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Contents

Risk Analysis by Failure Mode Effects Analysis (FMEA) <i>Lefayet Sultan Lipol</i>	1
Ethical Banking Practices by Banks of Bangladesh: A way to Prevent Dubious Banking <i>Farhanaz Luna</i>	11
Obligations of teaching English language at higher secondary level in rural areas of Bangladesh <i>Faria Sultana</i>	22
Understanding Feminism in Alice Munro with Reference to her Characters ‘Johanna’ and ‘Jill’ <i>Nafisa Ahsan Nitu</i>	29
Analyzing the Role of Integrated Marketing Communication: Significance of Incorporation with Social Medias <i>Ahmad Bin Yamin</i>	38
Promoting Decent Work for Domestic Child Workers in Bangladesh <i>Mst. Ranziara Rahma and Md.Alamgir</i>	54
A Model Study on Erosion Control of Embankment by Vegetation <i>Shamima Nasrin and Professor Mohammad Shariful Islam</i>	60
Significance of Ecosystem Services of Soil in Food Security, Climate Change Adaptation and Mitigation <i>Shishir Reza</i>	72
“Small investor’s insecurities in capital market of Bangladesh: Impact of Bubbles and future to grow” <i>Farhanaz Luna and Ahmad Bin Yamin</i>	80
Network Model Scenario of Delay Tolerant Network by utilizing Self-Organized Data Aggregation Technique in Disperse Environment using Evolutionary Game Theory <i>Md. Salehin Ferdous Kader and Shekh Istiak Ahmed</i>	92

Risk Analysis by Failure Mode Effects Analysis (FMEA)

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Abstract

This is a report on the FMEA/FMECA risk analysis method in industries. We have visited at Parker Hannifin, Borås to know their techniques to implement it and found that the company is familiar with Design and Process FMEA only and organization's FMEA software is based on MS Excel sheet to put all of the data's of FMEA team's risk analysis investigation. The company follows a limit of RPN's 200 and any value beyond this limit and equal to this is marked red. The company is making risk analysis if they are asked to do so by the top management. It is helping the company to avoid accident, re-design and making a reliable design or process.

Keywords: *FMEA, FMECA, RPN, Criticality Matrix, P_{pk}*

Abbreviations

FMEA= Failure Mode Effects Analysis

FMECA= Failure Mode, Effects and Criticality Analysis

RPN= Risk Priority Number

Ppk=Process Performance Index

1. Introduction

We made our thesis with Parker Hannifin, Borås. The company is using risk analysis method: FMEA/FMECA. This chapter includes background, purpose & limitations of the research work and research methodology.

1.1. Background

Customers are placing increased demands on companies for high quality, reliable products. The rising capabilities and functionality of many products are creating additional complex for producer to keep up the quality and reliability. Conventionally, reliability has been accomplished through widespread testing and applies of method such as probabilistic reliability modeling. These are techniques done in the delayed phase of improvement. The challenge is to devise in quality and reliability early in the expansion phase.

Failure Modes and Effects Analysis (*FMEA*) is a tactic for evaluate possible reliability troubles in the early hours at the progress cycle where it is simpler to acquire actions to

overcome these matters, thereby improving consistency through design. *FMEA* can be apply to recognize probable failure modes, conclude their effect on the process of the product, and categorize actions to diminish the failures. A vital step is anticipating what might go incorrect with a product. Whereas anticipating each failure mode is not possible, the improvement squad ought to invent an extensive record of likely failure modes as probable.

Near the beginning and steady use of *FMEAs* in the design process let the engineer to draw out failures and manufacture dependable, protected, and customer satisfying goods. *FMEAs* also carry chronological information for use in upcoming product development. [2]

1.1.1. Descriptions of FMEA Method

For calculating the risk in *FMEA* method, risk has three components which are multiplied to produce a risk priority number (*RPN*):

- 1) Severity (*S*): Severity is described on a 10-point scale where 10 is highest.
- 2) Occurrence (*O*): Occurrence is described on a 10-point scale where 10 is highest.
- 3) Detection (*D*): Detection is described on a 10-point scale where 10 is highest.

$$RPN = S * O * D.$$

$$RPN_{min} = 1 \text{ while } RPN_{max} = 1000. [1]$$

Here we shall try to explain the techniques to take decision of prioritizing a process based on *RPN*.

Table 1: Example of a risk calculation by FMEA. [1]

	Severity (S)	Occurrence (O)	Detection (D)	RPN=S*O*D
Potential failure 1	2	10	5	100
Potential failure 2	10	2	5	100
Potential failure 3	2	5	10	100
Potential failure 4	10	5	2	100

Our first priority will be the potential failure 2 and 4 as we have highest severity ranking there. The potential failures 1 and 3 have same severity ranking 2. But 1 has occurrence 10 higher than 3. So it should be prioritized next. So the results are.

First priority..... Potential failure 4

Second priority..... Potential failure 2

Third priority..... Potential failure 1

Fourth priority..... Potential failure 3. [1]

1.1.2. Descriptions of Criticality Analysis (FMECA):

The MIL-STD-1629A document describes two types of criticality analysis: quantitative and qualitative. To use the quantitative criticality analysis method, the analysis team must:

Define the reliability/unreliability for each item, at a given operating time; identify the portion of the items unreliability that can be attributed to each potential failure mode, rate

the probability of loss (or severity) that will result from each failure mode that may occur.

Calculate the criticality for each potential failure mode by obtaining the product of the three factors:

Mode Criticality = Item Unreliability x Mode Ratio of Unreliability x Probability of Loss

Calculate the criticality for each item by obtaining the sum of the criticalities for each failure mode that has been identified for the item.

Item Criticality = SUM of Mode Criticalities

To use the qualitative criticality analysis method to evaluate risk and prioritize corrective actions, the analysis team must:

Rate the severity of the potential effects of failure; rate the likelihood of occurrence for each potential failure mode.

Compare failure modes via a Criticality Matrix, which identifies occurrence on the horizontal axis and severity on the vertical axis. [4]

2. Company description (Parker Hannifin, Borås)

With annual sales exceeding \$12 billion in fiscal year 2011, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. The company employs approximately 58,000 people in 47 countries around the world. Parker has increased its annual dividends paid to shareholders for 55 consecutive fiscal years, among the top five longest-running dividend-increase records in the S&P 500 index. Parker has been operating for almost 40 years in Sweden, providing quality services and products to its Swedish OEM (Original Equipment Manufacturer) customers and to other companies through its strong, professional distribution network and Technology Centers. To meet its customers' needs in motion and control, Parker provides the broadest range of products available from any single supplier. This is supported by expertise in nine major technologies: hydraulics, pneumatics, electromechanical, filtration, process control, fluid and gas handling, sealing and shielding, climate control and aerospace. Not only has a product supplier, Parker also offered Value Added Services to help its customers to save time and money. [27]

FMEA/FMECA in a company: The report is based on company Parker Hannifin.

2.1. The FMEA process at Parker Hannifin:

Parker Hannifin, Borås is not so interested to do risk analysis for design or process but for some important designs or processes, the top management of the company mainly from U.S.A and U.K enforces them to make the *FMEA* risk analysis but it does not hamper the quality of the analysis. They form a cross functional group by taking a member from every

departments of company. After this they do the following tasks together correspondingly.

2.1.1. Review of the process: This step consists of the following tasks consecutively- what product and process that the document applies, product part number, product drawing number, if the document has been developed for a project, manufacturer of the article, who is responsible for the document?, this document's file name, date when the document was released for the first time, date when the last revision of the document was release, this document's revision number, why the document was prepared, why it is updated, the steps of the process that the document includes, other notes, names of all the documents that were used in the derivation of this *FMEA*, for example- drawings, instructions, procedures, *C-FMEA*, Process Maps, etc., the use of documents document number, edition of the used documents, participants who have developed *FMEA* document, date of the *FMEA* meetings. The participants are marked with X, in order to find the points to do actions in one can put a limit. All risk figures, which is greater or equal to the limit, will be stained red and description of process steps that have been analyzed.

2.1.2. Brainstorming: Enter any errors that may occur in process preferably through an open-ended "brainstorming" in the group. Errors are disturbances that lead to the planned function or outcome is not achieved. Possible errors should be described in physical or technical terms and not as symptoms noted by the customer.

2.1.3. List potential effects of failure: Describe what effect of the error may be to the client.

2.1.4. Assign severity ranking: Enter the severity of the client if the error would occur. A reduction in the severity can only be achieved through design modification of the system, subsystem or component or a redesign of the process.

2.1.5. Assign occurrence ranking: Enter the probability that a specific error to occur. Prevention or management action against the causes through redesign or process change is the only way to reduce the failure rate.

2.1.6. Assign detection ranking: Discovery / criteria form of detection method. Enter knowing who is responsible for implementation.

2.1.7 Calculate the RPN: Calculate the RPN, $RPN = \text{Severity} \times \text{Occurrence} \times \text{Detection}$

2.1.8. Take action: Enter all possible causes for the error type. Is often defined based on how the error can occur and described in terms of something that can be corrected or controlled. (These are to be tackled if the error is corrected). A detailed description will facilitate future work on which the error should be corrected. [27]

3. FMEA/FMECA in practices (Parker Hannifin, Borås):

In *FMEA* sheet (to rank risk), Parker Hannifin uses severity, occurrence and detection for risk assessment. Each item is ranked from 1 to 10 where 10 are highest. It is used for assessing risk of each individual failure mode of a design or process.

3.1. Severity

It rates the severity of the potential effect of the failure. In other words, severity is a numerical subjective estimate of how severe the customer (next user) or end user will perceive the effect of a failure. It is described on a 10-point scale where 10 is highest.

Table 2: Severity ranking system. [3]

10	Hazardous or governmental issue without warning.
9	Hazardous or governmental regulations with warning.
8	Vehicle inoperable, negative environmental effect, big effect on image, 100% scrap.
7	Vehicle operable but at a major reduced level of performance. Customers are very dissatisfied.
6	Vehicle operable but at a reduced level of performance. Customer dissatisfied.
5	Vehicle operable but at a reduced level of performance. 100% of products may have to be reworked.
4	Defect noticed by customers (<75%). The product may have to be sorted, with no scrap, and a portion reworked.
3	Defect noticed by customers (<50%). Some components may have to be reworked out of station- no scrap.
2	Defect noticed by customers (<25%). Some components have to be reworked in station- no scrap.
1	No effect on product/process.

A reduction in the severity ranking index can be effected through a design change to system, subsystem or component, or a design of the process. [3]

3.2. Occurrence

It rates the likelihood that the failure will occur. In other words, occurrence or sometimes termed likelihood is a numerical subjective estimate of the likelihood that the cause, if it occurs, will produce the failure mode and its particular effect. It is described on a 10-point scale where 10 is highest.

Table 3: Occurrence ranking system. [27]

10	<100/1000 pieces; $P_{pk} < 0.55$ alternatively Very high: persistent failures.
9	50/1000 pieces; $P_{pk} > 0.55$ alt. Very high: persistent failures.
8	20/1000 pieces; $P_{pk} > 0.78$ alt. High: frequent failures.
7	10/1000 pieces; $P_{pk} > 0.86$ alt. High: frequent failures.
6	5/1000 pieces; $P_{pk} > 0.94$ alt. Moderate: occasional failures.

5	2/1000 pieces; $P_{pk} > 1.0$ alt. Moderate: occasional failures.
4	1/1000 pieces; $P_{pk} > 1.10$ alt. Moderate: occasional failures.
3	0.5/1000 pieces; $P_{pk} > 1.20$ alt. Low: relatively few failures.
2	0.1/1000 pieces; $P_{pk} > 1.30$ alt. Low: relatively few failures.
1	<0.01/1000 pieces; $P_{pk} > 1.67$ alt. Remote: Failure is unlikely.

Occurrence is the likelihood that a specific cause/mechanism of failure will occur. Preventing or controlling the causes/mechanisms of failure through a design or process change is the only way a reduction in the occurrence ranking can be effected. . [27]

[P_{pk} = Process Performance Index: In the Six Sigma quality methodology, process performance is reported to the organization as a sigma level. The higher the sigma level, the better the process is performing.]

3.3. Detection

It rates the likelihood that the problem will be detected before it reaches the end-user/customer. In other words, detection is sometimes termed effectiveness. It is a numerical subjective estimate of the effectiveness of the controls to prevent or detect the cause or failure mode before the failure reaches the customer. The assumption is that the cause has occurred. It is described on a 10-point scale where 10 is highest.

Table 4: Detection ranking system. [27]

	<i>Detection/Criteria</i>	<i>Inspection Types</i>		<i>Methods</i>	
10	Absolute certainty of no detection.			C	Cannot detect or is not checked.
9	Controls will probably not detect.			C	Control is achieved with indirect or random checks only.
8	Controls have poor chance of detection.			C	Control is achieved with visual inspection only.
7	Controls have poor chance of detection.			C	Control is achieved with double visual inspection only.
6	Controls may detect.		B	C	Control is achieved with charting methods, such as SPC.
5	Controls may detect.		B		Control is based on variable gauging after parts have left station, or Go/No Go gauging performed on 100% of the parts after parts have left the station.

4	Controls have a good chance to detect.	A	B	Error detection in subsequent operations, OR gauging performed on setup and first piece check (for set-up causes only)
3	Controls have a good chance to detect.	A	B	Error detection in-station or detection in subsequent operations by multiple layers of acceptance: supply, select, install, verify. Cannot accept discrepant part.
2	Controls almost certain to detect.	A	B	Error detection in-station (automatic gauging with automatic stop feature). Cannot pass discrepant part.
1	Controls certain to detect.	A		Discrepant parts cannot be made because item has been error-proofed by process/product design.

A=Error-proofed, B=Gauging, C=Manual Inspection

In order to achieve a lower ranking, generally the planning process control has to be improved. Random quality checks are unlikely to detect the existents of an isolated defect and should not influence the detection ranking. Sampling done on a statistical basis is a valid detection control. [27]

3.4. Working with FMEA software:

In the FMEA sheet, if severity ranks 10, 9 then it marks red. The company maintains a limit of RPNs 200. So if the S.O.D value exceeds that limit, it shows red. Red mark is used as an alarm. In the Parker Hannifin MS Excel sheet, it is not possible to put the values of S, O & D on the first row (first part of figure-4). [27]

Allvarighet / Severity	Class	Tänkbara felorsaker / Potential causes of failure	Feltänslet / Occurrence	Nuvarande förebyggande konstruktions-styning / Current design controls prevention	Nuvarande upptäckbarhet / Current design controls detection	Upptäckbarhet / Detection	Risk- tal / RPN	Rekomenderad åtgärd / Recommended Action	Ansvarig / Respons	Åtgärds resultat / Action results				
										Införd åtgärd / Action taken	Allvarighet / Severity	Feltänslet / Occurrence	Upptäckbarhet / Detection	Risk- tal / RPN
9			6			4	216				8	4	1	32
8			5			5	200				6	3	3	54
7			5			6	210				5	2	4	40
6			4			7	168				6	3	3	54

4. Discussion

FMEA is a very effective risk analysis method for a company but it is not obligatory to use. But if any organization uses this it must get several benefits as it is mentioned in this report. In Parker Hannifin, they use only Design and Process *FMEA* and some qualitative part of criticality analysis.

To complete an *FMEA* analysis, it is necessary to make a cross functional group from different departments of the company. The team will be composed of experienced and devoted person will search for failure mode, cause, effect, severity, occurrence, detection etc. together. Brainstorming is very necessary for this *FMEA* worksheet. It is also required to find the proper way to lessen the failure mode. Severity ranking remains almost same if the failure mode is not eliminated.

As a result, the main difference between the company findings and the theoretical finding of this report is: Parker Hannifin is using a grand limit for RPN value and it is 200. If severity ranks 10 or 9, it marks red for alarming the design or process. In criticality analysis, the company is only performing the qualitative part (avoiding quantitative part).

5. Conclusion

There is a working principle of Parker Hannifin to perform *FMEA* and an example of *FMEA* method that was received from Parker Hannifin in this report too. Moreover, the company gave us opportunity to use *FMEA* software and made an *FMEA* analysis with us. The software compiles the comparison of RPN values between before the action was taken (Red) and after the action was taken (Blue).

As Parker Hannifin, Borås are not interested to make *FMEA/FMECA* analysis if they are not asked from top management; we shall suggest them to make at least *FTA* (Fault Tree Analysis) instead of *FMEA/FMECA* for a design or process at the condition of no obligations. We are hopeful to implement this knowledge in our future life.

References

Books

1. Donald W. Benbow, Roger W. Berger, Ahmad K. Elshennawy, H. Fred Walker, 2002, *the Certified Quality Engineer Handbook* by ASQ.
2. Bo Bergman & Bengt Klefsjö, 2010, ISBN 978-91-44-05942-6, 3, [rev.] Ed., *Quality: from customer needs to customer satisfaction*, Lund: Student literature.
3. Daimler Chrysler Corporation, Ford Motor Company, General Motors Corporation, Third Edition, April, 2001, *Potential Failure Mode and Effects Analysis (FMEA) Reference Manual* by Adare Carwin Limited.

Scientific Articles and Published Papers

4. Hot Wire, Issue 46, December 2004, *the eMagazine for the Reliability professional* by ReliaSoft Corporation available at www.weibull.com/hotwire/issue46/re basics46.htm
5. Massimo Bertolini, Maurizio Bevilacqua, Roberto Massini, 27 September 2004, *FMECA approach to product traceability in the food industry* by Science Direct.
6. Maria Laura Chiozza, Clemente Ponzetti, 17 March 2009; *FMEA: A model for reducing medical errors* by Science Direct.
7. Fiorenzo Franceschini and Marizio Galetto, 2001, VOL. 39, NO. 13, 2991-3002; *A new approach for evaluation of risk priorities of failure modes in FMEA* by International Journal of Production Research.
8. ICH, Guidance for industry, June 2006, *Q9 quality Risk Management* available at <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM073511.pdf>.
9. David C.Dunkle, ITT Industries- Systems Division, NASA Risk Management Conference 2005; *Prioritizing Human Interface Design Issues for Range Safety Systems using Human Factors Process Fmea* by NASA.
10. Dr. Deborah L. Smith; 2011-05-07, *FMEA: Preventing a Failure before Any Harm Is Done* available at (http://www.isixsigma.com/index.php?option=com_k2&view=item&id=8:fmea-preventing-a-failure-before-any-harm-is-done&Itemid=203)
11. Luca Bencini and Steve Pautz; 2011-05-17, *FMEA Can Add Value in Various Project Stages. Available at* http://www.isixsigma.com/index.php?option=com_k2&view=item&id=106minimizing-risks-how-to-apply-fmea-in-services&Itemid=203
12. Tim Williams; 2011-05-22, *Minimizing Risks: How to Apply FMEA in Services* available at http://www.isixsigma.com/index.php?option=com_k2&view=item&id=106minimizing-risks-how-to-apply-fmea-in-services&Itemid=203

Web Pages

13. <http://www.reliasoft.com/newsletter/3q2002/fmea.htm>, Date: 2011-05-23.
14. http://www.reliasoft.com/newsletter/v6i1/fmea_process.htm, Date: 2011-05-23.
15. www.quality-one.com, 2011-05-23.
16. www.scribd.com/doc/19251291/Benefits-of-FMEA, 2011-05-20.
17. <http://rsdo.gsfc.nasa.gov/documents/Rapid-III-Documents/MAR-Reference/GSFC-FAP-322-208-FMEA-Draft.pdf>, Date: 2011-05-08.

