespeare." To Keshab Chandra Gangapadhyaya he writes, "In the great European dramas you have the stern realities of life, lofty passion and heroism of sentiment. With us it is all sentiment, all romance ..... Ours are dramatic poems."

The next major dramatist whose life and works were greatly moulded by Shakespearean influence is Michael's contemporary, Dinabandhu Mitra (1830-1873), a brilliant student of the Hindu College whence the great Shakespearean Professor Richardson had gone back to England just four years ago leaving deep imprint on the ambience of the college that was peculiarly Shakespearean. The facilitating environment obtaining in the college contributed to produce the mental make-up of the Bengali dramatist. The inspiration of Derozio and more so of Richardson brought greater and closer familiarity with English literature and the boundless bounty and 'infinite variety' of that literature particularly of Shakespeare kindled the latent literary talent of the young Bengalees not only for its translation and imitation but also for the deeper realization of its essence in the innermost province of their heart for its ultimate reflection in Bengali literature by way of producing its own variety of dramas. It was the peculiar characteristic and achievement of the age of Madhusudan, Bankim, Dinabandhu and Biharilal.<sup>6</sup> Shakespeare came to influence Dinabandhu's work since its very inception as evident from his own essay published in the *Sambad Provakar* in 1853 ('On his having arrived at the age of twenty three'), "If I don't listen to the advice of Shakespeare, he would say, "You are one of those that will not serve God, if the devil bid you."<sup>7</sup> Held in such close mental proximity to Dinabandhu, Shakespeare could exercise a great influence on the language and style, form and character of his dramas.

In spite of his frank declaration of loyalty to Shakespeare, the first and most familiar play of Dinabandhu is almost divested of Shakespearean influence. Macbeth has made entrance in his popular farce of *Saclhbar Ekadashi* where

the central character Nimchand Dutt is the typical representative of the 'Young Bengal' - the youths who were given to excessive drink and revelry at the impact of the fashionable English culture of the day at the same time acquiring mental width and depth derived from English education. Shakespeare was exceedingly favourite with them and they used to quote him off and on, relevantly or irrelevantly. Dinabandhu's Nimchand typifies them when he quotes in the second scene of Act Two of 'Sadhbar Ekadashi':

Canst thou not minister to a mind diseas'd  
Pluck from the memory a rooted sorrow:  
Raze out the written troubles of the brain;

**(Macbeth: Act V, Sc. III)**

In the same scene noted above Nimchand again imitates the dialogue from the first scene of Act Four of Macbeth: Macbeth! Macbeth! Macbeth! Beware Nimchand, Beware Kalnemi, what worthless stupid, hatching conspiracy?

In the Third Scene of Act Two Nimchand again quotes Macbeth to the police sergeant, "Thou canst not say, I did it never shake/ Thy gory locks at me.  
**(Macbeth: Act II, Sc. IV)**

Despite all his flaws and vices, Nimchand has not totally lost his conscience and humanity, nor is he willing to. So his awareness bursts forth and resorts to quoting Shakespeare:

I dare do all that may become a man  
Who dares do more is none.

**(Macbeth Act I, Sc. VII)**

It is in this way that he scales Shakespearean tragic height when his characteristic language of sardonic merriment gives in to heart-piercing repentance bringing in the cathartic effect.

In his *Biye Pagla Buro* the central character Rajib Mukherjee, the old man with his inordinate craze for marriage, speaks on occasions in language almost similar to the dialogues in Macbeth. For example, the marriage crazy old man (Act I Sc. II), while sitting in his own room, hears the knock at the door and says,

“ ..... (Knocking at the door) knock, knock. knock. knock day in and day out, (Knocking at the door), again knock, knock, knock repeatedly knock, knock, (Knocking at the door) Who's there? Why don't you speak and only knock (Knocking at the door), break open the door. Would I call out for Rammoni; the buggers are gone away. (*translation from the original* ).

Comparable dialogue is there in Macbeth:

“Porter. Here’s a knocking indeed! If a man were porter of hell-gate, he should have old turning the sky. (Knocking within) knock, knock, knock! Who’s there, i’th’ name of Beelzebub? Here’s a farmer that hang’d himself on the’ expectation of plenty. Come in Time, have napkins snow about you: here you’ll sweat for’t. (Knocking within) Knock, knock, knock! Who’s there, i’th’ other devil’s name?” (Act II Sc III)

Shakespeare’s spell was so overwhelming upon him that in the ‘Foreword’ to his last drama *Kamaley Kanzirzi Natok* he composed only before two months of his death he could not but quote Macbeth to justify his motto in writing it,

Dun. Dismay’d not this  
Our captains, Macbeth and Banquo?  
Serg. Yes  
As sparrows eagles, or the hare the lion (Act I, Sc. II)

The quotation bespeaks of his intention of treatment of the theme in a dignified style and heroic manner like the one in Macbeth but it ends in no appreciable success.

In this Swan’s song of his, he is at pains to delineate the character of Shikhandibahan, the second in command of the Army of the Manipur State and a brave general with characteristics similar to what Shakespeare portrayed his Macbeth and Banquo with. Dinabandhu depicts Manipuri queen Gandhari in the way Shakespeare does his Lady Macbeth. The same behavioral pattern is discernible in both Lady Macbeth and Gandhari - the former suffers from guilty conscience of the treacherous deed of murdering King Duncan whose life she and her husband should have protected, gives in to somnambulism, goes mad and dies while the latter loses mental balance and behaves madly, though not dies. The sense of guilt haunts Lady Macbeth constantly from the time of the murder of King Duncan while Gandhari’s repentance starts pricking her resulting from her conspiracy to murder her stepson. Quotations from the two tragedies will bear testimony to their resemblances:

King: What a terrible disease, not at all possible to diagnose if she is asleep or wakeful. Her eyes are now open and then shut; she walks in sleep and sleeps in walking (translation from the original).

The gentlewoman i.e. attendant to Lady Macbeth and the doctor comment on the condition of Lady Macbeth in a similar vein. (Act V. Sc.I)

Gent- I have seen her rise from her bed, throw her night gown upon her, unlock her closet, take forth paper, fold it, write upon't, read it, afterwards seal it, and again return to bed; yet all this while in a most fast asleep.

Doct: A great perturbation in nature, to receive at once the benefit of sleep, and do the effects of watching .....,

You see her eyes are open.

Gent: Ay, but their sense is shut

The queen Gandhari says in the same scene:

.....give me water, one pitcher of water, a thousand pitchers of water and more. Pour on all the water available from the Gomukhi to the Gongasagar -- Oh mother!

It is no different from what Lady Macbeth says:

Here's the smell of the blood still. All the perfumes of Arabia will not sweeten this little hand. Oh, Oh, Oh!

In the line next to the above bursts forth Gandhari's retribution:

My heart does not burn; it gets only extremely heated. Oh it burns, it burns, it burns up completely. Pour down water, pour ..... water, pour water by drying up all the cold water from the limitless, fathomless sea. The fire of sin never douses. Oh the great cold ocean! How has your power of extinguishing flame been nullified by the fire of sin of this degenerate soul?" (translation from the original).

How closely this resembles Macbeth's soliloquy!

'Will all great Neptune's ocean wash this blood  
Clean from my hand? No; this my hand will rather  
The multitudinous seas incarnadine,  
Making the green one red. (Act II Sc II)

Thus we can realize that the mental affability for Shakespeare that took firm roots in Dinabandhu's youth as a brilliant student of the Hindu College where a facilitating Shakespearean ambience was created by Derozio first and next by Prof. Richardson did not wane till the last days of his life - Shakespeare was his guardian angel from the beginning to the end of his life with dramatic concept and treatment of theme wonderfully coloured, studded and interspersed with Shakespearean ideas and expressions.

The most prolific contributor to dramatic literature (80 dramas and farces) is Girish Chandra Ghose (1844-1912) who was simultaneously a playwright, an actor and a stage manager. He infused a new life-blood in dramatic literature and stage performance in Bengali. Of his indebtedness to Shakespeare his is a candid confession. "The great poet Shakespeare is my ideal. I have been following his suit." His *Jana* is one of the plays that bear distinct marks of Shakespearean influence. Having deterred by the negative acceptance on the stage of his literary translation of *Macbeth*, no longer did he venture to produce anything of the sort; instead he made use of the indigenous stories in the form and character of the English ideal with commendable success, thus contriving his own original creation.

Conglomerate of ideas and elements culled from different Shakespearean dramas, *Jana* has turned into an original drama in such a manner as Shakespeare's, for his treatment of source materials has, like the greatest English dramatist, carved out a work of art which is entirely his own. Complementary to his reflection of King Richard III and *Cariolanus*, the witch scene from *Macbeth* has also been conjured up. For example (transliterated by the author):

**Drishay Paribartan - Shmashan - Sakhiganer Dakini-beshe Paribartan  
Samanta - Geet Saranga - Khemta**

**Sakhigan:** Marar harer phuler mala parechhi galay,  
Niya marar matha kheli aay .....\_.....  
Aay lo boshi marar bukey,  
Chiteyr chhai aay makhi gay  
Hi hi hi hasher ghatay kheluk damini,  
Nechey nechye aay lo, jogini, ronarangini  
Narir male, marar chhale, aay sajani sajai kaay (III, i)

Likewise the witch in *Macbeth* sings:

1. Witch. Round about the cauldron go;  
In the poison'd entrails throw?  
Toad that under cold stone  
Days, and nights had thirty-one  
Swelt' red venom sleeping got  
Boil thou first i' th' charmed pot. [Act IV, Sc. I]

Shakespeare's characteristic tragic conception of *Macbeth* has bred contagion and infusion in '*Prafulla*', another very successful play by Girish Ghose. In *Macbeth* is noticed, "The calamities proceed mainly from conscious, voluntary actions - actions expressive of character. In other words in Shakespearean tragedy character is Destiny". Similarity is evident in the case of *Jogesh*, the hero

in 'Prafulla' where tragic consequences follow from the flaw in his character - the seed of tragedy germinated in the heart of Jogesh. The calamities and catastrophe follow inevitably from the deeds of men and that the main source of the deeds is character." Similar to Macbeth's ambition is Jogesh's lust for fame manifesting that Girish Chandra makes use of the Shakespearean tradition according as his taste and necessity warrant. What is appreciable here is that he has borrowed from Shakespeare's different works, not confining himself to a single drama, eventually producing an original work of his own with reminiscences of his sources ~ a fact clearly exemplified in the creations of the great dramatist of unrivalled fame the world over.

In short, in his art of characterization, in the treatment of his source materials, in the language and versification of dialogues, and in the externalization of the internal conflict, Girish Chandra has more often than not drawn from Shakespeare - his avowed guide and emulative ideal. "Girish Chandra is the last Bengali genius, the ideal of native Bengali drama and dramatic performance and even the innovator of a peculiar dramatic verse form in which intermingling of the Yarra (indigenous variety of drama before the modern drama came into being) and the English drama has been done in a unique style and it is precisely what captivated the Bengali mind." "O By dint of his extraordinary power of assimilation and absorption he could bring Shakespeare close to the Bengali audience and reading public.

The next famed dramatist is Dwijendra Lal Roy (1863 - 1913) who was well-versed in English literature and a returnee from London after having spent a considerable period of time there. He says, "Since my childhood I had a profound devotion to poetry and drama. Having been to London I would go on reading Shelley and coming back from there I would continue reading Wordsworth and Shakespeare time and again and got by heart those portions of the latter's poems which appealed to be most excellent." Standing in awe beside Shakespeare's grave in England, Dwijendra Lal vowed, "Your name shall not remain unheard of wherever the English language is known and this young son residing by the Ganges in the Aryan land will go on holding fast to your ideal and paying homage to you as the favourite poet of the world, the brother figure of Kalidas, the favourite child of the Indian Muse."<sup>12</sup> This sense of reverence acted as the unfailing stimulus in his dramatic compositions.

In every single dramatic composition Dwijendra Lal borrowed not from one of Shakespeare's works but from several of them and thus constructed one that got acceptance as a new work of art." His Nurjahan, coupled with the indefensible infatuation of Antony and Cleopatra, bears resemblances of both Macbeth and Lady Macbeth in the depiction of

the title character. Macbeth has embarked upon murderous orgy in order to satisfy his ambition to ascend the throne and once on the throne to secure its possession. Seated on the throne, D.L. Roy's Nurjahan is goaded on with the same destructive sort of ambition and perpetrates murderous deeds to make the throne free of onslaught and ouster. And this is how Nurjahan shakes off her womanliness and assumes the proportions of destructive manliness of Macbeth. Lady Macbethian characteristics too have been infused in Nurjahan. In the hellish errand of capturing immense power whetted on and on by their ruling passion of unusual ambition the two ladies lose their natural self and pass inexorably into madness as an inevitable consequence of their behaviors and actions that run counter to their normality and propensity of womanhood. The deviation from the normal course of their life heaps destruction on others as well on themselves ultimately resulting in a cataclysmic catastrophe.

But there is dissimilarity in similarity between Lady Macbeth and Nurjahan. Lady Macbeth has not totally lost her womanliness in the devilish depravation of ambition; her repentance is so pathetic that it earns sure sympathy from the audience while Nurjahan fails to arouse concession in the heart of the viewers. Whatever be the failure it needs no saying that D.L. Roy is the first dramatist to write a successful 'She - Tragedy' in Bengali in keeping with the Shakespearean art of construction of tragedy based on the flaw of character and internal conflict in the dramatis personae.<sup>4</sup> Nurjahan is so exceptionally drawn that she stands indisputable in the whole range of Bengali Literature as a female character tossed and torn by inner conflict. "her temper some adamant qualities and severity of purpose not ordinarily associated with the typically feminine"<sup>15</sup> is quite noticeable as in Lady Macbeth.

Macbeth finds entrance in the texture of D.L. Roy's Tarabai. Suiyamal is spurred by the ambition of capturing the throne of Mewar, his wife Tamasa acting as a motivator in his misadventure that ends in tragedy. They resemble Macbeth who, by murdering King Duncan, engenders in his mind confusion, suspicion and vacillation. Likewise Suryamal rends from his suspicion, vacillation and indecision. Just as Macbeth has been tempted and lured by Lady Macbeth, so also Suryamal by his wife Tamasha.

Dwijendra Lal has not failed in his commitment to Shakespeare that he would hold him in esteem and he has done it faithfully in his famous play Chandragupta. Some of the characters here are sometimes heard uttering the same words as in Shakespeare. D. L. Roy was greatly influenced by Scene III, VII and VIII of Act V of Macbeth. The following dialogue

of Chandragupta is couched in almost the same words as in Macbeth.

Chandragupta: Eventually my subjects, my legions have joined the opposite camp!  
...There are enemies without, enemies within. Like a warrior, I'll die fighting, but not like an engaged tiger put to death by prodding the sword into the body. I'll die fighting in the battlefield amidst my soldiers under the azure sky studded with stars. (translation from the original). (Act IV, Sc. V)

Mac. Bring me no more l'eports; let them fly all. (Act V, Sc. III)

.....  
.....