18. <http://www.fmeainfocentre.com/>, Date: 2011-05-26.
19. <http://www.volvogroup.com/suppliers/global/engb/supplierapplication/standardsaccess/Pages/fmea.aspx>, Date: 2011-05-15.
20. www.asqsection1206.org/uploads/1/5/0/2/.../fma-asq-presentation4-06.ppt, Date: 2011-05-07.
21. <http://www.reliasoft.com/xfmea/benefits.htm>, 2011-05-01.
22. <http://flightservices.org/FMECA.htm>, Date: 2011-05-05.
23. <http://www.scribd.com/doc/3666204/Failure-Mode-and-Effects-Analysis-FMEA>, Date: 2011-05-23.
24. <http://www.slideshare.net/Jacobe2008/risk-management-283397>, 2011-05-25.
25. <http://sce.uhcl.edu/goodwin/Ceng5334/downloads/FMEA%20Basics.pdf>, Date: 2011-05-26.
26. <http://www.fmea-fmeca.com>, Date: 2011-05-29.

Telephonic and e-mail interview

27. Joakim Bengtsson, Quality Manager, Mobile Valves Borås, Parker Hannifin AB, Hydraulics Group, Mobile Controls Division Europe, Almenasvagen 22, and SE-501 78 Boras, Sweden.

Ethical Banking Practices by Banks of Bangladesh: A way to Prevent Dubious Banking

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Abstract

Banks are the life blood of any economy. These speed up the motion of economy and safeguards growth and development. On the other hand, downfall of a few banks may endanger the whole economy. Generally, banks do business with public money and thus the question of transparency and ethics comes to the front. Corruption, influence, dishonesty and mishandling of power pose serious problems to the banking industry of the country. So, the demand for ethical banking practices is getting louder day by day. Demand of ethics in banking industry is very much important because we have 57 banks and other 31 financial institutions which are contributing to our socio-economic development. This paper us giving an idea of ethical banking practices, some reasons of ethical misconduct and the way to get better and emergence ethical banking practices of the country these days. For this study secondary method and ethical guidelines from different countries are used and presented in descriptive method.

Key words: *Banking ethics, Ethics, Transparency, Ethical decision making*

JEL Code: G21, G28.

1. Introduction

Ethics is the principles and measures which examines the values, rules and norms that govern the individual and social relations of the humans. Ethics differentiates between good and bad, but anything that is legal is not necessarily ethical. That's why to establish ethical banking, bankers and management should be ethical and moral. Ethical banker should consider people, then the planet and therefore their business profit. Banks have to fulfill investment and saving functions by playing an intermediary role between the fund-supplying and fund-demanding parties of the society. That also obliges them to stick to ethical principles during their operations. Ethical banking is an alternative to traditional banking and some of its particulars and approaches match with the Islamic banking system. Ethical bank deals with social and environmental impacts of its operation of investment and loans by giving priority to transparency, fair trade and corporate social responsibility. In ethical banking, it is possible to use morality in a structured equation. Well-known banks should maintain ethical conduct to attract and retain bright and honest employees. Then the

banks will be relatively free from the problems of quick employee turnover or inability to hire smart and honest employees. Management of human resource would be easier, internal control would improve and operational competence would increase. Brand reputation would make it easier to raise additional capital in a cost-effective manner, as and when needed (Islam, 2012).

2. Background of the study

Since old fashioned Christian people group depended on the counter realism of Jesus, saving money was moral and any type of "Usura" (high enthusiasm loaning), was considered as corrupt. In England, King Offa of Mercia in 791, at that point King Alfred the immense (849-899), and also King Edward the Confessor (1042-1066), prohibited usurers. Standard monetary banks have had fluctuating associations with corporate social obligation and moral venture. In any case, a clearer development has risen since the 1990s. With changing social requests, and as more is thought about the impacts that banks can have through their loaning arrangements, banks have started to feel weight from the overall population, NGOs, governments, administrative bodies and others to consider their social and ecological impact.

This study shows the importance of ethical banking in building brand and to retain loyal employees.

3. Literature Review

People deny the correlation between ethics and business, believing that the place of morality is within religion, while others perceive the interconnection between morality and religion (Badi&Badi 2009). Banking business is attractive for illegal transactions only if the effectiveness of a controlling mechanism for a consistent conformity with the operating principles is missing (Berg, 1993). In doing their job, they should always bear in mind the general welfare. The respect of business ethics can be analyzed by monitoring the obligations arising from such principles (Davies, 2001). Banks can conduct auditing internally and in an independent manner. Banks are helping in developing country with its advisory services. The internal audit of the bank's operations should conform to the operating principles and business ethics code to internal auditors (Davies, 2001). Banking products and services is imminent to all economies, regardless of their economic development (Dobson, 1993). It is generally recognized that banks, just like other financial organizations, are prone to manipulations with their financial statements at the end of a quarter or a fiscal year. Every business movement has solid things in common with morality and moral actions of an individual or groups. (Githui 2012). Business ethics can be defined as a group of moral actions of an individual, as the part of a combined forms of business activities without damaging the business relationships within the business system and the wider environment (Phillip, 1985). In banking operation the banking activity involves a rapid change in innovation. In traditional banking activities, since some sort of records is

kept on transactions (Rangarajan, 2000). Public attention has lately turned towards debates about business ethics, as the social responsibility of the individual and the collective. The lack of ethics destroys trust. In banking business trust is a precaution for successful operation of business.

Every segment of work and operations of a company entity should respect ethical principles. All the employees in a company, from top to bottom, should stick to ethical rules (Sims, 1991). Bank in a country may prescribe, for the purpose of public announcement, a type, form and content of statements, method and deadlines for their publication (Taleb and Mark 2009). A number of companies in the loan market tell stories their revenues in order to acquire funds and reduce their loan costs. Revenues are thus unnaturally enlarged and costs deflated. Such corporations have set their own benchmarks for reporting revenues to lenders and the public, desisting at the same time from generally accepted criteria for decisive revenues (GAAP - Generally Accepted Accounting Principles). Therefore, loan officers must be very careful since many clients may present ambiguous profit figures (White, 2010). It is in view of many scholars in the banking sector that banking officers should be specifically focused on the financial statement. According to Prof. Dr. Muhammad Mahboob Ali, Bangladesh is massively missing appropriate lawful frameworks. This has likewise negative effect on the managing an account segment of the nation. In the event of nationalized banks, here and there broad control of Ministry of Finance makes issue for appropriate administration of banks. Top managerial staff of the nationalized banks are generally enrolled either politically or great association with Government and they assumed a key part in awful loaning amid various day and age. They now and again gave "coordinated credits" (Ali 2007). Sobhan (2000) portrays that the incomparable morals in any general public must be established on the guideline of equity. A general public, which denies its most gainful natives of assets, in spite of their demonstrated uprightness in the utilization of such assets, is probably going to sustain destitution and in addition underdevelopment and will in the process disintegrate the establishments of a popularity based society.

4. Methodology of the study

The type of this research is descriptive research. We just want to show the ethical banking behavior and its practices in banks of our country. For this analysis we are doing qualitative analysis. For the completion of the present study, secondary data is collected. Secondary data are collected from different web sites on ethical banking, many books, journals and published papers. Researcher also studied ethical guidelines from Bangladesh. To get the clear view of ethical banking researcher also studied ethical banking from different countries.

5. Ethical Issues facing the Banking Industry

We are concerned regarding financial institutions and their use of money. Banks can channel economic resources in different ways that make money result in some form of wrong doing.

The two main ways in which banks can do this are (a) by lending money to others, that is, by issuing credit facilities to their clients, these being customers corporations, governments, individuals, etc., and (b) by actively and directly investing money, that is, owning shares, be it in the name of others or for themselves, in companies, projects, or countries, that conduct different forms of wrong-doing. Banking industry facing many ethical issues in different operations, the large sums of funds that banks have available to invest make these investments particularly relevant when we analyze ethical issues facing banks.

5.1 Usurious practices

Usury may be defined as demanding significantly more money back from customers than is just and fair. We know banking is a business which is concerned with protecting and growing other's money. That's why banks try their best to maximize their investments and charge interest rates on the loans and financing activities they offer to their clients. If any bank charges excessive interest rates, abusive commissions, or ultra-profitable credit charges that go beyond reasonable standards it can be called usury. People are concerned that banks may charge excessive rates for themselves upon customers. It is expected that banks to take care to implement policies that prevent wrong-doing in the form of usury and similar sorts of dubious practices.

5.2 Speculative banking

Speculation is the act of trading in an asset or conducting a financial transaction that has a significant risk of losing most or all of the initial outlay with the anticipation of a considerable gain. With assumption, the risk of loss is more than offset by the possibility of a huge gain; otherwise there would be very little motivation to speculate. It may sometimes be difficult to distinguish between assumption and investment, and whether an activity qualifies as speculative or investing can depend on a number of factors, including the nature of the asset, the expected duration of the holding period, and the amount of leverage. Engaging in terribly speculative investments and negligent credit lending practices is morally unacceptable. Banks deals with other's fund so it should be handled responsibly. We believe bankers and financial professionals will take a responsible approach in all investment and lending operations with its customers' money. Speculative banking gets especially complicated from a moral perspective when we consider that clients seldom receive the necessary, detailed information to let them know what kind of investments their bankers are undertaking with their money.

6. Ethical Misconduct

Ethical misconduct is defined as behavior that violates professional or ethical standards for the profession or discipline for which a student is preparing as adopted or recognized as authoritative by the relevant academic program. Due to individuality of service provider and consumer, the chances of ethical misconduct increases due to greed, self-interest, profit maximization, to accomplish targets etc.

- Sometimes Self-interest transforms into greed and selfishness. Greed of employees becomes a fever of amassing for gaining profit. Their focus shifts from long term to short term.
- Lack of transparency occurs when a customer is paying for the services, he has full right of loyalty and clearness from the institution but bankers recommend those investment plans to the customers in which bank is creating maximum profit rather than apprising the customer about the structure of the investment.
- Conflict of interest occurs when service provider can be in close proximity to the customer. The service provider can experience conflict of interest. For example insurances staffs can guide the customer to split his whole amount of investment in small amount and increase the number of policies to misguide the income tax authorities. In this situation, the government does not get actual data about the potential of the customer but customer and employee are in win situation.
- In banking industry when a client is financially sound, have good balance in bank that client s gets better services by banks. It is also true if a customer is not having very sound financial condition, nobody will bother to look towards that customer and resolve his issues. Clients should be treated justifiably and service dealing should not be based on partiality or the financial position of the customer.

7. Factors Affecting the Ethical Decision Making

Different people make different decision on the basis of their interpersonal relations, ability, morality and learning with the same set of cultural and organizational values. Personal values influence the Ethical decision making. Individual can apply one set of value for personal life and another set of values in professional life.

- Ethical decision making may get shape by the environment a person working on. In highly competitive environment employees works in major challenges and pressure from higher authority. Ethical climate in the organization can have an impact on the employee's individual personal values. When an individual feels the pressure to succeed and achieve the targets, they tend to compromise their own personal values and ethics.
- In a social environment business executives develop, the environment consists of shared culture, religion, and attitudes, desires, and expectations, degree of intelligence, education, belief, lifestyle and customs. This social environment affects in values, beliefs, and attitudes of the executives.
- With strict legal environment the ethical decisions may change. Fairness, ethical standards, lobbying, bribery or kickbacks, environmental pollution, consumer cheating, and tax avoidance or evasion are some of the ethical issues which have been practiced by many executives on the basis of legal and political environment.

- Ethical behavior also depends on personal environment, work environment and professional environment. The decision making process gets shape by the surrounding of an individual and group.

8. Benefit for banks by ethical conduct

Ethical practices by banks can give them a brand value. Through pursuit of ethical practices, banks can acquire brand reputation and this may help them expand customer base and increase income. The ethical reputation is also likely to attract ethically conscious clients. So banks will be greatly relieved of the problem of non-performing loans. If bank is reputed for ethical behaviors they can be able to attract ethical and honest employees and they will be relatively free from the problems created by quick employee turnover or inability to hire smart and honest employees. It would be easier for HR department and internal governance would improve and operational efficiency would increase. Brand reputation may help to make it easier to raise additional capital in a cost-effective manner.

8.1 Build Customer Loyalty

Ethical behavior may help the company create more positive image in market and which will bring new customer from word of mouth from the loyal one. Loyal customer makes the marketing cost lower of the company as they are doing marketing intentionally or unintentionally in the market and now a days by the help of social networking it has become very easy to provide reviews and attract others by a customer rather than the company itself. Conversely, a reputation for unethical dealings hurts the company's chances to obtain new customers. Loyal customer base is one of the keys to a successful business because serving an existing customer doesn't involve marketing cost, as does acquiring a new one.

8.2 Retain Good Employees

Unethical conduct and discrimination in workplace leads good and honest employees leave the company. Companies who are fair and open in their dealings with employees have a better chance of retaining the most talented people. Employees who do not believe the equality and justices in compensation methodology they can't retain dedicated employees. Talented individuals at all levels of an organization want to be compensated fairly for their work and dedication. They want career advancement within the organization to be based on the quality of the work they do and not on preferentialism. They want to be part of a company whose management team tells them the truth about what is going on, such as when layoffs or reorganizations are being planned.

8.3 Avoid Legal Problems

By being ethically clear company can avoid many legal problems. Companies that maintain the highest ethical standards take the time to train every member of the organization about the conduct of business and industry will be more rewarded. At times, a company's management may be interested to cut corners in pursuit of profit, such as not fully obeying

with environmental regulations or labor laws, ignoring worker safety hazards or using substandard materials in their products and the consequences for being caught can be severe, including legal fees and fines or sanctions by governmental agencies. The negative publicity can cause more harm than financial losses it may cause damage to the company's reputation that is even more costly than the legal fees or fines.

8.4 Good Public Image

A company that demonstrates high ethical standards in all of its business practices will enjoy a positive public image. A positive public image will result in to higher levels of productivity, larger profit margins.

9. Recommendations

The fundamental motive behind the banking ethics is to apply to the procedures and transactions of the banks with each other and with their customers and shareholders. To ensure that the existing respect for the banking profession in the society and to maintain and protect the stability and trust in the banking sector ethics is necessary. Banks are ethically bound to serve the customers, shareholders as well as the nations to develop the country in accordance with the country law and principles. The applications of loans and advances should be scrutinized in a proper manner. Banks have obligation to maintain secrecy of customers' accounts and saving the interest of small savers by not making by dubious lending in greed of higher margin. Banks should work in maintaining trust and stability in financial markets, and the requirements of economic development of the country.

9.1 Maintaining Honesty and Fairness

Banks should be stick to the honesty principle in their relations with their customers, employees, shareholders, group companies and with other banks, organizations and companies during their operations. Honesty and fairness relate to the general moral attributes of decision makers. Honesty refers to truthfulness, integrity, and trustworthiness and fairness is the quality of being just, equitable, and impartial without being biased or influenced. At a minimum, business people are expected to follow all applicable laws and regulations. In addition, they should not knowingly harm customers, clients, employees, or even other competitors through deception, misrepresentation, or coercion.

9.2 Equal Treatment of Clients

Banks should not make any discrimination towards their customers based on their financial and social standing, and gender during their service. At the heart of the success should lay respect to humans. Banks should make no discrimination and should avoid all forms of bias in their attitudes towards their employees as well as to their customers.

9.3 Reliability

Banks should offer clear, comprehensible and correct information to their customers within the principle of reciprocal trust during their entire services and transactions; and they should provide the customer services in a timely and complete manner to retain reliability of their existing and potential customers.

9.4 Maintaining Transparency

Banks should provide accurate, complete and timely information to their customers regarding all kinds of products and services they offer to them in all phases of such service relationship and on all subjects by also complying with the limitations stipulated under the laws and regulations of country and the industry as well.

9.5 Avoiding Fraud

In general, fraud is any purposeful communication that deceives, manipulates, or conceals facts in order to create a false impression. In recent year, accounting fraud has become a major ethical issue, but as we will see fraud may also relate to marketing and consumer issues. When an individual engages in deceptive practices to advance his or her own interests over those of his or her organization or some other group, chances of fraud may result in.

9.6 Establishing Information Technology

The final category of ethical issues relates to technology and the numerous advances made in Internet and other forms of electronic communications in the last few years. Some issues that must be addressed by business included the monitoring of employees' use of available technology, consumer privacy, site development and online marketing. As the number of people who use the Internet increases, the areas of concern related to its use increase as well.

9.7 Observing Social Benefit and Respect to Environment

Banks should show due diligence to support all kinds of social and cultural activities in the light of the principle of observing, aside from the profitability, the social benefit and respect to the environment as well as the country.

9.8 Fighting with Laundering of Crime-Originated Assets

Banks should adopt the fight against corruption, laundering of crime-originated assets, etc. as a significant principle as stipulated by international norms and the provisions of national laws and regulations, and do their utmost for the due cooperation with each other, with other organizations and institutions related with the subject, as well as with the competent authorities. They should also assume the required measures inside their organizations for this purpose, and device training programs to instruct their personnel on the matter.

9.9 Monitoring and Controlling Insider Trading

Banks should take all measures in order to prevent the use of insider information for the trading purposes. They must comply with the banking act and company act to ensure the information not being used by the parties to manipulate or misuse it. Monitoring and controlling of insider trading not only secure stock holders equity but also bring stability and confidence of all the stakeholders of bank.

9.10 Building Customers and Employee Relationship

Banks may introduce internal regulations providing sanctions and measures for the prevention of their employees from being involved in relations with the customers such as borrowing-lending, being guarantor and opening joint accounts with the customers which relations cannot be explained under ethical principles, accepting presents from the current or potential customers of the bank, or deriving personal benefits from both their job potentials and from the business potentials of their customers by using their status.

10. Conclusion

It is assumed that participants in the banking sector should be true professionals and should adopt best practices of the industry and should comply to the rules strictly. Unethical or illegal activities of any financial service provider should be discouraged and if required should report to the concerned authorities. Being in a sensitive industry financial service provider should not be influenced by personal relationship, personal benefits such as gifts or other forms of benefit. To retain trust and stability in the banking industry the central bank may take more precautionary measures and monitoring to ensure safety in the banking sector. Anti-money laundering laws and practices may be strengthened and enforced. Political appointment should be stopped by amending the regulation to ensure transparency. The Bangladesh Bank (BB) should also monitor the activities of the state-owned commercial banks as the private commercial banks are monitored. A committee can be formed with expert bankers, scholars and civil society members by the Bangladesh Bank to set ethical banking principles and guidelines for the banks. Training programs can be arranged for bank officials and management about consequences of unethical practices. It is the commitment of the Bangladesh Bank which can only ensure ethical excellence in our banking industry.