They have tied me to a stake; I cannot fly,  
But, bear-like, I must fight the course (Act V, Sc. VII)

Again in Act. II. Sc. II when under the impact of perfervid feelings Chanakya soliloquizes- "the mouth of pig, skin of spider, stench of funeral, taste of peepul and cry of ass - all have been put in the cauldron." This cauldron becomes similar to the witches' in Macbeth as quoted below:

**Act IV, Scene 1.**

**A dark cave. In the middle, a cauldron boiling.**

**Thunder**

2. Witch. Fillet of a fenny snake,  
In the cauldron boil and bake;  
Eye of newt, and toe of frog,  
Wool of lat, and tongue of dog,  
Adder's fork and blind - worm's sting,  
Lizard's leg and howlet's wing  
For a charm of powerful trouble,  
Like a hell \_ broth boil and bubble.

In quite similar surroundings are the two meals being cooked - the one by Chanakya in Chandragupta in Bengali and the other by the witches in Macbeth in English.

The previous examples along with his masterpiece *Sajahan* demonstrate that though Shakespeare is the universal favourite of all the dramatists, none of them before D.L. Roy has made more successful application of the Shakespearean art in Bengali so far as characterization, exposition of internal conflicts and giving vent to them through soliloquies, conception of tragedy, construction of plot and exploration of the mysteries of life are concerned. 16 This is why, D.L. Roy may be said to have gained the immortal fame of an unparalleled dramatist of rare constructive art.

Shakespeare captivated the imagination of the boy Rabindranath and he translated Macbeth fully at his fourteen. He writes, “Shakespeare, Milton and Byron were our literary gods in those days; the things in their writings that moved us excitingly were powerful sentiments of hearts The strong overpowerings in their minds infused us with excitement”<sup>17</sup>

Rabindranath could never forget the sense of awe and reverence, sentiments and impressions that Shakespeare inculcated in his boyhood. For example, while writing in 1940 the introduction of his play *Malini* composed in 1896 Rabindranath says, “Shakespeare’s plays have all along been our ideals for dramatic compositions. His multitudinous variety, scope and interactions have occupied our mind from the very beginning.” This does not, however, imply that Rabindranath drew from Shakespeare for long, rather the assimilating power of the greatest Bengali poet could, by dint of its own nature, yield drama of a variety that was essentially its own.

The constant flow of life or the current complicated situations are the constituent elements of Shakespearean production and the Bengali drama before Rabindranath followed suit. To Rabindranath human soul is of paramount importance.<sup>18</sup> He took for the theme of his drama those profound human sentiments and feelings that could only be felt and realized in the mind, and not those external incidents or situations of man’s life that can be explained and understood with the help of intellect. ‘Q Rabindranath’s dramatic creation of the formative years is, therefore, found to be bearing some influences of Shakespeare that have disappeared as his dramatic genius came to full blossom. His *Raja O Rani* [The King and the Queen] has made skilful use of Macbeth in the portrayal of the characters of Rebati and Chandrasen. Rebati has given stern and naked expression to the vile desires of her husband Chandrasen as well as her own highly ambitious intent (transliterated by the author)

Rebati:           Jete dao, maharaj! kee bhabichho boshi?  
                      Bhabichho kee lagi? jak juddhey  
                      Debatakripay, aar jeno nahi ashey feerey.  
                      Chandrasen : Dheerey, rani, dheerey.

Rebati:           Kshudhita marj ar  
                      Bosey chhiley atodin samay chahiya  
                      Aaj to samay elo-tabu aajo keno  
                      Sei bosey achho ..... –  
                      Upay rachana karo abosar bujhey  
                      Basonar paap sei hotechhey sanchay  
                      Tarporey keno thakey asidhir klesh. [Act III, Sc. IV]

The above dialogues and characters are successfully composed and drawn after Lady Macbeth [Act I, Sc. VII]. Rabindranath's Chandrasen is as ambitious as Shakespeare's Macbeth and has been provoked by his wife to committing the misdeeds as the latter by Lady Macbeth.

Macbeth: I have no spur  
To prick the sides of my intent, but only  
Vaulting ambition, which ov'r-leaps itself,  
And falls on th' other.

Chandrasen: Oti ichcha chale oti begey dekhite na  
Paay path, aponarey korey se nishfal.  
Bayubeggy chhutey giye matta ashwa jatha  
Chuma karey faley rath pashan prachirey.  
*(transliterated by the author)*

The excessiveness of sentiment and emotion Rabindranath speaks of in his 'Memoirs' is in abundance in this play. For example, the sturdy manliness and violent emotion of Bikramdeb are purely Shakespearean characteristics.

Rabindranath's Bisarjan [The Sacrifice] treads the Shakespearean path. This play depicts the characters and treats the dramatic conflict in the Shakespearean manner. The ambitious desire of Nakshtray Roy to gain the throne by killing his brother, the king, compares well with the ambition created in the mind of Macbeth after he listens to the Witches and his wife. Nakshtray soliloquizes (transliterated by the author):

Zethajai sakalei boley, raja hobey?  
Raja hobey? E baro achcharya kando! Eka  
Boshey thaki tabu keno shuni ke jeno bolichhey  
Raja hobey? Raja hobey? Dui kaney jeno  
Basha kariachhey dui tiye pakhi; ek  
Buli jane shudhu, Raja hobey? Raja hobey?  
Bhalo bapu, tai hobo.

This is quite similar to what Macbeth says after he hears the prophecy of the witches:

Mac: Stay, you imperfect speakers, tell more.  
By Sinel's death I know I am Thane of Glaims:  
But how of Cawdor? The Thane of Cawdor lives,  
A prosperous gentleman; and to be king  
Stands not within the prospect of belief,  
No more than to be Cawdor.' [Act I. Sc. III]

Again Macbeth soliloquizes after he has heard and seen everything.

Mac: [Aside] Glaims, and Thane of Cawdor!  
The greater is behind. Thanks for your pains. [Act I. Sc III]

Besides, dividing the play into five acts, employment of blank verse, and a few other aspects of the Shakespearean creative art have been followed by the greatest Bengali poet in the early period of his dramatic career.” But in the maturer stage of his dramatic composition Rabindranath keeps from his Shakespearean adherence. The diminishing influence of Shakespeare and for that matter English as a whole on the Bengali culture and life has been divined by Rabindranath himself:

Once a great soul like David Hare could come close to us and bring in the fore front the greatness of the English people to the natives and the students of the time did really surrender to the English nation. Now-a-days it is not merely that English Professors cannot drive home to us what is the best of their nation but they belittle the ideals of the English that captivated us during our childhood and deflect our mind from them. The result is that while the students in the past would receive the English education in the English literature with undivided attention, at present they do not do so, rather they gulp them down but do not enjoy. We do not find the students saturating themselves with the taste of poetry of Shakespeare, Byron and others with as sincere a devotion as their predecessor used to. The bond of love that could have been easily set up with the English by the medium of literature has been stalled.<sup>21</sup> Added to the above diagnosis by the greatest genius of Bengali creative literature as factor responsible for the dwindling influence of the Shakespearean drama on the Bengali dramatic literature are the political, economic and sociological reasons that may be nut-shelled as the emergence of strong nationalistic feeling and abhorrence for everything foreign and patriotic adoration for the home-grown ultimately leading to the independence of the Indian Subcontinent. It is not, however, untraceable that Shakespeare still continues to influence us in the field of our creative literature. So deep-seated and permanent-rooted he is in our thought and culture!

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**Suicide or Submission: A Comparative Study of Okonkwo and Caliban  
from the Postcolonial Perspective**

Mamun Al Faruque\*

**ABSTRACT:**

The paper has two sections. The first section attempts to tit Okonkwo of Achebe's Things Fall Apart and Caliban of Shakespeare's The Tempest in the same group as both of them are the victims of colonial segregation and the second shows how despite similar treatment of them by the colonizer they differ in their reactions, namely the former committing suicide and the latter accepting the colonial aggression. By pinpointing those, it is further shown within the discussion how suicide is sometimes admirable and more worthy than submission in the case of Okonkwo and Caliban respectively.