References

1. Ali, M. (2007). Ethics in Banking with special reference to Bangladesh. *Chittagong University Economics Dept Journal*, 1(1).
2. Badi R.V., and Badi N.V (2009) Business Ethics; Vrinda Publications (P) LTD
3. Berg, S. (1993). Bank efficiency in Nordic countries. *Journal of Banking and finance* , (17) 2-3, pp 39-45.

4. Belal, A.R., Abdelsalam, O. & Nizamee, S.S. J Bus Ethics (2015) 129: 769.
<https://doi.org/10.1007/s10551-014-2133-8>
5. Brennan, L. (2003). *Business Etiquette for the 21st Century*. London: Piatkus.
6. Daniel Daianu, Events Spur Re-examination of Business Ethics, Social Responsibility, Southeast European Times, 23/12/2002
7. Davies, H. (2001). Ethics in Regulation, . Business Ethics: A European Review , 10(4) 280-87.
8. Donadio, R. (2010) Money-Laundering Inquiry Touches Vatican Bank, September 21, www.nytimes.com/2010/09/22/world/europe/22vatican.html?_r=0
9. Dowd, K. (2009) Moral Hazard and the Financial Crisis, Cato Journal, Vol.29(1), <http://www.indytruth.org/library/journals/catojournal/29/cj29n1-12.pdf>
10. Eremia, A.; Stancu, I. (2006) Banking Activity for Sustainable Development, Theoretical and Applied Economics No.
11. Ethical banking. http://en.wikipedia.org/wiki/Ethical_banking, [Accessed 19 June 2014]
12. Githui D., (2012), Ethical Dimensions in Responsible Professionalism and Accounting Procedures in Kenya: A Critical Analysis of Theory and Practice. Research Journal of finance and accounting. Vol 3 (2) pp 58-69
13. Githui D., (2011), Mobile Money transfer in Kenya: An ethical Perspective. Research Journal of Finance and Accounting, Vol 2 (2)
14. Goyal, K. .A & Joshi, V. (2011). A STUDY OF SOCIAL AND ETHICAL ISSUES IN BANKING INDUSTRY. International Journal of Education and Research, 2(5), 49-57.
15. Green, C.F. (1989). Business Ethics in Banking. Journal of Business Ethics 8(8) p. 631-634.
16. Hazard, Jr., and Geoffrey, C., (1995). Law, Morals, and Ethics. Southern Illinois Law Journal, 19, 447-58.
17. Islam, A. (2011). *Ethics in Banking*. BANGLADESH INSTITUTE OF BANK MANAGEMENT.
18. Muhammad, Y., and Jolis, A. (2001). Banker to the poor: The Autobiography of M. Yunus the Founder of the Grameen Bank, . Oxford University Press, 12, 65-85.
19. Phillip, L. V. (1985). Defining 'Business Ethics': Like Nailing Jello to a Wall", Journal. Journal of Business Ethics, , 4, 377-83.
20. Rangarajan, C. D. (2000). Banking in the High-tech Enviroment, . Journal of Indian Institute, 4, 22-24.
21. Sobhan, Rehman (2000): "Restoring Justice to Banking Bangladesh", *Bank Parikrama*,

Vol.XXV, Nos.2&3.

22. Schwartz, M., S., and Archie, B. C. (2003). Corporate Social Responsibility: A Three-Domain Approach, *Business Ethics Quarterly*, 13 (4), 503-30.
23. Shleifer, A. (2000). *Inefficient Markets: an Introduction to Behavioral Finance*. Oxford University Press, 10, 17-22.
24. Sims, R. R. (1991). The Institutionalization of Organizational Ethics. *Journal of Business ethics*, 10, 493-506.
25. Sinclair, A. (1993). Approaches to Organizational Culture and Ethics. *Journal of Business ethics*, 12, 63-73.
26. White, A. (2010). Consumer Debt in GCC hits \$139bn. *Arabian Business Review*, 12, 90-109.

Obligations of teaching English language at higher secondary level in rural areas of Bangladesh

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Abstract

Teaching English language in rural areas at higher secondary level school in a non-English speaking country like Bangladesh requires severe care and dynamic method at the beginning of learners' education. The study aimed to explore the challenges of teaching English language along with the curriculum at higher secondary level in rural areas in Bangladesh. From June to October in 2017, a qualitative investigation included in-depth interviews with teachers and classroom unstructured observation was conducted at higher secondary level in Faridpur, Bangladesh. The study explored English Language Teaching would be an effective way of developing skills that requires extensive training for teachers, setting up single curriculum in the board syllabus, using more teaching techniques to encourage young learners in improving their language skills.

Key words: Teaching English Language, Communicative Language Teaching, Higher Secondary Level, curriculum, English Language Teaching.

1. Introduction:

The demands for English skills are crucial in response to the importance to the impact of globalization (Tsang, 1999). From the Pakistan period, English was a second language and people use English language in offices, profession, and education and for other purposes along with bangle language. The main purpose of using language is to communicate one's needs, necessities, feelings, thoughts and ideas to others (Banu,2009).The English text books of higher secondary level have been developed for the learners to develop students' four language skills. Cotterall (1999) sought to identify the beliefs of English language students regarding variables that influence language learning and she found that students rated practice and opportunities to use the target language ahead of the teacher in terms of their importance for successful language learning. Importance has been given in reading and writing which helps to develop the base of a learner. Linguistic abilities help developing cognitive abilities, a wide range of research in brain development, cognitive psychology, language and education has confirmed that (Briggs & Elkind, 1973; Evans & Carr, 1985; Wells, 1986).

In order to look for information and obtain knowledge, to read books English is mandatory and often used as the medium of instruction in higher education (F, Sultana

2014). Students who are studying at HSL , they need to learn different reading strategies like scanning, skimming and locating information throughout the textbook to solve diverse reading problems. In case of English Language teaching (ELT), several methodologists (Littlewood, 1981; Richards and Rodgers, 1986; Tudor, 1993; Harmer, 2001) have suggested many potential roles for a language teacher. Tudor (1993) looks the role of the teacher in learner centered classroom where the focus is on learners' active involvement on learning process. Teaching English Language is a very important phenomenon in Bangladesh both primary and higher secondary level in rural areas. In English there are descriptive terms of three contexts such as English as a native language (ENL), English as a second language (ESL), and English as a foreign language (EFL). The main objective of teaching English in rural areas at higher secondary level are to enable students to practice basic rules of English which helps them to carry out in their future. HSL students in rural areas cannot speak and communicate with simple English and also cannot read to comprehend the textbooks properly which is set for their age group and level. Most of the HSL Students in rural areas cannot write passages, letters, essay, summary, formal letters, and so on. For students development NCTB prepared English curriculum but it is not applied precisely in the rural areas of Bangladesh. This is one of the reasons that students in the rural areas of this country are not able to achieve English Language proficiency at their higher secondary level due to existing challenges in our education system.

Another reason is that there is a curriculum which is not followed properly in the rural areas only set of teaching materials are given. The English curriculum at HSL of rural areas indicates the aim, teaching methods and techniques, instruction, teaching aids and evaluation system. Teaching English language in the rural areas of HSL is pitiable where learning means only memorizing grammatical rules and context of the text without understanding. There is no chance to use the English language outside of the classroom or even in the classroom except reading and writing. HSL students' of rural areas main target is to pass in the board examination.

2. Methodology:

From June to October in 2017, a qualitative investigation included in-depth interviews with teachers and classroom unstructured observation was conducted at higher secondary level in Faridpur District under hazigonj upazila, Bangladesh. 40 teachers were interviewed from each Higher secondary level college. Each interview took 45 – 60 minutes was followed by a semi-structured questionnaire that included teachers' views about the challenges of teaching English language, perceptions and experiences regarding factors that contribute to teaching English Language at rural areas of higher secondary students. In addition, I conducted four observations of English class at higher secondary level using a guideline that included classroom size, teacher per student, equipment used for teaching, available facilities for teaching and learning. Observation checklist was used to find out classroom

teaching-learning conditions and procedures towards English language teaching along with the curriculum.

For all in-depth interviews, digital recorder was used for all interviews. Data was translated into English. I manually coded the data according to my research objectives which relates to the challenges of teaching English language at rural areas and to identify the challenges to apply the English language curriculum at the higher secondary in rural areas of Bangladesh.

I had also received training on how to protect the rights of the study participants prior to conducting qualitative study, including obtaining written informed consent. As part of the consent process, I made clear the amount of time when I was asking eventual study participants to give. I also explained that there were no individual benefits or compensation for participating, that there would be questions about academic and professional performance, knowledge, and informed that these topics could be sensitive, and/ or that it could be uncomfortable to have a stranger interviewing them in their teaching method. During the consent process, I specified that participation was voluntary. I explained to the study participants that they could withdraw their consent at any time.

3. Findings

3.1. Socio-demographic

The majority of study participants were men (30 men, 10 women). More than two-third of the study participants reported that they have completed a postgraduate degree along with non-government teacher' registration certificate. Almost all of them were permanent teachers.

3.2. Training

Although most of the teachers were graduated in English literature, but were not advanced with modern English language teaching methods and techniques. Nearly half of the teachers of higher secondary level reported that they did not participate in any special training of English language teaching and perceived that lack of training in terms of quality, content, trainer, duration, mode of training provided, or the syllabus partial or as a whole might affect their teaching properly.

3.3. Curriculum and Syllabus

Curriculum is the heart of the education system which indicates the educational aim, objectives and learning outcomes which helps teachers to conduct their teaching in the classroom. But this study found that most of the teachers are not aware of the curriculum in rural areas which becomes an obstacle for implementing curriculum at HSL students. The higher secondary syllabus and curriculum is often changing often due to political reasons, or when any new method introduced by education experts or policy makers. The curriculum is designed for two years while the syllabus is designed twice or more for a year round,

which is changeable. Teachers from rural areas reported that the curriculum followed by Bengali medium background was not appropriate for improving English language both writing and speaking skills of the students. Despite the curriculum was designed for developing English language skill but in reality that had not achieved. In addition, teachers were instructed to complete the syllabus in any way by one academic year, which was identified as another barrier by the teachers. Some of the senior teachers identified change of the curriculum as a problem to deliver the lessons to the students for teachers. Moreover, guardians also faced the similar problem to guide their children at home when a new curriculum is introduced.

3.4. Inadequate qualified teachers

The majority of the teachers in the rural areas conduct English classes by using Bangla language. To be skilled in a language especially the language which is not your mother tongue is needed regular practice (sadek,2002). It is found in this study that teaching English language at higher secondary level in rural areas is horrifying. Majority of the teachers practice reading and writing and follow GTM in the classroom but it is not enough for the students to develop their English language skills. Half of the teachers reported that they are not aware of other teaching methods. It is also found that there are very few teachers of the rural areas of higher secondary level who cannot write a piece of text of their own. Two-third of the teacher said that rarely they read English newspapers, books or watch any English TV programmes.

3.5. Objective of Teaching HSL

Over half of the respondents believe that English Language is very hard. The objective of Teaching English language at HSL is that students will understand simple instructions in English and carry them out. More than half of the teachers claimed that there is no speaking and listening practice in the classroom. Listening is an important skill of language learning. Without listening practice of English language, perfect pronunciation of speaking style cannot be followed (sadek,2002). But it is found that there is no opportunity of hearing instruments for HSL at rural areas for English language teaching. Very few teachers are excellent in time management and some teachers do not maintain any time schedule which affects the learning process. Teachers only follow grammar translation method (GTM) for English language teaching. There are some teachers who have no skills and they do not give any feedback to the student's learning.

3.6. Interaction among Teachers and Students

Rural areas teachers interact among students regarding the syllabus, question answer, fill in the blanks, rearrange, essay writing, paragraph writing and comprehension. Majority of the teachers are not from the English Language Teaching (ELT) background and was not oriented in modern and diversified teaching techniques. Therefore, if syllabus even changes their method do not change, this makes their classes less communicative. In contrast to urban areas, higher secondary teachers were more experienced in terms of length of

teaching, but they followed only the ‘Grammar Translation Method (GTM)’, because they were not more willing to other method than GTM, because they perceived that other methods took much of their time to implement. Teachers from rural areas of higher secondary level perceived that their students had developed their skills in reading and writing only.

3.7. Requirement for implementing English curriculum and teaching aids

Almost all of the teachers claim that there are many problems to implement English curriculum properly at HSL level such as a high student- teacher ratio, small class room size, insufficient teaching aids-only chalk, blackboard and duster, not following lesson plan properly ,scarcity of language lab, proper physical facilities such as individual building, electric supply, and books unavailability are also responsible for education atmosphere .It is also found that no. of students per section were too high and teachers required to manage the class, class works, diary and lessons as well that seemed hard for them. Teaching aids and materials were not available in ELT classes in rural areas of HSL students which played an important motivator for the students towards learning and understanding content knowledge.

3.8. Necessity to Read other English Books along with writing

Most of the teachers reported that HSL students are young and they do not get interest to learn English language because their basic is weak. Two third of the student mentioned that they only memorize the answer to get good grades in the examination like other subjects. Of all respondents, very few consent that they said they do not read English regularly. Reading newspaper and story books is another vital and common way for post graduate Bangla medium learners’ to develop English language skills. Around half of the teachers said that HSL students should read English newspaper and English story books which will help them to enrich their writing vocabulary as well as reading.

Two –third of the teachers mentioned that reading more books will help students to improve their reading and writing skills .But it seemed that students read more English books in urban areas than rural area students did. The reasons for higher secondary students for not reading extra books in addition to text might be lacking in vocabulary, hesitation and fear of the English language, pronunciation.

3.9 Need of Speaking and listening Practice

Majority of the teachers mentioned that English conversation in the classroom improves students English language skills. It is found in this study that students from rural areas do not practice the English language as regular communication. The reasons might be hesitation, nervousness, very poor vocabulary, using sentence structure, pronunciation, using lots of hedges and pauses. Teachers from rural areas of Bangladesh were not using English in their regular conversation or instruction among themselves or with their students, not even in English classes. Without listening practice of English language, perfect

pronunciation and speaking style cannot be achieved (Sadek, 2002). Classroom environment varies from class to class and it depends on the class that how much students understand English.

4. Discussion

The study explored for special training for higher secondary level teachers in rural areas. The text book “English For Today” mentioned by NCTB which follow the communicative Language teaching for students to develop their four skills.. On the other hand, in reality the existing textbook only can improve learners’ reading and writing skills. Although the curriculum designed for Communicative Language Teaching but in reality teachers follows the only knowledge based method. Teachers need to know different methods and approaches along with GTM of teaching, which made a significant difference in learners’ knowledge, e.g. teacher-student interaction, student-student interaction, project work, peer work, and other task based activities within the class. In addition, rural area teachers should read outside books to improve their skills as well as they need to encourage their students to read other English books beside the textbook, which will improve their grammar, vocabulary, and level of understanding. Classroom practice should be more emphasized to improve learners’ skills which relate to listening, speaking and articulately, and decreases their nervousness. Pedagogy has the capacity to provide the opportunities and conditions within which these learners’ contributions are found to have a positive effect upon learning or may be more fully engaged (Breen 2001, Arnold, 1988). Unfortunately, rural areas higher secondary learners are not able to speak English fluently due to the lack of knowledge of sentence structure, accent and more over they feel shy. The teacher acts as an analyst, counselor, and group process manager (Richards & Rodgers, 1986). Teachers have to be more responsive to their students, so that students can share their problems and can get solutions easily.

5. Conclusion

The study revealed that more emphasis should be given on curriculum design which will remain same for at least 10 years based on the scenario of rural area students. Qualified HSL teachers can play vital role in improving learners’ quality, therefore, appropriate training should be provided to teachers. Policy makers should emphasize more on communicative language at higher secondary level to ensure strong basic knowledge of rural areas learners.

Reference

1. Banu, L. F. A. (2009). Problems and Misconceptions Facing the Primary Language Education in Bangladesh: An Analysis of Curricular and Pedagogic Practices. *BRAC University Journal*. Institute of Educational Development, BRAC University (IED – BU). 1: 1-10.

2. Breen, M. P. (Ed). (2001). *Learner contributions to language learning*. Harlow: Pearson Education Limited.
3. Briggs, C. & Elkind, D. (1973) Cognitive development in early readers, *Developmental Psychology*, Vol. 9, pp. 279–280.
4. Cotterall, S. (1999). Key variables in language learning: what do learners believe about them? *System*, 27, 493-513.
5. Evans, M. A. & Carr, T. H. (1985) Cognitive abilities, conditions of learning, and the early development of reading skill, *Reading Research Quarterly*, Vol. 20, pp. 327–350
6. F,Sultana (2014) Efficacy of Outside – Classroom English Language Learning: A Study of Intermediate Bengali Medium Students Studying English at Tertiary Level in Bangladesh.
7. Sultana, F., & Ahsan, M. A. (2013). Efficacy of Communicative Language Teaching in Primary School - Bangladesh Context. *International Journal of English Language Education*; 2013, Vol 2, No. 1. <http://dx.doi.org/10.5296/ijele.v2i1.4734>
8. Sadek,M.A.(2002).The problems of English Language Teaching at primary level in rural school of Bangladesh. Unpublished Master’s Thesis ,IER, University of Dhaka
9. Tsang, E. S. (1999). Resistance to self-access learning. In Morrison, B. J. (Ed.), *Experiments and evaluation in self-access language learning* (25-42). Hong Kong:HASALD.
10. Richards, J. C., & Rodgers, T. S. (1986). *Approaches and methods in language teaching: A description and analysis*. Cambridge: Cambridge University Press, London, UK

Understanding Feminism in Alice Munro with Reference to her Characters ‘Johanna’ and ‘Jill’

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Abstract

This paper explored the wonderful world of Alice Munro who has recently mesmerized the readers with her short stories and the unique themes. There are many variations found in her writings which make us to think about the themes and the characters. Her women characters are very unique though they are very conventional and most of them are from the rural areas but they carry the essence of the true women spirit and freedom. Here the paper illustrates the character of Johanna from “Hateship, Friendship, Courtship, Loveship, Marriage” and Jill from “My Mother’s Dream”. These characters will show us that women have such power that they can go to any height to do anything to achieve their goals and in this modern era it is the symbol of modern women. Women are not regarded weak in this present time rather they are in some extent can do more than men. Alice Munro depicted the characters with such vigor and touch of softness that they touch our hearts and make us think of women in a new point of view.

Keywords: Feminism, Emotion, Human spirit, Strong teenage attitude, Independence

1. Introduction

The women characters of Alice Munro are so simple yet so strong. The domestic atmosphere, the household affairs are common in every house of her stories. But from that easy and soothing description we find such a story that blow our minds and forced us to think about the intensity of the theme and character. The simple women characters have such diversity and colors which move our minds and immediately take us in confidence. The super narrative technique which does not follow any traditional rules, the techniques is just to touch our mind and move us to think about what is actually happening in the story and after finishing reading the story we need to find our own conclusion by implying our own experience and thought and we try to relate it in our life which give us a feeling of fellow feeling that someone in the world is having the same condition.