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## **INTRODUCTION:**

Suicide has been and had been a very common phenomenon from the time immemorial. Suicide is the most sensational and most unusual kind of death for it is death at one's own hands. It is unusual because the urge to preserve and protect life, especially one's own life, is the strongest human instinct and one that is rarely overcome in normal persons. Generally, we may say such a state of mind results when a person undergoes a loss of something (or someone) that he holds very dear and without which (or whom) he feels that life has become meaningless and no longer worth living. The feeling of overwhelming and unbearable loss is really a state of despair, and despair is a state of hopelessness and is therefore one of the religious sins.

So to turn to suicide in a state of despair is a sin even further, for life and death are in the hands of God and no one but God has the right to take a life. A man usurps this right when he takes his own life. This is why it is so frequent in tragic writing. So serious and grand characters are seen committing this act to get rid of the burden of life that really is very tormenting to bear. So is the case with Okonkwo's. All throughout the story he is the epitome of stout and strict. So his tragic consequence enhances tragic significance. On the other hand Caliban is found submitting and adapting with his colonial master towards the end of the play *The Tempest*. His tacit behaviour uttering the words "I will be wise hereafter" clearly suggests that he accepts the colonial domination, though unintentionally. His intention to be wise mentioned here is nothing but be wise after the colonial colour. Though the play ends in laughter and union, for Caliban this is his personal tragedy. To the researcher this sort of retreat is to be disapproved and suicide is most acceptable though in every major religion this is highly discouraged because it is a sin against natural law, charity, the community, and God from whom mankind has received life as a gift.

## **REVIEW OF LITERATURE:**

Alix Wilberl says that Achebe does not introduce the theme of colonialism until the last 50 pages or so. By then, Okonkwo has lost everything and been driven into exile. And yet, within the traditions of his culture, he still has hope of redemption. The arrival of missionaries in Umuofia, however, followed by representatives of the colonial government, completely disrupts Ibo culture, and in the chasm between old ways and new, Okonkwo is lost forever. Deceptively simple in its prose, *Things Fall Apart* packs a powerful punch as Achebe holds up the ruin of one proud man to stand for the destruction of an entire culture.

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1. Postcolonial Study and Globalization Theory, p.117, editor: Neil Lazarus.

G.D Killam<sup>2</sup> said that the conflict of the novel, vested in Okonkwo, derives from the series of crushing blows which are leveled at traditional values by an alien and more powerful culture causing at the end, the traditional society to fall apart.

Rodney<sup>3</sup> discusses the role of education in producing Africans to serve the colonial system and subscribe to its values. He notes that class stratification, which leads to neo-colonialism, begins with the linking of colonial education to material gain. The main purpose of colonial school system was to train Africans to participate in the domination and exploitation of the continent as a whole, Colonial education was education for subordination, exploitation, and the creation of mental confusion and the development of underdevelopment.

Raleigh<sup>4</sup> says that the portrait of Caliban , with his affectionate loyalty to the drunkard, his adoration for valour, his love of natural beauty and a feeling for music and poetry, his hatred and superstitious fear of the task-master, and the simple cunning and savagery of his attempts at revenge and escape- all this is a composition wrought from fragments of travellers' tale and shows a wonderfully accurate and sympathetic understanding of uncivilized man.

Montaigne<sup>5</sup> in his theory of the "noble savage" says "I find that there is nothing barbarous and savage in this nation, by anything that I gather, excepting that everyone gives the title of barbarism to everything that is not in use in his own country... .They are savages at the same rate that we say fruits are wild, which nature produces of herself by her own ordinary progress; whereas in truth we ought rather to call those wild, which natures we have changed by our artifice and diverted from the common order ... .To my apprehension, what we now see in those nations does not only surpass all the pictures with which the poets have adorned the Golden Age, but all their inventions in feigning a happy state of man ...so native and so pure a simplicity as, we by experience see to be in them,could never enter into a poet's imagination, nor could they ever believe that human society could have been maintained with so little artifice and human patchwork.

I. The events in *Things Fall Apart* take place during Europe's violent partitioning of Africa at the end of the nineteenth century, and Achebe wrote and published the novel towards the end of the colonial period, during a time of burgeoning nationalism across Africa. African frustration was compounded by the inconsistency between, on the one hand, universalistic Christian ideals and

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2. Globalization and the Humanity, p. 76, editor: David Leirnil.

3. Resistance in Postcolonial African Fiction, p.3 7, Canadian Journal of African Studies.

4. Europe Under-developed Africa, p.112

5. Essay on Cannibals, Norton Critical Edition, p 49

liberal political ideas which colonialism introduced into Africa, and, on the other hand, the discrimination and racism which marked colonialism everywhere. This discrepancy deepened during the Second World War, when the British and French exhorted their African subjects to provide military service and labour for a war effort that was intended, in part, to uphold the principle of national self-determination. Post-war Africans were well aware that they were being denied the very rights for which they had fought.

The story ends with the death of the hero Okonkwo. When he committed suicide his body was not touched by the Igbo people as it was against their custom. In reply to the Commissioner's question why they themselves cannot bring down Okonkwo's dead body hanging from a tree, Obierika says,

**It is against our custom, said one of the men. It is an abomination for a man to take his own life. It is an offence against the Earth, and a man who commits it will not be buried by his clansmen. His body is evil and only the strangers may touch it.**

Obierika further says to the commissioner ferociously: "That man was one of the greatest men in Umuofia. You drove him to kill himself; and now he will be buried like a dog... "

So why did Okonkwo do this heinous act? Was he not aware of the fact that this sort of death brings nothing but dishonour and disgrace? He is one of the persons among the society who followed the rituals very earnestly. Besides, he is a man of business. Having material attitude towards life it is really difficult for him to commit suicide. Throughout the whole story he has been depicted as a man of virility. Thus the story begins with the emphasis on his robustness and materialism and it drags him down in the same manner till the end. In the second chapter he was narrated as the man of action, a man of war and in chapter seventeen, the 'Roaring Flame'. In chapter one. Achebe describes him as "tall and huge" with "bushy eyebrows and wide nose which give him "a very severe look." When Okonkwo walks, his heels barely touch the ground and "he seems]"to walk on springs, as if he was going to pounce on somebody." Okonkwo has "a slight stammer" and his breathing is heavy. Okonkwo is renowned also as a wrestler, a fierce warrior, and a successful farmer of yams (a "manly" crop). He has three wives and many children who live in huts on his compound. Throughout his life, he wages a never ending battle for status; his life is dominated by the fear of weakness and failure. He is quick to anger, especially when dealing with men who are weak, lazy debtors like his father. However, Okonkwo overcompensates for his father's womanish (weak) ways, of which he is ashamed, because he does not tolerate idleness or gentleness. Even though he feels inward affection at times, he never shows affection toward anyone. Instead, he isolates himself by exhibiting anger through violent, stubborn, irrational behavior. Okonkwo demands that his family work long

hours despite their age or limited physical stamina, and he nags and beats his wives and son, Nwoye, whom Okonkwo believes to be effeminate like his father, Unoka.

Okonkwo is impulsive; he acts before he thinks. Consequently, Okonkwo offends the Igbo people and their traditions as well as the gods of his clan. Okonkwo is advised not to participate in the murder of Ikefemuna, but he actually kills Ikefemuna because he is “afraid of being thought weak.” When the white man brings Christianity to Umuofia, Okonkwo dislikes the new ways. He feels that the changes are destroying the Igbo culture. changes that require compromise and accommodation--two qualities that Okonkwo finds intolerable. Too proud and inflexible, he clings to traditional beliefs and mourns the loss of the past.

Okonkwo’s suicide as a way to circumvent humiliation and dishonour is comparable to Brutus’s and Cassius’s suicide in Shakespeare’s Julius Caesar. In another sense it is also a way of asserting their individuality by dying for their convictions, political as well as personal. Ultimately, nevertheless, it is an affirmation of their honour because by this act they take responsibility for their own earlier actions. To deal with Brutus and Cassius first, they are both prominent and Roman citizens, members of the senate and belong to the patrician or upper class Roman society. As noble Romans, honour is to them an important consideration, and they conceive of honour as a blend of personal integrity and public regard. While addressing the Roman people in the Forum after the assassination of Caesar, Brutus says,

**Believe me for -  
mine honour, and have respect to mine honour,  
that you may believe (32.14-16)**

When Cassius and Brutus both see that the battle as well as the war is lost, they both realize that the consequence of their defeat will be the loss of their personal honour. They both know that if captured alive, they will be taken to Rome by Octavius and Antony to be paraded through the streets in a triumph and submitted to the usual indignities and insults that are heaped upon prisoners taken in war. And they know that if this happens they will have no opportunity of avenging themselves, for their inevitable end will be a disgraceful death at their enemies’ hands. Though Brutus was found to be a follower of the philosophical doctrines of stoicism, in the end he does kill himself, disregarding his own philosophical opinion in a practical matter where his honor is concerned.

**Besides being a method of escaping dishonour, their suicides are also an expression of their individuality. In their refusal to submit to tyranny Cassius says that they show not only a strong sense of personal honour but individual liberty. When Cassius says that he would rather “wear his**

dagger” in his breast than submit to bondage, he means he has the individual’s power of removing himself, if nothing else, from under the rule of a tyrant. Similarly, Brutus’s individuality is recognized by what Lucillus says of him to Antony at Philippi:

**When you do find him, or alive or dead,  
He will be found like Brutus, like himself. (54.24-25)**

In *Things Fall Apart*, when Nwoye embraces Christianity the first shock comes to Okonkwo. He is so disappointed and sullen that he becomes quiet. He tries to console himself thinking, “Living fire begets cold, impotent ash” (ch 17). In chapter twenty-one, after returning from the exile Okonkwo sees the dramatic change in the village both physically and mentally. The new religion and government and the trading stores were much in the people’s eyes and minds. There were still many who saw these new institutions as evil, but even they talked and thought about little else. Observing this Okonkwo “was deeply grieved. And it was not just his personal grief. He mourned for the clan, which he saw breaking up and falling apart and he mourned for the warlike men of Umuofia, who had so unaccountably become soft like women.”

If Okonkwo had been found alive he would have been taken under the custody of white people, which is nothing but dishonour to him as is noticed in the case of noble Romans. Another point is that he felt frustrated to see the change in the people of the village. In chapter twenty-four his despair reaches the nadir. As he lay on his bamboo bed he thought about the treatment he had received in the white men’s court, and he swore vengeance. If Umuofia decided on war, all would be well. But if they chose to be cowards he would fight alone. But then he saw the absurdity of fighting alone. That drove him to despair, and ending his own life must have appeared to him to be the only alternative left for him.

II. It will be interesting to compare Shakespeare’s Caliban with Okonkwo and see in what ways they are similar or dissimilar. Among Shakespeare’s numerous stage characters, probably none has been as variously interpreted as the ‘savage and deformed slave’ as Caliban in *The Tempest*. For nearly four centuries, widely diverse writers and artists from around the world have found the rebellious monster an intriguing and useful signifier. He has been portrayed in the theatre and in literary criticism as - among other things - a fish, a tortoise, the missing link<sup>6</sup>, an American Indian, and an African slave.

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*6. The very idea that the theory of biological evolution applies to man, too, and that man shared a common ancestor with the apes gave rise to the assumption that long ago there existed transitional types of animals showing the gradual modification from ape-ancestor to man. These were called missing link. (Source : Wikipedia)*

In appearance Caliban of the play is a grotesque monster one may come across in folktales and travel literature of the days of geographical discoveries and explorations. Actually travellers back from remote, unknown countries used to exaggerate or write out the misconceptions of what they actually saw there, chiefly to impress their countrymen.

In the play. Caliban's speech of how he came to become enslaved by Prospero provides an interesting context of colonialism and its effects on those who have been victimized by it. While Caliban is a creature that is meant to be feared, there are some clues provided in this speech which offer a contrasting view of his character and his relationship to the other characters in the play. From the very beginning to the end he has been maltreated by the white people. He has been called names over and over again by the colonizers. He tries to justify his claim by saying:

**This island, s mine, by sycorax my mother  
Which thou tak'st from me.(1.2.333-34)**

In the play, Caliban encourages a rebellion against his master, Prospero. Dramatically, this speech foreshadows their confrontation. Caliban persuades Stephano and Trinculo to make an attempt on Prospero's life. Prospero is able to quell the rebellion, using magic. The speech sets up Caliban's motives in the play why he rebels against Prospero's authority. Yet, at the beginning Caliban welcomed Prospero and Miranda. Indeed, Caliban "show'd [Prospero] all the qualities o' th' isle," helping him know which plants were edible, which areas of the island were fertile or barren, and so on. It seems that Caliban gladly welcomed Prospero. It is not until Prospero takes over the island for himself and sticks Caliban into a hard rock, that Caliban turns against Prospero. This is the usual way of treating the aborigines by the colonizers which is also evident in Conrad's *Heart of Darkness* where Kurtz becomes the master of the native people and kill them at will.

There is no question of Caliban being banished from others in the island because he is the only native inhabitant there. Caliban hates Prospero because he came with deceptive purposes to steal the island out from under him. Prospero indeed greets Caliban with seemingly kind intention. He flatters Caliban, teaches him about the sun and the moon and teaches him to speak language. It is this flattery that Caliban took for Prospero's love which turns ultimately to hate when Prospero's true intentions are revealed. Through Prospero's actions, Caliban develops an emotional attachment to him which would suggest an equal footing between them both, a footing that Prospero denies him. What this suggests of Caliban's character is a creature who is willing and capable of loving, but one who is fully aware of his own sense of self, enough to be angry and rebellious and hateful toward those who wrong him.

Prospero's view of Caliban that he is not human and therefore incapable of human feelings is closer to how Europeans would have viewed non-Europeans. Indeed, much of colonization rested on the notion that the inhabitants of these "faraway" lands were not human and therefore did not deserve the respect of the so-called civilized.

Since Prospero was sent into exile by his brother after he had stolen his title. Prospero can be on the island what he was denied in his homeland. This is implied in Caliban's speech: "For I am all the subjects that you have, /Which first was mine own king;"(1.2.343-44). Here, Prospero can create his own kingdom with subject(s) who will not threaten his rule, since Prospero's leadership is held through magic, which Caliban cannot counteract. Throughout much of colonization, many Europeans who lost either their wealth or social status in their homeland could recreate themselves or gain greater riches in the colonies. Indeed, that is what drew many British colonialists to the Americas. Prospero's exile on the island and his domination over Caliban gives him the power and authority he would not otherwise have in his native land Milan. Prospero's magic is in a sense equivalent to the colonialists' superior weapons and scientific knowledge, which give them a big advantage over the natives. Colonialists depend greatly on the resources from the colonies. Without such resources, Europe might not have thrived economically as much as it has. The only thing for which one can point the finger at Caliban is his endeavour to violate Miranda's Chastity, as Prospero puts it. But judging from an impartial point of view, one can hardly blame a person for his sexual ambition and desire for reproduction to continue his family line. Caliban says,

**Woud't had been done!  
Thus didst prevent me; I had peopled else  
This island with Calibans. (1.2.351-53)**

Caliban is aware that a woman like Miranda will produce brilliant children. He says to Stephano about Miranda:

**She will become thy bed, I warrant  
And bring thee forth brave brood. (3.2.102-03)**

The use of the word "people" and "brood" imply that he is not obsessed with sexual adventure; rather he is thinking of regeneration.