Though she takes the characters from everyday ordinary life but with the brush of her pen the characters become extraordinary. Her stories depict the ordinary story of the most ordinary character but it becomes extraordinary when it makes us to think and makes us to identify ourselves with the characters. It is the mastery of a great writer when she can make

the reader to take a stand for her fictitious characters and make to feel for them. Munro's short stories do not deal with some specific protagonist but women are always the main characters of her stories. Though other writer's stories whether they are male or female we find that women are submerged in a man's domain. Women characters are always inferior, mediocre and often bizarre. They are playing the side role in the stories. Their strength, their emotions, feelings are always neglected or they are centered round the male characters. And Munro is a revolt here. She used a word "unfathomable" for women. Women always have clarity of apparition that men do not have. Feminism is not very vivid in her characters but through their activity they show the true meaning of "Feminism". They are so common but still so different. This is the thing that attracts the readers towards the characters. The women characters of her stories are self-governing, spontaneous, they have extraordinary self-regulating judgment and they are not afraid of threat; the total opposite picture that we get in the stories of today's. They are proud of their own guts. They take the challenge to live their lives on whims. This is the attribute of every women of modern period but they don't feel so as it is difficult to identify their own traits as they possess it. Munro divulges the hurdles to woman's eccentricity and self-sufficiency. Her stories are centered on sexual emancipation, the economic liberation of the working class, woman's freedom from the cultural supremacy of males. A female child from her childhood gains knowledge of her roles, along with the boundaries society has placed on her. It is suitable that woman will take care of the kid, and while they take care of household tasks the authoritative and stronger male takes the jobs that need strength. But in Munro's stories we find that she tries to reverse this role that is imposed on women by the society. She speaks about the equality of men and women and sometimes she tries to put women superior than men. From time to time we want to revolt against some of this situation or incidents but we cannot gather the courage but the characters of Munro can do this and show us that we all have the same power but we need to know this and utilize this. So these characters of Munro are our home's people.

2. Objectives

The principal objective of the current paper is to bring out Munro's feminism in her literary works with reference to some of her major works. Feminism is not directly dealt with the theme or characters of her stories but her female characters are the paradigm of feminism. Their works in the stories reveal that they are very much of modern woman containing the idea of feminism. This paper will reveal the characteristics of feminism through Johanna and Jill. Alice Munro has wonderfully depicted the women characters in the light of this movement and Munro's feminism is reflected from her characterization.

3. Literature Review

Literature is the adaptable medium for the encouragement of women's rights in the 20th century. Alice Munro as a Nobel laureate utilizes this medium very beautifully. In her stories we find the emotional development of girls and women. Catherine Sheldrake says

“Munro presents her stories in ‘ordinary experiences so that they appear extraordinary, invested with a kind of magic’” (Sheldrick, 1997). Rasporich says “her gift to us is a variety of female characters portrayed from childhood to old age, whose hidden selves she explores beneath their artificial disguised or misinterpreted social faces....many of her characters belong to a dying defunct.” (Rasporich, 1980). Her stories are like this to show the whole life of women and girls with her adorning words. Her stories nicely present the man-woman relationships. “Her stories have a “soul”, and the image of their construction is, for her, the domestic image of a house. The gender implications of the opposition of these two ways of describing the genres are obvious” (McCain, 2002). Munro (2013) herself says that “I never thought of it being important, but I never thought of myself as being anything but a woman, and there were many good stories about little girls and women. After you got maybe into your teens it was more about helping the man to achieve his needs and so on, but when I was a young girl I had no feeling of inferiority at all about being a woman.”

4. Methodology

The current research has followed the observation method for collecting materials and organizing the main ideas while conducting the study. The compilation of critical interpretative essays and research papers provides new critical insights into the short stories of Alice Munro. Several critical journals and magazines were collected to get information about her short stories. The researcher also goes through several critical articles in order to be acknowledged in the related materials in proper way.

5. Definition of Feminism

The current paper has discusses about “Feminism” that is revealed in the vigorous women characters of Alice Munro. Feminism is a range of political movement, ideologies, and social movements that share a common goal to define, establish, and achieve political, economic, personal, and social rights for women. This term is used by Charles Fourier, a Utopian socialist and French philosopher at first. Feminist movements campaigned for women’s rights, including the right of vote, to hold public office, to work, to earn fair wages or equal pay, to receive education, to have equal rights in marriage. (en.wikipedia.org)

6. Findings: Discussion and Analysis

The short story "Hateship, Friendship, Courtship, Loveship, Marriage" is collected from the book "Hateship, Friendship, Courtship, Loveship, and Marriage" published in 2001 by Alice Munro. The story begins with a plain, simple and gauche woman named Johanna arranging a shipment of furniture and shopping for a dress. She is leaving town to go to the man she expects to marry, though he hasn't yet asked. The story transfers to follow the mean fellow she has been working for, who is angry about her departure though he doesn't have any idea why she is leaving, and then the story swings to Edith.

Edith and Sabitha are young adolescents. Johanna used to take care of Sabitha as a governess as she lost her mother and with leap back in time we learn that how Johanna came to live there and now why she is leaving. Edith and her friend Sabitha played a brutal joke in which they made it appear that this man, Sabitha's father, Ken Boudroue was writing love letters to Johanna. He was not. But, fooled into believing she has been carrying on a long-distance romance, Johanna makes plans to leave all she knows and head off to what appears certain to be abject humiliation.

We then shoved forward to the present, where Johanna arrives at her destination, and we follow her for a short time again. But then we leap ahead two years. And those two years later, we learn, through a notice in the paper read to Edith by her mother, what became of Johanna and Ken. But the master minder of this brutal joke, Edith can't digest it. She meant to humiliate Johanna as she thought herself to be smarter than that simple woman. But this was reversed and the joke becomes reality and Johanna becomes the part of a happy family which was beyond imagination of Edith. We got two main characters in this story, Johanna and Edith. Other characters play the supporting role to precede the storyline. Johanna is a hardworking woman who is very plain in his mind and body. She does not have any high ambition. She is happy with her present job to earn her livelihood. She even manages her eccentric boss. She is responsible enough to cook for his cruel employer while she was leaving. She is so simple that it is impossible to believe that she could go so far to marry that irresponsible person ken Boudraue and travel by train to a long distance and have the courage to sell the furniture of Sabitha's mother to arrange the money for her alleged beloved. Ken has no idea that who Johanna is but he was in such a condition that he totally becomes dependant on Johanna. It was love or arrangements we don't have any idea for Ken but for Johanna it was true love for which she can do anything. We cannot think of the things that Johanna does for her love that she hardly knows, this strength of women that Munro portrays beautifully. It is the truth that when a women loves truly she can go to any distance to do anything for him. Johanna is the example of this. She is such a simple women that no one thinks high of her, but she is hungry for love and with the slightest provocation she fell in love with ken. Through Johanna, Munro shows that women can do anything. She is the example of strength and love. A simple urban woman Johanna who knows less about her own city could make the impossible to possible. Munro wants to give us a message that women is the name of strength, when needed she can execute anything to fulfill her desired action. It is not only the case of Johanna it is the case of every women of the world. Johanna is the medium to tell about the inside story of a woman. She doesn't have any idea about feminism or about women's rights but through her activities and her inner strength we find the essence of ultimate feminist movement which is the prominent topic of this modern era. She is totally oblivious about the term "Feminism" but inside her, in spite of a simple and less educated woman she holds the true meaning of this term. These women characters are dependent on men for many reasons but they also display signs of self-determination. This ambivalence is a common occurrence that seems very well-known. Even sometimes we recognize the features of Munro's female character's personality exhibit in ourselves and it

is assumed that many readers can identify with them too. Though Munro's characters sometimes seem to depend on men, despite their attempt to succeed by themselves, is simply realistic. Their labors at maintaining an autonomous life shows that they are strong women, but they simply suffer the same dilemma that most men and women do. It seems that the women's dependence on men is a practical internal feeling that many cannot prevent. It is nature's way for women and men to depend on each other to fill a void they have in their lives. Munro seems to concentrate on women's voids rather than see the sights of men's desires. She wants to display that women are physically powerful and self-regulating but have an ambivalence that nature will not let them forget.

In this story we find very less word of Johanna from her own mouth but from other's words we find her very weird. She seems to be a very shy naive woman and no one can imagine that she could take such a drastic step to reach for her love. But she made it with her work and inner vigor. She even impressed Ken Boudreau who didn't have any slightest idea what is going on. But Johanna takes charge of him and supports him mentally and physically. Even she gives him financial advice and makes him stable in his unstable vagabond life. This proves that woman can cope up in any situation and she has the power to alter a situation. Man can easily depends on woman and rely upon her. Through the character of Johanna Munro proves that. In his review for the *New York Times*, William H. Pritchard, "Hateship, Friendship, Courtship, Loveship, Marriage," he notes that "Munro resists the doctrinaire satirist's temptation to humiliate and deprive her seemingly hapless protagonist: Johanna's story is other than the story of pride brought low." (Pritchard, 2001) The word feminism is not mentioned in the story but through the character of Johanna we find the true meaning of this term and we find her as the example of modern woman who is able to manage everything.

7. Strong Teenage Attitude

Again in the character of Edith, we find the ultimate qualities of a teenage girl. The secret, the jealousy, the urge of making prank are the attributes of a young girl. Edith and Sabitha are not out of this. They took Johanna as a perfect scapegoat to play a prank as they take her a naive woman. Because of their nasty joke Johanna and ken got married and it was very difficult for them to assimilate. In this way they helped to precede the storyline. They also show that the characteristics are all same to all the young girls of the world. But they also show that they are the future women who can handle anything. There is a difference between the urban and city woman but the inner qualities are the same. Edith wanted to escape from her surroundings and her shabby home and family and she got a bunch of fresh air when she is with Sabitha. They can share their secrets. They talk about sexuality, they talk about boys. They are at the same age. That's why Munro uses them to play such a prank to carry on the story smoothly. They are the catalyst. And sometimes women really play the role of catalyst. They can make home, build relationship, give financial advice, can do the job to support family, raise the children and they can do this all together. If she can

get the perfect partner she can make a heaven and if she can't have a perfect partner even that time also she tries to carry on with the relationship. Woman does not want to break anything shortly. They are full of sympathy and emotion. So we can tell that woman can lighten the world with their inner beauty and strength. In Munro's every short story we find this woman power. An ordinary woman can tell a powerful story with her regular normal work. She shouldn't be brawny to show her strength. By loving her children, her husband, her parents she could show this. If women can bear the pain of childbirth she could do anything. So Munro, the maestro of short story writer shows this beautifully as she observes this as a woman.

8. Human Spirit

If we take her another story we can see that there also she portrays the woman character with her powerful stroke and with the development of the story the character also develops and through their everyday work they show their strength. Her short story "My Mother's Dream" is from the collection of "The Love of a Good woman" (1998). In this story, we find this kind of human spirit. In this unusual story we find that the plot centers round women. The main characters are Jill, Ailsa and Iona. Only two male characters we get over here who are not very significant. Jill is the orphan girl who married George Kinkerk, a naval officer and became a part of his family that consists of his two sisters and her mother. So this is the story where women prevailed. Jill's background shows us that from childhood she is strong enough to deal with the harsh world. She is the very paradigm of modern day woman who is independent, energetic and very much confident about her goal. In George's family also we get the picture that his sisters are the main persons to control the family. George's elder sister Ailsa is the main person to run the family as they lost their father at their early age. She is the pillar of the family. Though she was meritorious but she had to leave her study in order to run her family. George is the income source for a very short time though his income plays less significant role in his family. After George's death Jill comes to live with them as she had no other relatives. In the memorial service of George we find the sign of strong mental ability in Ailsa. She had to take care of her sister, mother and now Jill and Jill's would be born child. But she doesn't hesitate to do that. Maybe one man be in lost in this situation but as a woman Ailsa showed her extreme patience and ability to hold the family together. She takes care of her mentally sick mother and sister and along with this her fragile and weak sister-in-law. She does it single handedly. It shows that women are capable of anything and can work under pressure. Ailsa did it in her own way and for doing this she sacrifices her whole life, even she didn't marry. But the story is not totally about Ailsa, it is the story of Jill, who is a young mother. Her husband died and couldn't see their child. She goes through the entire hormonal problem during her pregnancy time alone. This journey of giving birth to a new life she has to travel alone. Being a new mother, she does mistakes but she is able to raise her child and fulfill her own dream. She gets her diploma on violin playing and gets a job in the radio orchestra. Though she knows that she is not a very good violin player but she says that she could earn her livelihood through this. So with

all the drawbacks of life she doesn't break down. From her childhood she bore the adversities of life but still she doesn't lose hope. She succeeds in her life without the help of any male; though she was a mideokar she leads her life well. She can cope up with any of the situations. When her daughter is born she faces many problems but she doesn't give up. She has clanged through the situations. She gets the help from her sister-in-laws but she has to deal with the main problems. Here we need to tell about Iona who is a real help with the baby though she is mentally unstable. With her mental disorder she could not carry on with her nursing career but miraculously she takes care of the baby in such great extent that everyone is amazed. So it is the inner strength that god gives to the woman that even a handicapped person can take care of her baby. Though Iona makes a fuss when Jill put the baby sleep under a blanket with the sleeping pill but it is the expression of her love. She is taken randomly to the asylum due to her mental disorder still we can feel her love for children and her inner urging to become a mother. All the women characters of this story show their inner strength as women. Jill particularly shows the universal women attitude. She crosses all the hard stage of life alone and not only that she becomes mature bit by bit. In her tender age she becomes wife. Before enjoying the life fully with her husband she lost him. Without husband she gives birth to her daughter. She can't take care of her properly as she is immature at that time and she is novice as a young mother. But time teaches her. Nature has given that natural instinct to woman to fit in every situation and manage it. As the story proceeds we observe that how Jill gain the maturity as a woman and as a mother. The immature girl who had given sleeping pill to her infant to have a quite day, now she can manage her family as well as her career. She could even understand that she is not very good at violin playing still she is doing this to support her family. She marries again but she makes her first daughter to strong enough to cope up with this world. She still has a good relation with Ailsa and Iona. At the end of the story we find her talking care of her daughters properly along with her elder daughter.

9. Women's Strength and Adaptation

Munro tries to show all in her stories how women can utilize their strength and prepare themselves for any kind of situation and incidents. This is the core essence of feminist theory that is clearly shown in her writings. Catherine Sheldrick says that Munro presents her stories in "ordinary experiences so that they appear extraordinary, invested with a kind of magic" (Sheldrick, 1997). Munro confronts society not only as a woman but also as a female artist. She is the true campaigner of feminism.

For Munro, the feminist quest includes "the search for freedom of imagination and expression through the medium of art" (Rasporich, 1980). It is their basic quality to handle everything according to necessity. And they do it very well. Munro's stories are complex yet very simple to show women power. In these two stories we find that there are less male characters still the stories are not hampered, the plot of the stories are going smoothly. Two species are needed for world but women can do anything without men. Their supreme

power is that they can do multitasking at together. Man has to depend upon them but they are independent. The picture that we get in these two stories is the image Munro wants to show us about the modern woman. Whether they are urban or city woman they can show their intense desire to accomplish their life's purpose. They can do the hard work, they manage their family and career at together, they can use their intelligence to support their family in need and above all they are the passionate mother, wife, lover, daughter, friend and sister. They can carry all the relations with a balance. So we can tell that women are the most beautiful creation of god. With their strength, passion, love and work they are making this world more beautiful. They do mistakes still they have the courage to admit it and rectify it. Munro tries to portray this kind of women character who has blemishes but they have the courage to undergo any kind of peril to make their stand in the world. Through the characters of Johanna and Jill we find that feminism is prevailing in Alice Munro's short stories. The characters of her other short stories are also the true representative of feminism.

10. Conclusion

In this study we find that Munro's women characters are strong enough to deal with the modern world where they can make a stand as human being and as a balanced genus that can single handedly manage everything. All the female characters of Munro's are common and universal to us across the world that holds their own potentiality and individuality. Through her writings, Alice Munro contained the idea of feminism. Whether it is the naive urban woman Johanna or the city girl Jill, we find the common thing between them that they make a consign of their own and fulfill their purpose. This is the sight of the modern day women. They are independent, hardworking and efficient. They are emotional but they don't misuse their emotion. Actually it is not the competition with man, Munro tries to highlight the potentiality of women and she did it well. Munro's female characters don't look forward to get compassion from their male counterpart but claims the status of impartiality in all walks of life and try to maintain their uniqueness. In the course of her stories we find that her characters change from the level of weak individuals to the self-assured women as we find in the character of Johanna and Jill. The stories are the spectacular picture of womanhood depicting the perfect women vigor. Through Alice Munro's stories we come to know the beautiful world of women and their height of ability. Not only Johanna or Jill, all the characters of Munro's short stories are showing the extraordinary potency of women through their behavior, activities and feelings. Feminism is sublimed through the characters of Alice Munro.

References

1. Munro, Alice. "Hateship, Friendship, Courtship, Loveship, Marriage": Stories, Knopf (New York, NY), 2001.
2. "The Love of a Good Woman": Stories, Knopf (New York, NY), 1998.

3. - Nobel Lecture". *Nobelprize.org*. Nobel Media AB 2014. Web. 18 Apr 2017. http://www.nobelprize.org/nobel_prizes/literature/laureates/2013/munro-lecture_en.html
4. In her Own Words, **Conversation with Alice Munro, By Stefan Åsberg, SVT**, and Production: Swedish Educational Broadcasting Company and Swedish Television. Recorded November 12 and 13, 2013, in Canada)
5. McCaig, Joann, *Reading In: Alice Munro's Archives*. Waterloo Ont, Wilfrid Laurier University Press, 2002. [<http://www.questia.com/PM.qst?a=o&d=111905140>]
6. Pritchard, William H. "Road Map Not Included" *New York Times* 25 November 2001. Web. <http://www.nytimes.com/2001/11/25/books/road-map-not-included.html>
7. Rasporich, J.Beverly. *Dances of the Sexes: Art and Gender in the fiction of Alice Munro*. Alberta, Canada: The University of Alberta P, 1980
8. Sheldrick, Catherine. "Alice Munro". *Contemporary Literary Criticism* 95(1997): 282-283

Analyzing the Role of Integrated Marketing Communication: Significance of Incorporation with Social Medias

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Abstract

Modern day marketing has been passing a remarkable age intern of its tools and use of different communicative vehicles. Thus recent role of integration of marketing communication Medias are observed and monitored with careful decisions. Unlike the traditional marketing communication media such as television channel and newspaper, people are more exposed to internet more exclusively in social media. This article is based on the both exploratory as well as secondary data. Because of lack of funds and targeted audience to reach, the growths of social media are clearly identified. This article examined the role of integrated marketing communication and the present growth of using social media campaign and communication for better results in the organizations. With more presence of target market audience in social media, its cost effectiveness, flexibility and detail informative nature, it becomes an important communication tool.

Keywords: Marketing Communications, Marketing Integration, Integrated Marketing Communications, Social Media.

JEL Code: M30, M31, M370

1. Introduction

Integrated Marketing Communications (IMC) is playing a great role for organizations to communicate with their target customers. During the previous decades academicians found IMC is the most powerful tool in developing communication with target customers. IMC tries to manage all the elements of the promotional mix to produce a customer oriented clear message as well as attains organizational objects. The elements include advertising, personal selling, public relations, publicity, direct marketing, and sales promotion. IMC, from its inception has experienced many considerable changes basically those changes are resulting from two primary shifts in the relationship between marketers and consumers. Though IMC ties all customers home, work and other sources.