In spite of all the abusive remarks made about him, Caliban is a person who can appreciate music and poetry. He has got the sense of beauty which is absent in Antonio representing the civilized people. Hearing the sound and music of the island, he says,

**...the isle is full of noise,  
Sounds and sweet airs, that give delight, and hurt not.  
Sometimes a thousand twangling instruments  
Will hum about mine ears and sometime voices,  
That, if I then had wak'd after long sleep,  
Will make me sleep again..and then in dreaming,  
The clouds methought would open, and show riches  
Ready to drop me; that, when I wak'd  
I cried to dream again. (3.2.133-41)**

Whatever faults he has are human and spring largely from his dissatisfaction at being an oppressed and exploited slave.

Though Okonkwo and Caliban have different temperaments, they both protest against alien forces. Though Caliban's conspiracy with Stephano and Trinculo is likely to give the impression of his being mean and cowardly, he is also found vehemently protesting against his colonial master Prospero. When Prospero says that Caliban has been the wrong choice for his attempt to civilize him, Caliban replies:

**You taught me language; and my profit on't  
Is, I know how to curse. The red plague rid you  
For learning me your language! (12365-67)**

Nevertheless, being the only native of the island, Caliban has no choice but to bow down to the colonial power. Unlike Caliban, Okonkwo is not alone. He is surrounded by his clansmen, but they have no intention to stand by him and fight. When Okonkwo kills the head messenger, the people of Umuofia allow the other messenger to escape; they break into "tumult instead of action", and Okonkwo notices "fright in the tumult". Then he must have felt lonely and helpless in the midst of his own people. Nor can he forget the humiliation by the white people though he has already said "I shall fight alone if I choose", he sees the uselessness or madness of fighting alone. He had better take his own life, bearing a lesson for his people, in spite of the fact that according to the custom of his tribe suicide is an abomination. This appears to be a better course of action than Caliban's submission in the end:

**I'll be wise hereafter,  
And seek for grace. (5.1.294-5)**

It may be noted that Caliban and Okonkwo are creations of two literary artists of two widely different cultures and ages - one a European and writing at a time when looking at a native from the Post-colonial Perspective was out of the question, the other an African and of the age when the movement for African liberation was gaining momentum. This difference partly accounts for the different treatment of the two characters.

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## **Self-Motivation and its role in the context of Bangladeshi Learner's English Language Learning**

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### **ABSTRACT:**

*This study analyses the paradigm of self-motivation present among the university level learners in Bangladesh & also investigates the various individual's role to facilitate the second language (SL) learner to be self-motivated. Motivation is one of the significant parameters of second/foreign language learning and the concept has become a basic factor of second language learning theory. So, there is a considerable amount of research that explains the nature of motivation from the psychological point of view in the second language learning process. This paper discusses the fact that as each individual is motivated in different ways; not only the teacher or the researcher can influence the learner, unless the learner himself or herself should take steps too. Invention of new classroom practices and approaches to design various language programs and materials reflect a commitment to find more and effective ways of teaching languages. The author contends that Bangladeshi language learners face difficulties even to use English in the classroom or outside the classroom for lack of useful inspiration and self-motivation. The impact of these important socio- psychological factors of the learners shape their ideas about 'English learning without being self-motivated result into failure of achieving goal. Finally, some recommendations have been made for the learners, the teachers and others for positive advancement as a whole.*

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## **INTRODUCTION:**

Like other countries of the world, communicative language learning is very popular as a teaching method in Bangladesh. As Communicative Language Teaching (CLT) is a fully learner-centered approach, motivation plays an important role in the English language learning classroom. English is a compulsory subject in the schools and colleges in our country but due to lack of proper motivation, very few learners actually achieve the desired level of expertise in the four basic skills (Reading, Writing, Speaking and Listening) and its consequence gives a rise to incompetence of majority of the learners at the university level. In classroom learning, students have got many problems like large class-size, insufficient opportunity to use target language, unavailability of language lab, lack of proficient English teachers who can motivate weak students to make them competent, etc. It is true that most of the Bangladeshi students learn English mainly for its utilitarian value rather than integrative purposes. So, here a motivating environment is very much necessary for them to learn a second language.

It is natural that people would like to use their mother tongue or native language for communication. This may be a reason why the Grammar Translation (GT) method was popular for many years in Bangladesh. There are certain reasons why the people of Bangladesh feel the necessity for learning other languages in addition to our mother tongue, Bengali. As English is an international language, its importance and acceptance is undeniably greatest in all fields. Though the status of English is not clear in our state constitution, English language learning in educational institutions is important for many socio-economic reasons. .

If we consider learner-centered teaching processes, we will see that the role of the teacher is to monitor and guide the students. So to study learners' attitudes towards English learning is the most effective way to get insights into their needs. The learners' interests and motivation associate immediately to the language learning situation and the teaching-learning environment as a whole. Some of the important factors like age, aptitude, personality, etc. doubtlessly influence the learning process, but above all the positive attitudes of the learner facilitate the learning process. The researcher feels that to learn and use a SL effectively; the learner himself or herself should be conscious enough to take initiative for his/her progress, especially at the adult stage.

## **METHODOLOGY:**

The research was regulated basically by taking interviews of the private university students. The researcher talked to regular students of undergraduate level, and learners who took language learning just for a short-term goal. The

researcher observed the classroom activities of the English language learners through pair-work, group-work and closely observed their responses. Research was also done with a set of questionnaire (a sample of questionnaire is appended) the researcher talked to language teachers of different institutes and gathered their valuable comments. To assimilate the notion, help from various sources like -the internet, books, and journals were taken.

### **REVIEW OF LITERATURE:**

Gardner and Lambert (1959), Clement, Gardner, and Smythe (1977); Gardner, Smythe, and Clement (1979) conducted extensive research on attitude and motivation. In 1959, Gardner & Lambert found that second language achievement was related not only to language aptitude but also to motivation. In their view, the successful learner of a SL must be psychologically prepared to acquire symbolic elements of a different ethno-linguistic community, and to impose elements of another culture into one's own life space (Khanna & Agnihotri, 1994).

Motivation reflects the power to attain the goal which is reflected in the motivational orientation. In second language learning, the learner desires to attain goals, develop positive attitudes towards learning and make effortful behavior to make themselves self-conscious. Zoltan Dorneyi, in his article, "Motivation and Motivating in the Foreign Language Classroom", explains the motivational goal by discussing some of the useful group dynamics. These are-

- 1) Goal-orientedness,
- 2) Norm and reward system
- 3) Group cohesion, and
- 4) Classroom goal structures.

"A group goal is best regarded as a composite of individual goals". It is a part of goal-orientedness that is, "an end state desired by a majority of the group members" (Shaw, 1981). For example, the whole group selects a single topic for making dialogues or conversation by using different phrases. So goal orientedness means pursuing to achieve the target of the whole group. Norm and reward system gives direction that specifies appropriate behaviors required for efficient learning. Group cohesion can form a link among the members and to the group itself. Classroom goal structures can be competitive, co-operative or individualistic to create a successful learning environment.

From a developmental viewpoint, Piaget, the Swiss psychologist (Piaget, 1979) pointed out that children are motivated to develop their cognitive or mental abilities in a predictable set of stages: sensory motor, pre-operational, concrete operational, and formal operational. Children move to accommodate

their cognitive structures (schemata) to new stimuli or assimilate the new stimuli into their existing schemata. Piaget discussed the importance of the learner's early stages and explained the mechanism of accommodation and assimilation for learning. According to the theory of Piaget, fulfillment of the previous stage is necessary for advancement to the subsequent stage.

### **SELF-MOTIVATION: AN ANALYSIS:**

Before going to define self-motivation, the definition of the term 'Motivation' is required. According to *Longman Dictionary of Applied Linguistics*, Motivation is "the factors that determines a person's desire to do something". Canadian psychologists Robert Gardner and Wallace Lambert together (1972) define motivation in terms of the SL learners overall goal or orientation (Ellis 1987).

Motivation is a multifaceted psychological phenomenon. It is an unconscious process of exploration and discovery toward more complex and intricate development of an individual's mental structures. A rich, stimulating environment enables the learner to develop cognitively, and a deprived environment hinders this development. When it is second language learning, self-motivation is eagerness or willingness to know and use the language consciously. Teachers who are interested in facilitating second language acquisition (SLA) want to enhance and maintain learners' motivation in the language classroom. Brown (1981) identifies three types of motivation: (1) Global motivation, which consists of a general orientation to the goal of learning a SL; (2) Situational motivation, which varies according to the situation in which learning takes place; and (3) Task motivation, which is the motivation for performing particular learning tasks. (Ellis 1987). Gardner and his associates established scientific research procedures and introduced standardized assessment techniques and instruments. They set high research standards and bringing SL motivation research to maturity. Gardner and Lambert divided motivation into two types: Integrative and Instrumental. In their opinion, integrative motivation was characterized by a desire "to learn more about the [second] language group," "to meet more & different people" (emphasis original), and to affiliate with and be accepted by the L2 group. On the other hand, instrumental motivation reflected a "more utilitarian value" placed on language study (such as anticipated usefulness in one's career). (Ely, 1986:28-35).

Motivation has been identified as the learner's orientation with regard to the goal of learning a second language (*Crookes and Schmidt 1991*). This form of motivation is known as integrative motivation. When someone becomes a resident in a new community that uses the target language in its social interactions, integrative motivation is a key component in assisting the learner

to develop some level of proficiency in the language. It becomes a necessity, in order to operate socially in the community and become one of its members. It is also theorized "integrative motivation typically underlies successful acquisition of a wide range of registers and a native like pronunciation" (*Finegan 1999:568*). Later, Gardner (*1979*) linked an integrative motivation to "additive bilingualism" that is learners with an integrative motivation are seen as likely to maintain their mother tongue when they learn a SL.

The pragmatic approach to language learning is called 'instrumental motivation' for example - a special requirement for school or university degree, applying for a job, promotion in career, working as a tour guide, reading text materials, doing translation work, achieving higher score in the exam or upgrading one's position. Instrumental motivation occurs when the learner's goals for learning the SL is functional. (Ellis 1987). Gardner proposes that instrumental motivation is more likely to be linked to 'subtractive bilingualism'.

In some of the early research conducted by Gardner and Lambert, integrative motivation was viewed as being of more important in a formal learning environment than instrumental motivation (Ellis 1987). It has been found that generally students select instrumental reasons more frequently than integrative reasons for the study of language.

### **REASONS BEHIND BANGLADESHI LEARNERS LEARNING ENGLISH:**

From the primary and secondary sources of data, the followings are the most important reasons for learning English in Bangladesh:

0 English is an international language

- It is considered as a subject and they have to pass the exam
- Learning the language for the potential benefits in seeking employment
- For future career, higher study or use in studying abroad -taking tests like IELTS or TOEFL
- For getting extra importance among people
- To be able to speak more than one language
- To understand modern technology

Bangladesh is monolingual country and from the list above, it is clear that most of the learners learn English for pragmatic reasons.

### **IMPORTANCE OF SELF-MOTIVATION IN SL LEARNING!**

SLA can be a frustrating and difficult experience if the students are not actively motivated. As it is known that to be an expert of a language, one should be very much careful about the importance of it. Among 10 questions

of the questionnaire, about 99% SL learners agreed that self-motivation is most important factor for English language learning. But almost 85% learners admitted of doing practice or using SL outside classroom using their self-consciousness or motivation.

Here one aspect is quite clear from the response of the learners that about 90% took language courses as a part of their curriculum rather than to learn. In fact they study English, as they are compelled to do it. Self- motivation influences how often learners apply SL learning strategies, how high their general proficiency level becomes and how long they preserve and maintain SL skills after study is completed.

Gardner asserts that motivation is composed of four elements: a goal, a desire to attain the goal, positive attitudes toward learning the language, and effortful behavior to that effect. According to Gardner's theory, the goal must be related to SL learning, yet exactly what constitutes being "related to language learning" is arguable. As self-motivation is a continuous process, the researcher feels that it should be started at early stages. So they should try to be very positive and need to manage their learning process so that the de-motivating factors and other obstacles like noisy environment, personal or emotional problems such as financial crisis or accommodation problem, illness could not make the success slow. For second language acquisition, there is tremendous variety in the techniques employed by different learners. Here cognitive style is a vital factor. It is (Cognitive style) "a term referring to the manner in which people perceive, conceptualize, organize, and recall information" ((Ellis, 1987). It is usually considered that field independence will lead to greater success in classroom learning. The reasoning behind that is in classroom learning the greater ability to analyze the former rules of the language will be important. So whatever the teaching method is, GT or CLT, no input will come unless the students are interested to attain the goals. As motivation is interconnected with age, sex, attitude and aptitude, the process should come from the early stages of their learning. Even in the starting stage like the primary level or the kindergarten schools, they should be inspired by the teacher and by the guardians. For that reason, definitely we need qualified, efficient teachers and conscious guardians to produce self-motivated learners. Each of the stages and skills of second language needs proper nursing. Reinforcement theory that is appropriate for association of stimulus, response and arranging rewards for the learner make them self-confident in classroom learning. Language teachers can reward students extrinsically through praise or possibly with tiny prizes. Krashen (2002) discussed the 'affective filter' that consists of various psychological factors, such as anxiety, motivation, and self-confidence, which can strongly strengthen or slowdown SLA or FLA. After

all, self-motivation is a high variable that affects the rate and success of classroom learning.

### **CAUSES BEHIND THE LACK OF SELF-MOTIVATION IN BANGLADESHI LEARNER:**

From the interview of different learners, the researcher discovered some of the important points for lack of sufficient self-motivation in Bangladesh. The researcher investigated that here the learners are too much dependent on their language teacher's conduct of classroom activities. Even 95% confessed to doing nothing outside those practices. For this, it is necessary to explore the ways in which English education are conducted here. One of the most important factors is to investigate the most effective method through which a student gains proficiency. Though most of the learners at the undergraduate level have come from the CLT method, very few learners have seen extensive facilities for speaking and listening practice in classroom learning. Even for a large class, teacher's attempt of giving feedback for those skills is quite impossible. Among 15 reasons for lack of self-motivation given by 71 learners, the researcher has chosen the following 11 reasons:

- Failure to take the opportunity for using the language at all levels.
- Very few learners have got a teacher or tutor outside the city areas that are really enthusiastic and motivate them properly specially at the higher secondary level.
- The parents or the family members (friend or others) do not deliberately praise them when they use English with them.
- Fear and disinterestedness of the learning process.
- Lack of interesting and attractive materials other than the books.
- Inadequate pair and group work in the language class.
- Insufficient arrangements for monitoring the proficiency of the learner's various skills.
- Improper or bad timing for the language class - like when the learners are hungry and tired.
- No arrangements for enjoyment especially in classroom learning.
- Lack of self-confidence because of various reasons like poor pronunciation.
- Psychological stress.