First shift comes from technological development perspective. According to current explosion of advanced technology, easy access to internet, portability and efficiency of technology have made change in consumer's lives as well as strategies of marketing

communication. So IMC movement is needed to manage the external organizational marketing communication activities so that a concrete message reaches to the target consumers (Schultz D., 2009). However, IMC reliance shifted to more personalized media like social media in recent days. Another shift concerns the approach integrated marketing communication took while communicating with its audience. In previous decades the focus of marketing was only on tactical in recent days the main focus shifted from just a tactical coordination and inward looking mindset of traditional organizations of the past to the strategic coordination and an outward looking orientation (Kliatchko, 2008).

Today social media, also referred to as consumer-generated media (CGM) is continuously growing in both number and format on the Internet. It also can be referred as online word of mouth from consumer to consumer, public group sharing, emails, and consumer rating and so on. It influences the traditional marketers and marketing activities because TV channels and newspapers becomes less trust worthy as consumers believe other consumers review and rating about their desired products.

2. Background of the study

Advanced technology has increased options for organizations for creating good relationship with customers through new and developed communication channels. (Albesa, 2007). As the modern system allows marketers to communicate in an integrated system through digital media so it's easy to connect with customers who has already shifted from off line system to online system. So, marketers should understand the difference between digital communications and traditional communication, such as TV, radio, billboard ads, newspapers and magazines. The communication model was and is one-to-many compared to one-to-one or many-to-many communication model in digital media like blogs, social networks, wikis and other social media (Chaffey, 2003). The idea of integrated marketing communication (IMC) is to generate uniformity by combining marketing communication elements to support and improve each other to promote potential communication understandings (Duncan and Everett, 1993). Many marketers are seeing the social media as new arena of market communication specially Facebook, Twitter, LinkedIn and YouTube (Steltzner, 2009). Social media is perceived as a more trustworthy source of information by the customers about the product and services rather traditional elements of the promotion mix generated by organizations to connect with clients (Foux, 2006). Managers, especially in marketing field should include social media in the communication mix when developing and implementing their Integrated Marketing Communication strategies (Mangold & Faulds, 2009). Urgency of social media's engagement in the promotion mix becomes an important and interesting issue in current marketing era.

3. Methodology

This research was conducted on both the exploratory and empirical data. The growth and significance of the related topic cannot be understood only with the previous secondary

sources so researcher used a semi structured questionnaires to understand both the potential and existing customer responses towards the various IMC tools and how social media make the differences. The survey was conducted randomly among buyers of different consumer goods. At the same time interview was conducted with some responsible communication managers from traditional and non profit firms.

4. Literature Review

Integration of communication is not a new concept and, in fact, the concept of communication integration emerged as early as the 1930s. During this period the sales representatives would collaborate with the advertising team while, by 1966, scholars had already recommended the combined use of promotional tools in order to ensure synergy (Thorson and Moore, 1996). In 1970 and 1980 marketers felt increase in fusion activity of advertising industry. This idea influenced the advertising industry to provide one stop service to the customers (Thorson & Moore, 1996). In late 1980 fusion of marketing came out and started dominating the marketing over public relation academics (Thorson and Moore, 1996). In 1990 IMC had become one of the most contemporary marketing issue (Percy, 1997). Moreover IMC came out as a discipline in 1990s (Kerr et al., 2008 ;). The suggested names for this discipline was integrated communication (IC) and total communication (TC) but at last integrated marketing communication (IMC) has been finalized and came out as the most favored term (Kerr et al., 2008).

Despite ambiguity, the summery of IMC definition reveals it is the combined use of promotional tools in order to bring about consistency, clarity, and maximum communication impact (Schultz and Schultz, 2003). Duncan (2002) expresses the role of IMC messages in the development of communication strategies of firms and its strategic implementations. This concept explains that an organization should control (planned) and influence messages (unplanned, product, service) to create and encourage stakeholder relationships.

In competition with the global market, marketers want to connect with customers in most efficient and effective way to communicate their product benefit and service quality to the potential customers (Clow, 2010). Consequently, marketing communications have become a fundamental aspect of marketing, a business vision and an essential factor in successful business management. Its importance have increased dramatically in recent decades, considering that the marketing and communication are inseparable, all organizations business areas using various forms of marketing communication to make their offer and to meet financial or non-profit targets (Shimp, 2003). It can be said that IMC is highly complex content. For building sustaining competitive advantage current marketing era is helpful. IMC can build strong brand of the organization provided that marketing communication is stated more strongly to achieve its objectives.

Social media the most popular and widely discussed tool in marketing communication plays the important role in the aggregate communication plan of a firm. Social media can be

simply defined as the “media we use to be social” according to Safko (2010,). Safko (2010) emphasizes the importance of knowing the tactics and strategies of the tools that are available for the users to connect with each other rather than just understanding the definition. Though human beings have been interacting and using different marketing methods throughout the history, social media is more effective than the traditional methods because it offers a two-way communication. Kietzmann, Hermkens, McCarthy and Silvestre (2011) propose that social media is a set of “highly interactive platforms” created through the usage of mobile and web-based technologies in which individuals and communities are able to share, develop, discuss, and modify content created by other users. Mangold & Faulds (2009) discussed that the impact of consumer-to-consumer communications has been greatly magnified in the marketplace. Social media is a hybrid element of the promotion mix which enables companies to talk to their customers; on the other hand it enables customers to talk directly to one another. These unique features of social media make it as an important communication tool in modern day marketing by all means.

5. Integrated Marketing Communication

Integrated Marketing Communication is defined as the coordination and integration of all marketing communication tool, avenues and sources within a company into seamless program that maximize the impact on customer and other end users at a minimal cost. This integration affects all firms business-to-business, marketing channel, customer-focused, and internally directed communications. Integrated Marketing Communications is a management concept that is designed to make all aspects of marketing communication such as advertising, sales promotion, public relations, personal selling and direct marketing work together as a unified force, rather than permitting each of them to work in isolation. Besides, it acts as an aggressive marketing plan because it sets and tracks marketing strategy that captures and uses extensive amount of customer information. It also ensures that all forms of communications and messages are carefully linked together to achieve the specific objective of IMC.

The important tools of Integrated Marketing Communications are:

5.1 Advertising

Advertising is the most old and popular tool of IMC. It has four characteristics- it is non-personal; it is persuasive in nature; it is paid for by an identified sponsor; and it is disseminated through mass channels of communication. Message of advertisement may encourage adoption of goods and services by potential buyers. It is much cheaper way than personal selling to reach customers. Advertising peruses non personal nature and it can lack the ability to adapt the sales message to the potential buyers and in actual sales. Advertising actually works best in increasing awareness, changing attitudes and influence sales. The contribution of advertising to sales is difficult to separate because many factors actually influence sales. Contribution of advertising to sales works best in the long run. But it has exception in terms of internet arena. The use of banner ads and some pop ups views

promote sales in internet base advertisements. New technology can count how many persons clicked the banner and ultimately made a purchase.

Brand management and maintaining brand equity are strategically equipped with advertising. Recently the cost of advertising in Television increased five times in last 20 years worldwide. Because of its large number of audiences national advertising is very popular to spread the message of the firm. The credibility and clutter are other disadvantages in advertising because of its frequent and paid presence. Massive advertising from network television, to daily newspapers, to roadside billboards, to golf course signs, to stickers on fruit in grocery stores consumers are more likely to ignore advertising messages. Modern technologies including DVRs (digital video recorders) allow audiences to record television programs and gives power to skip commercials. The disadvantages make advertising more vulnerable and complex to integrate in wide marketing communication plan.

5.2 Public Relations (PR)

Public relations is managing and building positive relations with the firm's various publics by obtaining favorable publicity, building up a good corporate image, handling and heading off unfavorable and negative rumors, stories, and events (Kotler, 2009). Though public relations are used to promote product, people, ideas, and activities yet nonprofit firms are highly engage for its promotion than any other organizations. Public relations, which is often consider as management function which identifies, establishes, and maintains mutually beneficial relationships between an organization and the different publics upon which its success or failure involves.

Publicity, the main tool used by public relations practitioners, mostly works on third party endorsement. For that reason it is often considered as most credible messaging tool in marketing communication. Publicity capitalizes on the news value of a product, service, idea, person or event so that the information can be disseminated through the news media. Publicity articles are perceived as being more objective than advertisements, and their messages are more likely to be believed, absorbed and accepted. Though it is a free of cost vehicle officially it is a very hard working and vastly complex platform for bringing effective out-bound publicity messages to be noticed and picked up by credible media sources. Public relations' role in the promotional mix is becoming more important because of what Philip Kotler (2009) describes as an "over communicated society." Consumers develop "communication-avoidance routines" where they are likely to tune out commercial messages.

5.3 Sales Promotions (SP)

Sales promotion is one level or type of marketing aimed either at the consumer or at the distribution channel (in the form of sales-incentives). It is used to introduce new product, clear out inventories, attract traffic, and to lift sales temporarily. Sales promotions are short term and can be designed targeting final consumers or the trade. Consumer promotions such as coupons, sampling, premiums, sweepstakes, price packs, low-cost financing deals, and rebates are purchase incentives in that they induce product trial and encourage repurchase.

Sales promotion targeting traders are allowances for featuring the brand in retail advertising, display and merchandising allowances, buying allowances such as volume discounts and other volume-oriented incentives, bill back allowances such as pay-for-performance incentives, incentives to salespeople, and other benefits to encourage wholesaler and retailers to carry the item and to push the brand.

Researchers have found two main perspectives regarding sales promotion in firms' total marketing plan. First on is about the view of sales promotion as supplemental to advertising in that it connects the role of advertising with personal selling. This view regards sales promotion as a minor player in the marketing communication program. The next observation on sales promotion and advertising is, it is a distinct function with specific objectives and strategies very different from each other. Sales promotion in this logic is equal to or even more imperative than advertising. For that view, many of the companies allocate as much as 75 percent of their advertising or promotion budget to sales promotion and just 25 percent to advertising. Finding the right balance is often a difficult task. There is no doubt that sales promotion providing incentives that gives quick increase in sales volume and in long run it helps to boost brand identity and brand image.

5.4 Personal Selling (PS)

In general term, Personal selling is where businesses use people (the "sales force") to sell the product after meeting face-to-face with the customer. The sellers promote the product through their attitude, appearance and specialist product knowledge. They aim to inform and encourage the customer to buy, or at least trial the product.

Personal selling actually means dealing with all person-to-person contacts with existing and potential customers with the aim of introducing the product to them, convincing him or her of the product's value, and closing the sale. The responsibility of personal selling varies from organization to organization, depending on the nature of product, size of the company, type of the industry, and the products or services it is marketing. Many of the firms emphasized on personal selling this much that they regularly train and develop sales and other representatives improve their interpersonal skills with clients, customers, and prospects. They are regularly offering employee reward programs for their effective role in sales management. Personal selling is the most useful way to make a sale because of the interpersonal communication between the prospect and the salesperson. Messages can be customized to specific situations; immediate feedback can be received and processed according to need. But personal selling is comparatively most expensive tool in a marketing promotion.

5.5 Direct Marketing (DM)

Direct marketing, the oldest and effective form of marketing communication, is the process of communicating directly with target customers to persuade response by telephone, mail, and electronic means. The main users of direct marketing include but not limited to retailers, wholesalers, manufacturers, and service providers, and they use a variety of methods including direct mail, telemarketing, online shopping services, cable shopping

networks, direct-response advertising and infomercials. Because of its wide accessing nature consumer firms to nonprofit organization all are investing good amount of money in direct marketing. Direct marketing become more popular because of some socio-cultural change which include women's role changing in society, reduced the amount of time for shopping, cards for payment of goods and services, faster to purchase executions, technological advances in telecommunications and computers allow consumers to make purchases from mobile places via telephone, television, or computer, mobile or any other electrical portable devices.

So companies are preparing to target more precisely a segment of customers and prospects with message tailored to their specific needs and characteristics. Unlike advertising and public relations, this often not directly attached with ensured sales, direct marketing offers accountability by providing tangible outcome. Direct marketing can reach individual consumers and develop a long term sustainable relationship with each of them which not only strength the annual sales but also a strong loyalty for further business opportunities. Analyzing of previous reports of brands it is observed that brands with strong brand equity are more successful in direct marketing efforts than less popular brands. Direct marketing works best when other marketing communication, includes traditional media advertising, supports the direct marketing effort largely. Direct marketing has weakness as well, it is often said as being less sales oriented and more relationship oriented. Consumers are bombarded with mail, infomercials, and telemarketing pitches daily which can result negatively if not monitored with targeted strategies. Drawback includes privacy issues of customers, creating mistrust, expensive and more complex use of database management.

5.6 Sponsorships (Event Marketing)

Sponsorships (event marketing), merge advertising and sales promotions with public relations and publicity strategies. Sponsorships increase simultaneously awareness of a company or product or services, build loyalty with a target audience, facilitate differentiate a product and service from its competitors, demonstrate commitment to a community or ethnic group, endow with merchandising opportunities. Most of the sponsorships strategies are initiated to build long-term associations. Though the value of sponsorships can be very difficult to measure, yet its presence in a firms integrated marketing communication plan is very essential. Recent statistics shows sports sponsorships make up about two-thirds of all sponsorships.

5.7 Social Media Marketing

The idea of social media marketing basically describes the process of promoting business through social media channels. It becomes the powerful marketing means that is defining the way people are communicating, engaging and expressing their everyday life. It is low-cost, large traffic, interactive and more linkages for further understanding promotional methods for most of the businesses. Social media currently become very effective tool; with its help companies can get their required information, product description and other

promotional issues in this net working world. Because of its wide acceptance organizations are allocating good amount of budget for online marketing and presence, where majority of investment and engagement are on social media. Facebook, Instagram, Myspace, Google Plus, Twitter are so popular that almost who ever use internet has one account and spending significant amount of time surfing in it.

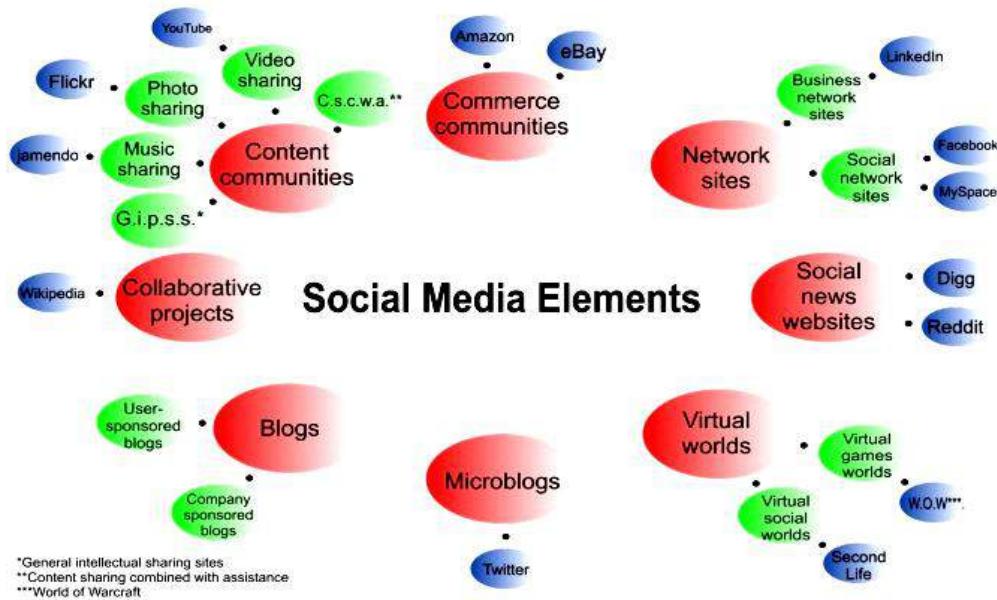


Figure 01: Elements of social media with associated of marketing objectives.

Source: Manuel Eugenio Lopez y Gonzalez, (2012), Social media in an integrated marketing communication strategy, Norway.

5.8 Internet Marketing

Internet is one of the most incredible inventions for modern technology, playing a very unique role in almost every sector of our daily life. Marketing is also involve and using it quite fruitfully. Internet marketing often called as i-marketing, web-marketing, online-marketing or e-Marketing, is the marketing of products, services, idea, person and place over the Internet. Marketers are reaching global audience through integrating internet in its marketing plan. The interactive nature of internet marketing in terms of providing instant responses made it most popular among young generation. Marketing via e-mail and wireless media are also some time considered broadly in internet marketing.

I-Marketing or internet marketing also refers to the placement of media along several multiple stages of the customer engagement through search engine marketing (SEM), search engine optimization (SEO), Web 2.0 strategies, banner ads on specific websites, e-mail marketing and other internet strategies.

5.9 Mobile Marketing

The growth of mobile use by mass population, make it as one important vehicle in a firms' marketing mix. Basically mobile marketing means communicating with the consumer via mobile devices. It can be done through sending a simple marketing message, to introduce them to a new audience participation-based campaign or to allow them to visit a mobile website. It is cheaper than traditional means for both the consumer and the marketer, easy enough for almost any age group to understand and engage and response, which enables e-marketing strategies implemented more effectively in most cases.

6. Social media and its importance

The integration of social media in integrated marketing communications is no more an auxiliary thought. This is done with the purpose to create the theoretical framework of this thesis work. The following figure shows the importance and the supplementary as well as power to act separately in enterprises marketing communication strategies.