### **How TO BE SELF-MOTIVATED:**

The researcher feels that to be self-motivated, the first step should come from the students' side. In this article, the author presented few strategies to motivate the language learners, drawing partly on experience and partly on findings. It must be noted that these are suggestions that will be helpful for

planning of SL learning. To make learners self-motivated, definitely the teachers have many more specific responsibilities, but learners' inactiveness will make it totally useless. So the learners, the teachers and even the parents or the guardians have the specific duties and efforts to make whole process a success.

#### **SUGGESTIONS FOR THE SL LEARNER TO BE SELF-MOTIVATED:-**

There are many great proverbs, like - "Slow and steady wins the race" or "Failures are the pillars of success" demonstrate the process of SLA. So for language learning, practice makes a man perfect. Observations show when SL is at the first stage of learning, the rate of learning is bit slow. This can be disappointing both for the SL learners and teachers sometimes. Eysenck (1964) identifies two general traits: the learner can be either an extrovert or an introvert and neurotic or stable. It is a common view that extrovert language learners learn more rapidly than others as because they can contact, communicate and associate easily.

According to J \_ Bruner "experience and exploration is the key for the learner". In his constructivism, Vygotsky (Russian theorist) stated that learning is active rather than passive. Learners build new knowledge upon the foundation of previous learning. So they are not blank slates upon which knowledge is etched. Here the learner needs to be active, reflective, collaborative, inquiry based and evolving. Group learning promotes participation and interaction effectively. Group learners share vocabulary, structures, intonation and even different views of expressions with others for gaining the same goal. It is not mandatory that the group will be formed by language teachers, rather students can encapsulate main ideas with their friends, discuss the progress without hesitations, and remove shyness or anxiety for the obstacles especially in the speaking skill. Pair learning is another didactic way that the learner can do all the skills including reading, writing, speaking and listening with his / her friends, relatives or even with family members. In classroom learning, pair work is a low risk strategy which makes learning interesting as well as competitive. Both SL learners and the teachers often complain that the learner was initially 'very enthusiastic, inspired to do tasks, tried to speak and participate in learning actively, but day by day their enthusiasm wanes. This may be because of losing interest or feeling difficulty or just because not being involved properly with their classmates. Gardner (1985) argues that motivation to learn a second language should be considered to have three components: effort expended to learn the material, desire to learn the material, and favorable attitudes associated with learning the material. The researcher suggests that without the combination of these components, long-term goals cannot be achieved.

Some of the successful learners informed the researcher in this investigation that as much as possible involvement of various activities in the classroom or outside the classroom would be fruitful. They did a lot of practice outside classroom by reading books, speaking with their groups, writing diary of everyday activities or listening to English news from BBC, CNN, listening cricket commentary, etc. So, the researcher suggests the SL learners should not be confined to classroom activities, rather be engaged in tasks like reading daily newspapers in English, reading storybooks and fun magazines, watching TV programs such as good movies, games and sports. This will definitely develop the vocabulary and the pronunciation of the learners.

#### **SUGGESTION FOR THE PARENT/ROLE OF THE PARENT TO MAKE LEARNER SELF-MOTIVATED:**

The positive role of the parents might be indirectly related to language learning. He/she may encourage the importance of practicing English at home, doing homework given by the teacher. If he/she is educated and has sufficient knowledge of the target language (TL), he/ she can assist them at home, take useful tests, can check scripts and even can give feedback. Their active participation in using TL with their children even at the dining table may inspire the learner to share the recent events, incidents or have an open conversation with them will increase self-consciousness. The parent should provide them nutritious food to make them energetic. Sometimes parents might show negative attitude or even scold the children because of their unexpected failure despite their rigorous efforts. At that time, though difficult, the parent should keep patience and assist them to be self-motivated. The researcher tried to make inquiry about the active role of the parent and almost 95% learners admitted the importance of their role. The investigation shows that only 70% parents are involved in giving oral inspiration only, rather than active participation to make the whole learning a success. The researcher thinks that the causes are- illiteracy, lack of proper knowledge in the specific field or too much dependency only on classroom learning, etc.

#### **SUGGESTIONS FOR THE LANGUAGE TEACHER TO MAKE LEARNER SELF-MOTIVATED:**

Teaching is definitely a difficult task for which a language teacher needs sufficient knowledge in the specific field. So pre-service and in-service training is a must to regulate his / her own building of knowledge. Observance shows taking the same courses repeatedly can bore the teacher which fails to make learning interesting. The language teacher has to manipulate three levels to make the learner self-confident. These are - the language level, the learner level and the learning situation level. Teachers can recognize that

foreign and second language learners probably have different clusters of motivations, although they share the same background of study or basic emotional needs for comfort, acceptance, and esteem. Teachers can be aware that over time, students' motivations might change in kind and degree, so asking students periodically about their motivations is a good idea to make them self-motivated. Experience shows that information taking, observing the performance, maintaining portfolio or record keeping and providing feedback of an individual learner will be enlightening for the next lesson. Extra homework and dedication is needed to make each class interesting for the inquisition of the SL learner.

In order to encourage the weak learner, each teacher can make the classroom environment more favorable, select interesting topic and sort this from easy to difficult. He/ she should inquire which parts of SL learning seems to them more difficult (for example, speaking, listening to lectures or other). The teacher seeks suggestions from them too and includes those in the planned curriculum by examining their usefulness.

Rebecca Oxford & Jill Shearin (1994) in the article "Language Learning Motivation: Expanding the Theoretical Framework." *Modern Language Journal*, Vol. 78: pp. 12-28, suggested that "Teachers can inculcate the belief that success is not only possible but probable, as long as there is a high level of effort. This positive set of attitudes is related to the setting of challenging goals and sub goals. Students can learn to have realistic but challenging goals regarding their eventual proficiency and can develop immediate, achievable sub goals that give them a sense of progress. Teachers can help students meet these aims through learner training in goal- setting and self-assessment. Teachers can also learn to accept varied student goals and provide appropriate feedback on those goals. Some students have more ambitious goals than others. Some students want and expect to develop high levels of proficiency in speaking, others simply want to develop passable reading skills, and still others just want to meet the language requirement and turn to other subjects". Moreover teacher's positive attitude will obviously influence the learner to be self-motivated as the teacher is considered an ideal icon who can shape learner's beliefs about success or failure in SL learning.

A teacher makes the SL classroom a welcoming, positive place for taking the views and task presentation. The classroom is not only a meeting place where anxiety is kept to a minimum but also an opportunity to be acquainting various useful modern technologies. He / she can arrange extra-curricular activities using the TL besides native language such as - essay competition, debate, general knowledge competition, etc. Arranging get together with their family members is sometimes effective to get the proper background of the learners.

Teacher must make the syllabus of the course relevant by basing it on needs analysis, and involving the students in the actual planning of the course curriculum.

**CONCLUSION:**

Any language learning except the mother tongue is usually a complex process where self-motivation plays a major role. When the researcher asked the learners whether English language learning is important or not, almost 100 % replied positively. So it is not important if the learners in Bangladesh want to learn English for utilitarian purposes. The question is how much they are self-motivated when they enter into the course and how much they keep it in the classroom or outside the classroom. From the study only 60% learners admit that they are self-motivated. But only a few of them thought about the matter consciously or took different steps to make learning productive. Therefore, the author strongly believes that, if the suggestions presented in this article are practiced, self-motivation among the students will boost and SL learning process will be a success as a whole.

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