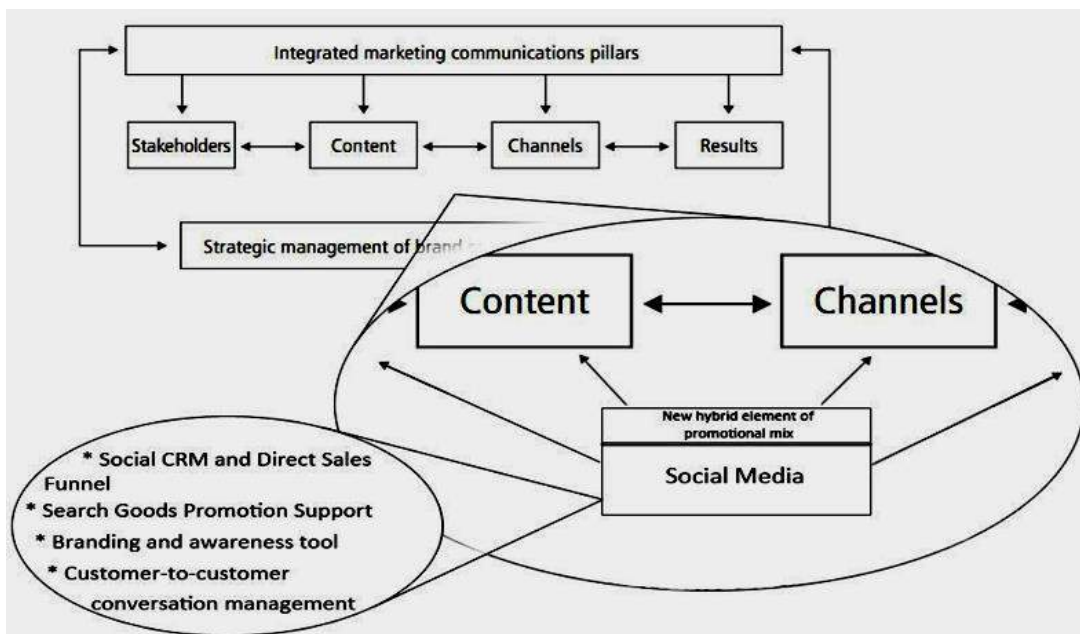


Figure 02: IMC and Social Media incorporation plot according

Source: Kristijonas Lucenko, 2012

To engage and learn from social media, and its different services available for incorporated with marketing plan the seven building blocks are as follows: identity, conversations, presence, relationships, reputation, sharing, and groups an play a vital role as recommended by Hermkens et al. (2011) provide a definition for the building blocks below:

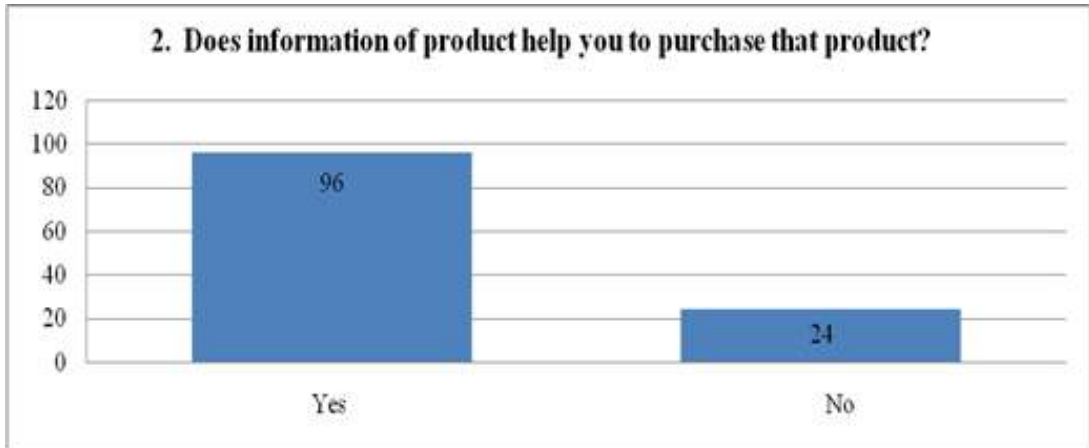
- Identity: means the amount of personal information the users are willing to share in a social media environment.
- Conversations: represent the extent to which users communicate on a social media setting.
- Sharing: is the content that users, receive, distribute, and trade among themselves.
- Presence: represents the ability of the users to know when others are online.
- Relationships: are the levels in which the users are able to associate one with the other.
- Reputation: Represents how aware are the users of their standing and that of others in a social media setting.
- Groups: This building block represents the ability of users to create communities and sub-communities. According to what certain site wants to accomplish, there will be a different focus on which building blocks are going to be developed further.

Worldwide, there are over 2.01 billion monthly active Facebook users for June 2017 (Facebook MAUs) which is a 17 percent increase year over year. There are 1.15 billion mobile daily active users (Mobile DAU) for December 2016, an increase of 23 percent year-over-year (Source: Facebook official statistics as of 2/01/17). 42% of marketers report that Facebook is critical or important to their business. (Source: State of Inbound Marketing 2012, The Takeaway) .16 Million local business pages have been created as of May 2013 which is a 100 percent increase from 8 million in June 2012. (Source: Facebook). Facebook marketing has transformed how business is conducted, and its use by local businesses to extend their markets continues to explode. These statistics show the significant growth of social media and how important it becomes for all the organizations for their marketing communication and business strategies.

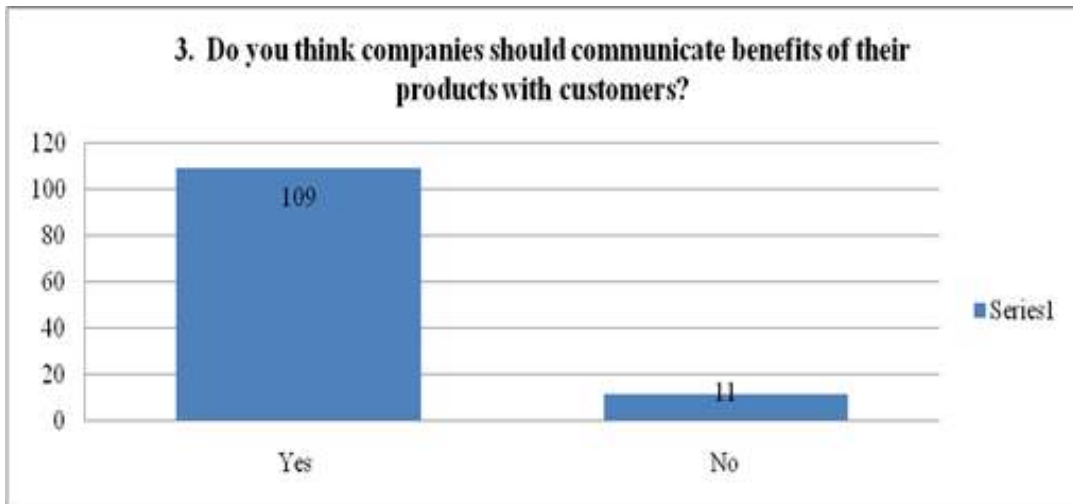
7. Analysis and findings

On the basis of collected data from participants, the following analysis has been made where the discussion on frequency, importance and expose to communicative media of usage of social media, preference of social media, preferred internet platform, internet using expenditure, popularly followed brand and tools etc are conducted to find a suitable guideline for marketers who are promoting their products already on digital platform and for also for them who want to do the same.

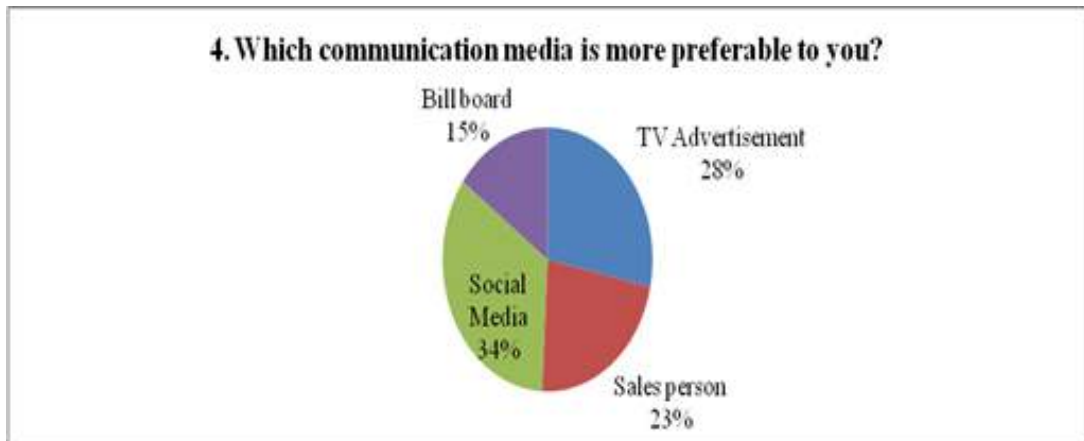
Respondents were asked understand the motive of consumer of their willingness to know about the product and the information related with it. Most of them (114) answered that they would love to know about the product before they purchase it, they wants to know. Only 6 of 120 answers they don't have any preference to know before buying to know about the product.



This statistics shows that consumer have more interest about the information cause they find these information help them to make purchase decision accurately. They assume it is more safe and wise to know about the product before they make any purchase decision. As the main purpose of integrated marketing communication is to make the target market aware about the product and maintain a smooth synergy among the other tools, it is quite obvious that connecting with proper IMC plan will make more information available and hence ensures more purchase decisions.

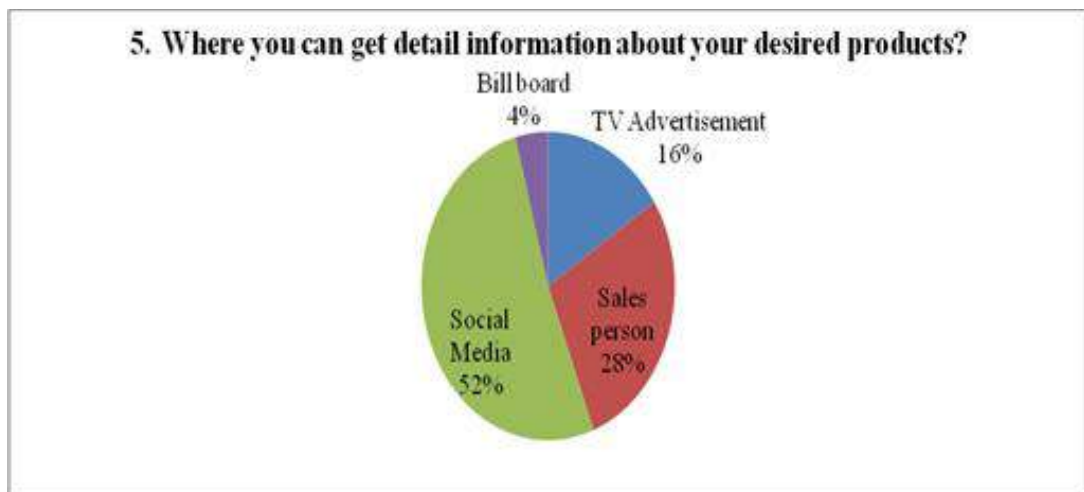


This was an open question to know how the consumers react being communicated by the companies regarding benefits of their products and services. Surprisingly about all of them (109) replied they think it's normal or they find its useful to get information from respected companies to know about the products and services.



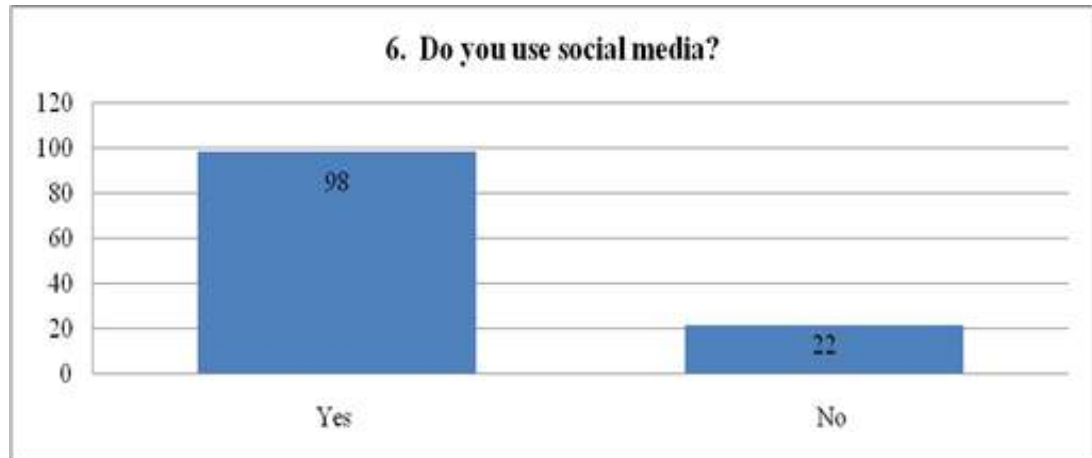
The good sign about promoting through digital media or internet marketing is, most respondent agrees on its reaching to get information about the products. So, it is widely used in searching , getting information or alternative evaluation by the respondents.

This research was also done to find out the popular tool in marketing communication. Majority of the respondents (34%) actually following social media through audio-video contents and other intreractive post and shared contents there. Next the TV advertisement, which is 28% and sales person 23% was preferred communicated tool among the surveyed population.

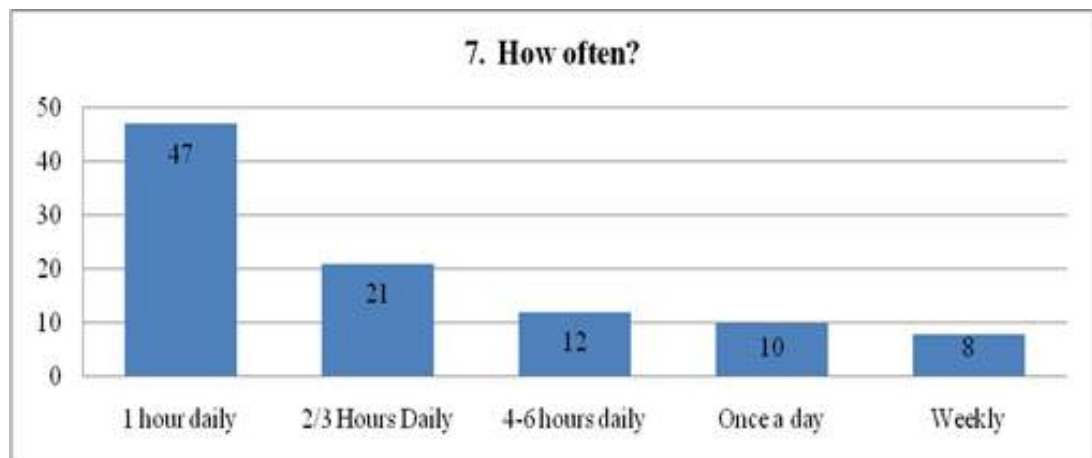


The senario of getting detail information by the consumers on product and service about 52% pointed that they find social media as more detail information providers, this also includes review, product origin, content and other related information detail in those social media. Sales person still providing quite wide renge of query by the consumer, old yet a strong vechile to ansewer consumers questions. Where as TV advertisment and billboard

advertisement have less significant role in term of giving detail information because of their time and space limitations.



Majority of the respondents showed that they use social media. 98 person of 120 use social media quite regular. Previous studies shows Facebook, Twitter, Instagram, Google plus were widely popular and used among the Bangladeshi population.



This research was done on regardless of age and gender and it is revealed that the frequency of using internet per day is 1 hours (47), which is nearly 39% of the total population. Studies shows that majority of them check updates quite often and regularly. The other respondents 21 use 2-3 hours, 12 person use 4-6 hours, 10 person once daily and the rest 8 use social media weekly once, these data shows majority of the population exposes as the potential target for digital marketers and social media is most used and timely reached platform.

8. Recommendations

This research with previous studies clearly shows the importance of integration of marketing communication by organization to maintain synergy. Studies have gone through the consumer's perception and presence in communicative media to reach them in time with less costly ways and of course in a more convenient ways. Following are the important indications of research recommendations to get the better and effective means of communication, use of effective tools in communication by organizations.

- a) The previous thought of using media as only a one way communicative style has changed, modern days communication become more interactive and interesting. So business firms as well as other organization should use those media where consumer feels themselves engaged and interested.
- b) The new approach of using marketing communication media become more strategic rather than only tactical, so the top management should get engaged with the organization's main vision and goal should be included in the firm's marketing plan.
- c) Consumers becoming more concern about what product they use, where it manufactured, what it contains and everything relating product benefit and purchasing methods. As TV advertisement, radio and billboard have limited space and costly it's nearly impossible for all organization to describe detail in those media. Whereas social media is convenient and easy accessed, no or less costly it is recommended the more frequent presence with detail information is needed there.
- d) Social media as it is consumer dominated media, is widely trusted and viral among most people so firms should continuously updated and monitor social media and use it as a strategic tool in IMC plan. At the same time consumer do love to get information from sales person so the synergy and integration in sales pitch should be carefully monitored.
- e) Many firms do not fully comprehend to employ and learn the different services available from social media. Discussed seven building blocks - identity, conversations, presence, relationships, reputation, sharing, and groups should be considered when designing strategic mapping of a firms marketing communication.
- f) People are more spending time in social media in interesting contents and unique ideas, so it is recommended that firms should make sure more presence in social Medias and continue with regular involvements uniquely.

9. Conclusion

The use of communication media is always regarded as vital decision for very organization. The main objectives of communication includes providing information, peruse, remind or retain the customer can only be successful when all the communicative tools create and

execute similar message and bring synergy among them. Integrated marketing communication plays this important role to bring this harmony and ensure effective communications. Whereas social media, the new tool of marketing communication, is the fastest growing and widely use media by mass population is not only cheap to access but also more effective to carry more detail information as the same time has the power to target individuals and can promote personalized marketing campaign. The use of facebook, twitter, youtube and instagram are becoming the most populated place these days. In small to big industry, consumer goods to person marketing everything are gaining popularity and effective result in investing social media. This rapidly changing technological environment also signals that marketers should also be aware of the change and be consumer oriented in term of communication message and its vehicles to reach target audience. A unique and meaningful presence in social media which is incorporated with the aggregate IMC plan can only help a organization for long-term sustainable objectives and goals achievements.

Reference

1. Albesa, J. G., 2007. Interaction channel choice in a multichannel environment, an empirical study. *International Journal of Bank Marketing*, 25 (7), pp.490 – 506.
2. Belch, G. E. and Belch, M. A., 2004. *Advertising and Promotion – An Integrated Marketing Communications Perspective*. 6th ed. New York: Tata McGraw-Hill.
3. Blackshaw & Nazzaro (2004). *Consumer-Generated Media (CGM) 101: World-of-Mouth in the age of the Web-fortified consumer*. <http://www.nielsen-online.com/downloads/>
4. Boone, L. E., Kurtz, D. L. (2007). *Contemporary marketing* (13th ed.). Thomson/SouthWestern.
5. Chaffey, D., Ellis-Chadwick, Johnston, K.F. and Mayer, R., 2003. *Internet Marketing: Strategy, Implementation and Practice*. 2nd ed. Edinburgh: Pearson Education.
6. Clow, K. (2010). *Integrated Advertising, Promotion and Marketing Communications* (4th ed.), Pearson Education, Upper Saddle River, (Chapter 1, 3)
7. Duncan T, Moriarty S (1997). *Driving brand value: using integrated marketing to manage profitable stakeholder relationships*. New York, McGraw-Hill.
8. Duncan, Tom R., and Everett, Stephen E., (1993). *Client Perceptions of Integrated Marketing Communications*. *Journal of Advertising Research* 33(5), pp.30-39.
9. Foux, G., (2006). *Consumer-generated media: Get your customers involved*. *Brand Strategy*, pp.38-39.
10. Holm O (2006). *Integrated marketing communication: from tactics to strategy*. *Corporate communications: Int. J.* 11(1):23-33.

11. Kaplan, A. M. and Haenlein, M., 2010. Users of the world, unite! The challenges and opportunities of social media. *Business Horizon*, [e-journal] 53 (1),
12. Kerr G, Schultz D, Patti C, Kim I (2008). An inside-out approach to integrated marketing communication: an international analysis. *J. Advertising* 27(4):511–548.
13. Kotler P, Keller KL (2009). *Marketing management*. New York: Prentice Hall.
14. Kietzmann, J.H., Hermkens, K., McCarthy, I.P., Silvestre, B.S. (2011). Social Media? Get Serious! Understanding the Functional Building Blocks of Social Media. *Business Horizons* 54(1), pp. 241-251.
15. Kristijonas Lucenko. (2012). *Integrated Marketing Communications and Social Media*, Bachelor Thesis, Department of Marketing and Statistics.
16. Mangold G. and Faulds, D., (2009). Social media: The new hybrid element of the promotion mix. *Business Horizons*, 52, pp. 357—365.
17. Manuel Eugenio Lopez y Gonzalez, (2012), *Social media in an integrated marketing communication strategy*, Norway.
18. McArthur, D. and Griffin, T., (1997). A marketing management view of integrated marketing Communications. *Journal of Advertising Research*, 37(5), pp. 19-27.
19. Percy L (1997). *Strategies for implementing integrated marketing communications*. Chicago: NTC Business Books.
20. Shimp TA (2003). *Advertising, promotion and supplemental aspects of integrated marketing communications*. (6th ed.), South-Western, Mason, (Chapter 1, 4).
21. Safko, Lon 2010. *The Social Media Bible: Tactics, tools & strategies for business success*. 2nd Edition. John Wiley & Sons, Inc. New Jersey. United States of America
22. Schultz, D. (2009). Solving Marketing Problems with an Integrated Process. *International Journal of Integrated Marketing Communications*, 1(I), 7-16.
23. Smith, P. R. and Taylor, J., 2004. *Marketing Communications: An Integrated Approach*. 4th ed. Malta: Gutenberg Press.
24. Stelzner, M. (2009). *Social Media Marketing Industry Report*. Michael A Stelzner, *New Communications Approaches in Marketing: Issues and Research Directions*, Winer / *Journal of Interactive Marketing* 108–117
25. Thorson E, Moore J (1996). *Integrated communication: synergy of persuasive voices*. New Jersey: Lawrence Erlbaum.

Promoting Decent Work for Domestic Child Workers in Bangladesh

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Abstract

Taking the aid of the housemaids in performing the households is a common phenomenon in Bangladeshi society, particularly in city life. The household sector is the largest and most open, yet invisible, form of informal labour in which children are predominantly preferred. Though the employer or the house owner does not get any direct financial benefit out of the maids' work, yet they enjoy the comfort of life at their expense. These children are reportedly exploited given the absence of any employment agreement. Many children become the subject of domestic violence. Hence there is a necessity for their legal protection. This article argues that a law is to be enacted for the protection of their best interests as well as for the development of the human rights situation in the country.

Keywords: Decent work, Domestic Work, Working Conditions, Labour Law functions, Human Rights

1. Introduction

In Bangladesh, domestic workers do not enjoy the status of the 'workers'. Rather they are treated as informal 'helping hands' in the day to day life of the worthy people. Frustratingly, they are also not protected by law. As such, they are often ill paid and insecure. Moreover, they can hardly claim a weekly day-off or a public holiday. At its worse, they often fall prey of criminal networks and become subject of trafficking and immoral activities. This is a clear case of exploitative situation and hence, suggests a dismal state of human rights practice in Bangladesh. Due to this situation, Bangladesh is lagging behind the international advancement on the issue of protecting the interests of the domestic child workers.

The house maids work in an obnoxious environment. They work for hours and are available on demand by the house-owners. They are accountable for accomplishing a variety of tasks from cleaning, cooking, looking after the children and livestock to collecting wood and many more. Some of these tasks can turn out to be very hazardous for very young children

or children who are tired and overworked. Therefore, they must be legally protected. Otherwise, the rule of law will merely be a buzz word.

2. State of Decent Work

The notion of decent work is open to interpretation. From human rights perspective, it implies the employment in conditions of freedom, equity, human security and dignity.¹ The International Labour Organization (ILO) terms the issue from a wider perspective. According to ILO, “Decent work involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men”.² United Nations Economic and Social Council has also endorsed this standard. To be treated as a decent work, it asks for a requirement of satisfaction of Article 7 of the International Covenant on Economic, Social and Cultural Rights (ICESCR). Article 7 of the ICESCR is reproduced below:

The State Parties to the present Covenant recognize the right of everyone to the enjoyment of just and favorable conditions of work which ensure, in particular:

- (a) Remuneration which provides all workers, as a minimum, with:
 - (i) Fair wages and equal remuneration for work of equal value without distinction of any kind, in particular women being guaranteed conditions of work not inferior to those enjoyed by men, with equal pay for equal work;
 - (ii) A decent living for themselves and their families in accordance with the provisions of the present Covenant;
- (b) Safe and healthy working conditions;
- (c) Equal opportunity for everyone to be promoted in his employment to an appropriate higher level, subject to no considerations other than those of seniority and competence;
- (d) Rest, leisure and reasonable limitation of working hours and periodic holidays with pay, as well as remuneration for public holidays.

Therefore, the above standards should be kept in mind while employing children in domestic works. The economic life of Bangladesh suggests that total elimination of child labor in domestic sector is not a reality. However, a progressive condition should be created so that gradually a standard can be achieved where the interests of the children are protected.

3. Current Challenges

Typically, children engaged in domestic work in Bangladesh have to work for unusually long hours -well above the official maximum number of working hours for workers in the

industrial sector. Most of them work seven days a week without any weekly holiday.³ Generally, these working children are either paid awfully inadequately or even not paid at all. These children are almost invariably cut off from their own families and are not in a position to bargain with their employers or complain about the maltreatments which they may suffer. The incidents of children employed as domestic workers haplessly suffering from persistent abuse and violence has routinely surfaced in media reports.⁴

To apprehend the current real situation the authors have talked to two domestic child workers. In an interview with a domestic child worker⁵ with some specific question we found that the child does not know whether she has any employment contract with her employer or not, her father can say. She had to work usually 7 days in a week and 8-10 hours in a day. She had to work on holidays also. She said that, she did not know what her daily/monthly income was and she did not enjoy any specific holiday in a week or month. She further said she had limited scope to watch television as a recreation but she got medical/financial assistance from her employer while she received any occupational injuries as well as general diseases.

In another interview with another domestic child worker⁶, we again found that she had no employment contract with her employer. She had to work usually 7 days in a week and 10-12 hours in a day. She had to work on holidays also. She told that, she did not know what her daily/monthly income was and she did not enjoy any specific holiday in a week or month. She further said she has scope to watch television at night as a recreation and she got medical/financial assistance from her employer while she receives any occupational injuries as well as general diseases. This two are merely two direct examples of how the house maid children are being exploited. A study shows that the child domestic workers are compelled by the employers to work even without any break for taking the opportunity of poverty and misfortune.⁷ 100% percent of the child domestic worker interviewed in the survey was found to work all the 7 days of a week. The study revealed that 22% percent child workers had to work 1-8 hours in a day while 53 % workers had to work 9-12 hours, 20% had to work 13-15 hours and 5% workers had to work 16-18 hours in a day.

The child workers access to recreational activities was found to be very limited. The children either had no time after work or were too tired after work to take part in recreational activities. They also lacked space for game and sports. However 79% percent of the working children mentioned watching TV or listening music is their main source of recreation as it involves minimum cost. 8% working children says that they have access to different indoors game, 5% have the facilities to perform games and sports while 8% have the others recreational facilities.⁸

4. Way Forward

Though the Constitution of Bangladesh is the highest instrument for protection and promotion of all segments of its people but it has also given some extra attention to the backward section. Article 14 of the constitution states “It shall be a fundamental

responsibility of the state to emancipate the toiling masses-the peasants and workers-and backward sections of the people from all forms of exploitation.” Again Article 15 (b) of the constitution provides that “the right to work i.e. right to employment at a reasonable wage having regard to the quantity and quality of work.” Furthermore Article 28 (4) of the constitution provides that “nothing in this article shall prevent the State from making special provision in favour of women or children or for the advancement of any backward section of citizens.”

Apart from the constitutional commitment, Bangladesh has ratified the Convention on the Rights of the Child, Article 32 (1) of which asks the state parties to recognize the right of the child to be protected from economic exploitation and from performing any work that is likely to hazardous or to interfere with the child’s education or to be harmful to the child’s health or physical, mental, spiritual, moral or social development. Bangladesh is also a party to the ILO Convention on the Worst forms of Child Labour.

The judiciary has also been proactive in asserting the need to protect the child from domestic of exploitation. In *Bangladesh National Women’s Lawyers Association The Cabinet Division of Bangladesh*⁹ the Supreme Court of Bangladesh addressed the multiple abuses to which child domestic laborers are subjected and highlighted the problems that girl children face when working in domestic settings. The Supreme Court also directed the government to take concrete steps to remedy these abuses and, in doing so, took a significant step toward protecting the rights of child domestic workers in Bangladesh.

Therefore, constitutional promise, judicial and international mandate requires that the state is under an obligation to promote an environment of the decent work for the domestic child workers. At times, the state took the excuse that as the matter is a policy affair so it requires time and resources. The courts’ observation is also bypassed being directive in nature. Most of the laws enacted by the state are related to the children in contact with law and children engaged in formal sector though 93% children out of 7.4 million are working in informal sector including domestic work.¹⁰

To give them a binding force a law should be enacted. Because law regulates different aspects and dimensions of our social, political and economic lives thus it will be an important instrument of protection and empowerment. The proposed law should include:

- A clear prohibition of employment of children under the age of 15;
- Specific time limit of work for the domestic child worker
- Employment and contract
- Definite minimum salary
- There must be scope for minimum study facility (at least the completion of primary level study);
- Working hour and work time must be specified

- Leave and leisure period should also be specified
- Domestic child worker must have a treatment facility or specific amount of taka per month for the treatment.
- Domestic workers will have the right to seek remedy in case of any conflict with his/her employer Violation of the law will be a criminal offence and in violation there must be specific punishment.

Besides the enactment of law, the establishment of specialized agencies to look into the matter is also necessary.

5. Conclusion

It may be stated that child labor, as it is today, cannot be completely eliminated unless the economy of the country is developed. In other words, child labor is such a major persistent economic issue in Bangladesh that it cannot be stopped simply by a piece of legislation; rather it can be eliminated only by adoption of suitable long term economic measures. Even then making a protective law can go a far way to save the children involved in the domestic service. In Bangladesh, existing child laws are uniformly violated, child welfare is deliberately trampled and children are made to work because of poverty. Poverty, illiteracy and deprivation are the major causes of domestic child labour in our country. Creation of awareness about child rights among children, their parents and framing of law may improve the situation. There are various organizations which are fighting against domestic child worker to take them under the coverage of law. Poor families should be given knowledge about **family planning/control** so that they are not burdened by children. It would be advisable not to keep small children at home for taking domestic help in daily household chores. Let us all should take some step in bringing smiles to many faces and make this world a beautiful place for a child to live in.

References

1. Islam, M. R.(2014), Study Report on Regulating the Unregulated Domestic Works by Children, Submitted to national Human Rights Commission, Bangladesh,p-4
2. Alamgir, M. “A Legal Study on Domestic Child Labour in Dhaka City,” Mphil Thesis (unpublished), Islamic University Kushtia, p-113.
3. Interview, Khadija, a 10 years old domestic worker
4. Interview, Ruma, a 12 years old domestic worker
5. Bangladesh national Women Lawyer’s Association vs The Cabinet Division ,Writ Petition No.3598 of 2010 at 13 also available at<http://www.lawschool.cornell.edu/WomenAndJustice/Featured-Comments/Featured-Csae-ChildDomestic-Worker-BD.com>

6. Save the Children(Sweden-Denmark),Living inside room outside law, A study on Child Domestic Workers and the Role of Government & Civil Society, October 2010,p54
7. [http://en.wikipedia.org/wiki/Decent work](http://en.wikipedia.org/wiki/Decent_work)

End Notes

1. http://en.wikipedia.org/wiki/Decent_work (last visited on 27.01.2015)
2. Ibid
3. Dr. Md. Rizwanul Islam, Study Report on Regulating the Unregulated Domestic Works by Children, Submitted to National Human Rights Commission, Bangladesh, June 2014,p-4
4. Ibid.
5. Interview, Khadija, a 10 years old domestic worker.
6. Interview, Ruma, a 12 years old domestic worker
7. Md. Alamgir, “A Legal Study on Domestic Child Labour in Dhaka City,” Mphil Thesis (unpublished), Islamic University Kushtia, p. 113.
- 8.
9. Bangladesh National Women Lawyer’s Association vs The Cabinet Division, Writ Petition No. 3598 of 2010 at 13 also available at<http://www.lawschool.cornell.edu/WomenAndJustice/Featured-Comments/Featured-Case-ChildDomestic-Workers-BD.com>
10. Save the Children (Sweden-Denmark), Living inside room outside law, A study on Child Domestic Workers and the Role of Government & Civil Society, October 2010, p54

A Model Study on Erosion Control of Embankment by Vegetation

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Abstract

*Embankment failures occur continuously throughout Bangladesh. From field surveys, the major causes of failure of embankments are identified as breach of the embankment, cutting by public, overflow, erosion, seepage and sliding. Other causes were poor planning, design and faulty construction. The cause of failure of flood control embankments could be attributed to erosion and sliding of embankment materials due to river encroachment and mitigation. From a strict economic viewpoint, cost of ramification of these problems is high, and the national budget for such works is never sufficient. It was found that the traditional practices for embankment protections are expensive, not eco-friendly and sometimes not effective due to improper design and construction fault for the designed life. On the other hand, protection of embankment slopes and river bank using vetiver grass (*Vetiveria zizanioides*) is being used in many countries of the world. This paper presents the application of vetiver system for slope protection and erosion control of embankment slopes. A small scale model study was conducted to find out the performance of vetiver grass on embankment slope against erosion. A slope was prepared with 1.5:1 (H:V) with sandy soil. Artificial rainfall was created with the help of a perforated GI sheet. Intensity of rainfall used in the model test was between 100 mm/hour to 125 mm/hour. It is found that vetiver grass can reduce almost 71% erosion of soil. It is also found that the vetiver grass is able to increase the factor of safety of embankment slope by 1.8 times with side slope 1.5:1(H:V).*

Keywords: erosion, vegetation, green technology, factor of safety

1. Introduction

Construction of earthen embankments, their repairing and rebuilding for flood control, irrigation and drainage have been the history of Bangladesh since time immemorial. Institutional steps for embankments construction started with the creation of the East Pakistan Water and Power Development Authority (EPWAPDA) in 1959. After the

independence of Bangladesh, the Bangladesh Water Development Board (BWDB) is the principal executive agency for construction, operation and maintenance of embankments in order to save lives and properties from natural disasters such as main river floods, flash floods in the east and northeast of the country, and saline intrusion in the lower delta. Over the last few decades, more than 13000 km of earthen embankments have been constructed along with this, some other constructions such as 7555 km of coastal embankments, 3674 km of irrigation canals, 3204 km of drainage channels, 7907 km of hydraulic structures like sluice gates and culverts, 1082 pump houses and 2 barrages are made (Hossain, et al. 2007). The estimate prepared by BWDB in 1984 shows that about 1200 km of bank length of rivers were subjected to erosion, 565 km of which faced severe erosion problems. The instability in river regime coupled with huge discharge and sediment load cause erosion, scouring and also deposition, and thus a chain action proceeds (BWDB 1987).

Other constructions vulnerable to rain and flood damage include about 7000 km of national highways, 90000 km of feeder roads and millions of homestead flat forms. The failure of embankments in Bangladesh is almost a recurring phenomenon and thus, continuing every year. In year 2007, a lot of earthen embankments, river banks, agricultural and forest land on terraces and hill slopes are subjected to erosion just at the start of the monsoon. Centre for Environment and Geographic Information Services- CEGIS in Bangladesh shows in a recent research that 0.1 million people become homeless every year in the country due to river erosion. In the last 34 years submerging of river side lands are 219286 acres in Jamuna, 69135 acres in Ganges and 95119 acres in Padma. To be concerned that, erosion in the Jamuna would cause 3408 acres of land, 543 localities, 3360 metres of embankment, 5160 metres of roads, 4 educational institutions, and 2 market place to be submerged by 2007. In the mean time, the Ganges would cause 1778 acres of lands, 136 acres of localities and 570 meters of roads while the Padma would cause 1600 acres of lands, 370 acres of localities, 3930 m of roads, 9 educational institutions, 5 market places and 1 Union Council office to be submerged in the river by recent rate of erosion (BWDB 1987).

The traditional practices for protecting embankments are expensive and sometimes not effective due to improper design and construction fault for the designed life. Biotechnology is an alternative solution for embankment protection. Past researches indicated that use of vetiver grass is a successful biotechnical method to protect the slope.

An alternative solution for the problems can be plantation of vetiver system along the slope of embankments and river banks (Truong et al., 1996). Vetiver root system not only serves the purpose of slope protection but also contributes to the green technology of today's world (Truong and Baker, 1998 and Ke et al., 2003). It adds green environment reducing pollution and as well as prevents soil erosion of embankment and river bank. Thus biotechnology might be a good alternative and effective solution for embankment protection in Bangladesh.

The main objective of this paper is evaluating the effectiveness of vetiver in erosion of slope from a model study.

2. Causes of Embankment Failure and Common Practices

Surface runoff and erosion contribute widely to land degradation in many parts of the world, because of their contributions to losses of water and soil fertility, on the one hand, and their intensification of flooding and surface water pollution risks, on the other hand. Top soil erosion of natural slopes become more vulnerable in bare soil where top surface is not covered with significant vegetation since vegetation acts as a natural reinforcement of soil. Main areas of erosion in Bangladesh are presented in Table 1.

Table 1: Main areas of erosion in Bangladesh

River	No. of location of bank/embankment erosion	Length of erosion (km)
Brahmaputra-Jamuna	41	162.60
Ganges-Padma	26	94.50
Meghna	8	72.00
Teesta	11	34.90
Minor river	112	92.30
Flashy river	75	23.00
Tidal river	32	85.80
Total	305	565.10

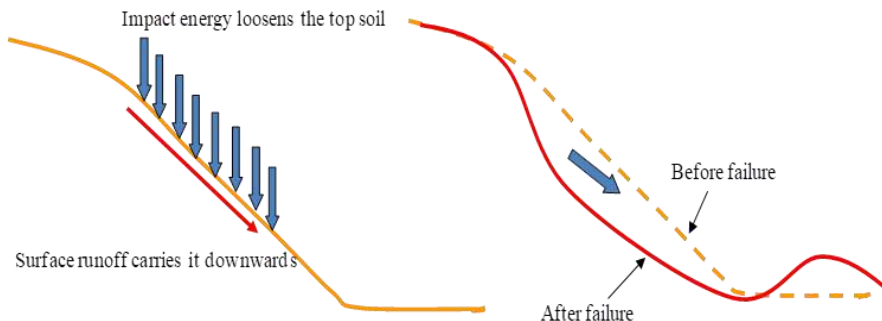


Figure 1: Mechanism of top soil erosion: (a) impact of rain fall on slope and (b) after slope failure due to rain fall

Two fold mechanisms may be involved with top soil erosion.

a) Raindrop impact energy loosens the top soil: After a rainfall over significant time raindrop impact energy may loosens the bond among the soil particles and becomes vulnerable to sheet erosion. The mechanism of top soil erosion is shown in Figure 1(a) and

b) Surface runoff carries it downwards: the loosened soil mass is subjected to an additional hydraulic push by the surface runoff, carries it downwards and induces a failure surface.

The traditional practice for protection of embankments/river banks in Bangladesh is to use cement concrete (CC) blocks, stone or wood revetments, geotextiles, geobags and plantation

etc. Usually, cement concrete (CC) blocks are used where storm surge is high. Sand bags and wood revetments are used where flow of water is moderately high. Protection of embankment by plantation is also another practice in our country. But unfortunately, it is also not effective during cyclone because of overturning or uprooting of trees. Most of the cases in embankments, sand bags were washed away from some portion of the embankment slope due to wave action. Thus it made the embankment slope unprotected and vulnerable at this portion and this weak portion may lead the embankment failure. The reasons of cement concrete (CC) blocks failure may be the lack of proper compaction of embankment slope, existing soft layer(s) below the embankment, lack of proper placement of CC blocks on the embankment slope or high tidal surge make the embankment toe weak and wash away the soil particles below the CC blocks, etc.

3. Bio-Engineering Method

Most developed and developing countries like Australia, China, India, Malaysia, Spain, Thailand and Zimbabwe use vetiver for different erosion protection works. It creates a simple vegetative barrier of rigid, dense and deeply rooted clump grass, which slows runoff and retains sediment on site. Binna or vetiver grass (*Vetiveria zizanioides*) is used in more than 100 countries of the world (Truong, 2000). The special attributes of vetiver is that it can grow on sites where annual rainfall ranges from 200 mm to 5,000 mm (Rahman et al., 1996). *Vetiveria zizanioides* at one year of age can produce the roots penetrating more than 1 meter deep. This somehow, depends on the conditions of the soil and health of the grass. The roots will be longest if the grass is grown in loose clay soil with good water drainage potential. Figure 2 shows the massive root system of vetiver grass.



Figure 2: Massive root system of vetiver grass

It can survive in temperature ranging from 0°C to 50°C. It grows on highly acidic soil types (pH ranges from 3.0 to 10.5). It is also high tolerant to Aluminum (Al), Manganese (Mn), Arsenic (As), Cadmium (Cd), Chromium (Cr), Nickel (Ni), Lead (Pb), Mercury (Hg), Selenium (Se) and Zinc (Zn) in the soil (Truong and Baker, 1998). Even in the soil with EC_{se} values 7.8 dSm⁻¹, the relative yield of vetiver grass is found to be 100%. But in soil with EC_{se} values of 10 and 20 dSm⁻¹ yield of vetiver is reduced by 10% and 50%, respectively (Truong et al., 2002). Its roots are very strong with high tensile strength of 75 MPa (Hengchaovanich, 1998). Vetiver hedges can survive even for more than 100 years (Verhagen et al., 2008).

The Vetiver System is used for soil and water conservation, infrastructure stabilization, pollution control, waste water treatment, mitigation and rehabilitation, sediment control, prevention of storm damage, and many other environmental protection applications through bioengineering and phytoremediation (Wikipedia).

The Vetiver System is the premier soil erosion method outside of temperate zones. Narrow hedgerows of Vetiver grass will spread out rainfall runoff across the slope, act as a filter to trap erosion sediment, create natural terraces and reduces the velocity of rainfall runoff. It has application for on farm soil and water conservation, rehabilitation of eroded lands, and prevention of erosion on sloping lands.

4. Experimental Program

Erosion model was developed to simulate the details of the soil erosion process on river or hill slopes. Soil was collected from Keraniganj, Dhaka, Bangladesh.

4.1 Physical and Index Properties of Soils

A detailed laboratory investigation was carried out to determine the physical and index properties of the soil samples collected from Keraniganj sites. The laboratory testing program consisted of carrying out specific gravity, moisture content and particle size analysis. All the tests were conducted according to ASTM standards.

4.2 Test set-up

Generally when the rain fall intensity exceeds soil infiltration capacity, the excess rain flows down and first forms a sheet flow on the slope. The process of sheet flow with water and sediment can be simulated in detail which may possibly render or truthful results for soil erosion.

The model had two basic parts:

- a) Container for preparing soil slope
- b) Rainfall distribution system.
- a) Container for preparing soil slope

The soil slope was prepared in a 3.8 mm thick 1.22 m×0.91 m×0.91m wooden container. 8 wooden stick was attach to the container to make a frame. Then 1.22 m long, 0.91 m wide and 0.81 m high soil slope was prepared the container. Tests were carried out on 1:1.5 slope of compacted silty sand which was collected from Keraniganj with 0.15 m horizontal support of same sand on toe side of the slope. Length of slope used was 1.22 m including 0.15 m on toe side. A schematic diagram of slope is shown in Figure 3.

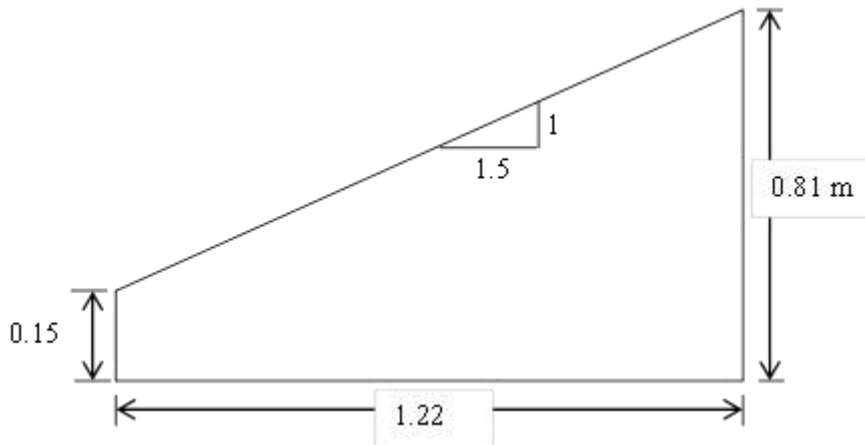


Figure 3: Schematic diagram of the slope

b) Rainfall distribution system

A perforated GI sheet was used to make the water distribution uniform throughout the soil slope. This tray looks like a grating of 2 mm opening with 25.4 mm center to center spacing. Average rainfall intensity of Bangladesh is 50-100 mm/hr. The rainfall intensity used in this model test was between 100 mm/hour to 125mm/hour to know the condition of soil at worst condition. Then rainfall was distributed uniformly over the soil surface from a constant height to maintain constant rainfall energy for all tests throughout the time.



Figure 4: Perforated GI sheet for rainfall distribution

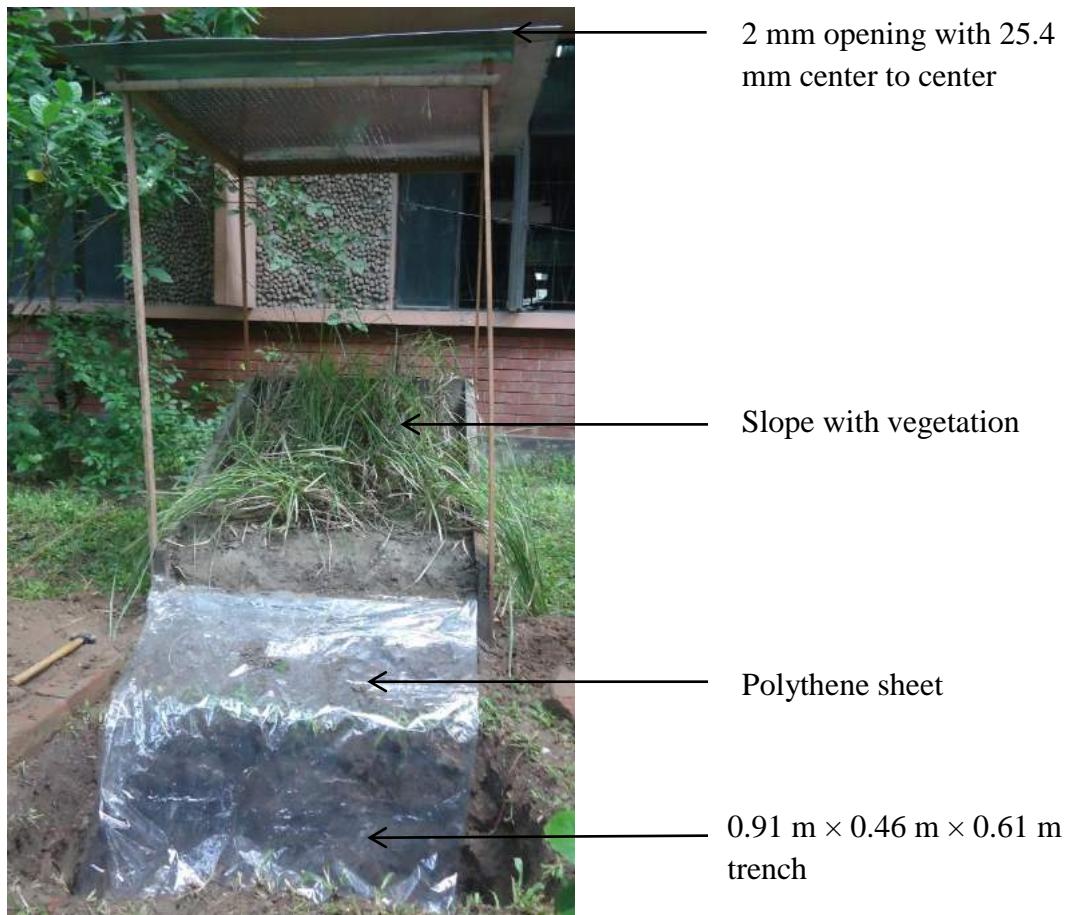


Figure 5: Test set-up for measuring top soil erosion

A plastic was added at the toe of the slope to minimize the water and soil loss. The soil eroded with runoff water was collected in synthetic geo-textile. Eroded soil mass were measured at ten minute interval and at last one hour. This process was done both bared slope and for vetiver covered slope. The test set-up is shown in Figure 5.

5. Test Result

5.1 Index Properties of Soils

Specific gravity of the soil sample is 2.7. The grain size analysis of the said sample is presented in Figure 6. Sand, silt and clay content the soil is 10%, 80% and 10% respectively, According to the percentage of contents the soil is sandy silt. From the Figure, it is found that the mean grain size, D_{50} and co-efficient of uniformity, C_u is 0.048 mm and 7.5 respectively.

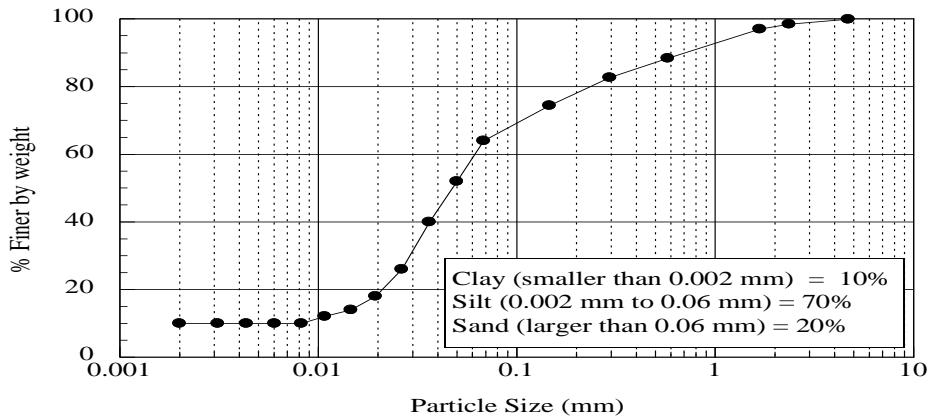


Figure 6: Particle size distribution of soil samples collected from Keraniganj

5.2 Top Soil Erosion Control

Figure 7 shows the condition of slope before and after test done on bared slope. A comparative result of soil erosion without and with vegetated cover is presented in the Figure 8. Cumulative percentage of soil erosion for two hours for both bare soil and vegetated covered soil, It may be seen from the graph that cumulative erosion of bare soil is significantly high (3.4% of total soil mass used for the test) compared to that of (below 0.96% of total soil mass used for the test) vegetated covered soil. Hence total reduction of erosion is almost 71% of total erosion.



(a)



(b)

Figure 7: Condition of slope: (a) before test and (b) after test

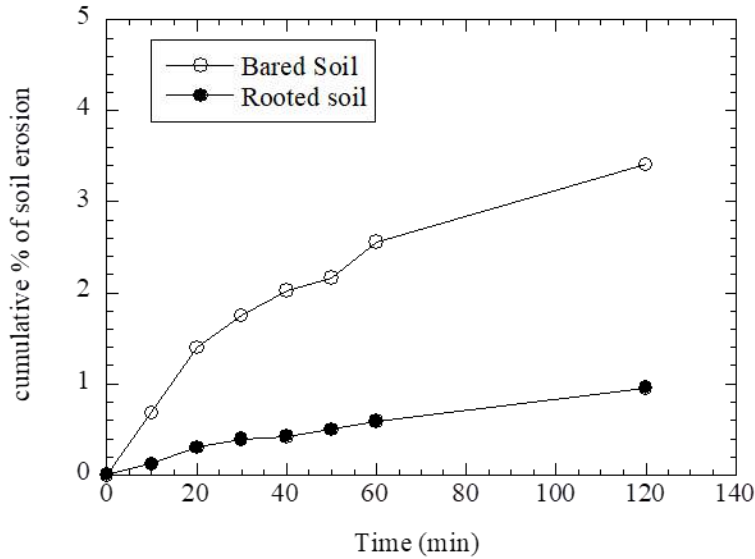


Figure 8: Cumulative percent soil erosion vs time graph

5.3 Estimation of Slope Stability

Field tests were conducted by Islam et al. (2013a) in Kuakata to determine in-situ strength and horizontal deformation failure of vetiver rooted soil matrix and bared soil. A special device was developed for conducting the field tests. From the physical laboratory test is found that the soil of Kuakata soil is silty sand which is nearly similar to Keraniganj soil. In-situ test data presented in Islam et al. (2013a) was used for determining the factor of safety (FS) using Coppin and Richards method (Islam et. al., 2013b).

The values of the parameters used for stability analyses both bared and rooted soil are presented in Table 2. From the table it is seen that the effective cohesion and angle of friction of soil due to soil reinforcement by roots enhanced 0.6 times and 0.5 times respectively than that of bared soil. For factor of safety analyses, it is assumed that the vetiver rooted crosses the slip circle and the side slope of embankment is 1.5:1.

For Bared soil the factor of safety (FS):

$$FS = \frac{c' + (\gamma z - \gamma_w h_w) \cos^2 \beta \tan \phi'}{\gamma z \sin \beta \cos \beta}$$

For Rooted soil the factor of safety (FS):

$$FS = \frac{(c' + c'_R) + [(\gamma z - \gamma_w h_v) + W] \cos^2 \beta + T \sin \theta \tan \phi' + T \cos \theta}{\{(\gamma z + W) \sin \beta + D\} \cos \beta}$$

The results of factor of safety analyses are shown in Table 3. It is seen that factor of safety for bared slope and rooted slope are 1.75 and 3.18, respectively. So, it is clear that vetiver root is effective for improving the factor of safety significantly.

Table 2: Parameters used for stability analyses

Effective soil cohesion, c' (kN/m ²)	13	13
Unit weight of soil, γ (kN/m ³)	18	18
Vertical height of soil above slip plane, z (m)	1	1
Slope angle, β (°)	33	33
Unit weight of water, γ_w (kN/m ³)	9.8	9.8
Vertical height of GWT above slip plane, h_w (m)	0.5	0.5
Effective angle of internal friction of the soil, ϕ' (°)	8.4	17
Enhanced effective soil cohesion due to soil reinforcement by roots, c'_R	-	9
Surcharge due to weight of vegetation, W (kN/m ²)	-	2.5
Vertical height of GWT above the slip plane with the vegetation, h_v (m)	-	0.4
Tensile root force acting at the base of the slip plane, T (kN/m)	-	5
Angle between roots and slip plane, θ (°)	-	45
Wind loading force parallel to the slope, D (kN/m)	-	0.1

Table 3: Analysis of factor of safety of an embankment with 1.5:1 side slope

Analysis Condition	Soil Properties			Factor of Safety
	γ (kN/m ³)	c' (kPa)	ϕ (°)	
Bared Slope	18	13	8.4	1.75
Rooted Slope	18	22	17	3.18

6. Conclusion

Embankment failure due to erosion is a common problem in Bangladesh. Plantation of vetiver system along the slope of embankments, river banks and hill slope is an alternative green solution to the problem. To determine the soil loss of bared slope and vegetated slope erosion tests were conducted on small scale models. Main findings of this paper are:

a) From the model erosion test, it is observed that erosion can be reduced by vetiver grass plantation. Vetiver grass reduces the erosion by 71%. Vetiver plantation works very well on

the embankment slope. It protects the slope from raincut erosion and sliding.

b) The results showed that cohesion and angle of internal friction of rooted soil is always higher than that of bared soil. From the obtained cohesion and angle of internal friction the stability of embankment slopes are estimated by using Coppin and Richards method of slope stability analysis. From the analyses, it is found that the vetiver grass is able to increase the factor of safety of embankment slope by 1.8 times.

From this analysis and investigation, it can be said that the vetiver grass plantation is effective to protect the embankment slopes against top soil erosion and runoff. It may act better in wave action. It also works against shallow depth failure. Plantation of vetiver can be a cost-effective, sustainable and eco-friendly method for the erosion control as well as shallow depth slope failure in Bangladesh.

References

1. Hossain, H.M., Sakai, T., and Kajisa, T. (2007). "Present Status of Embankments in Bangladesh: Case Studies in 2007". Proc. of the Intern. Agril. Engrg. Conf., 3-6 Dec., AIT, Bangkok, Thailand.
2. BWDB (1987). "Flood in Bangladesh 1987, Investigation, Review and Recommendation for Flood Control". Bangladesh Water Development Board, Dhaka, pp.6-63.
3. Truong, P. N., Gordon, I. and Baker, D. (1996), "Tolerance of vetiver grass to some adverse soil conditions," Proc. First Int. Vetiver Conf., Thailand.
4. Truong, P. N. and Baker, D. (1998), "Vetiver grass system for environmental protection," Technical Bulletin No. 1998/1, Pacific Rim Vetiver Network Office of the Royal Development Projects Board, Bangkok, Thailand.
5. Ke, C., Feng, Z., Wu, X. and Tu, F. (2003) "Design principles and engineering samples of applying vetiver eco-engineering technology for steep slope and riverbank stabilization," Proc., 3rd Int. Conf. on Vetiver (ICV-3), Guangzhou, China, pp. 349-357.
6. Truong, P. (2000). "Vetiver Grass System: Potential Applications for Soil and Water Conservation in Northern California", Invited paper presented at the Stiff Grass Technology Seminar, at Woodland.
7. Rahman, M. M., Islam, M. A., Rashid, S. H., Mia, M. M. K. and Rahman, M. H. (1996). "Study on the Distribution a Potential Of Vetiver Grass in Bangladesh", Bangladesh Journal of Plant Taxonomy Vol. 3, No. 2, pp. 1-16.
8. Truong, P., Gordon, I. and Armstrong, F. (2002). "Vetiver Grass for Saline Land Rehabilitation under Tropical and Mediterranean Climate", Paper presented at the Productive Use and Rehabilitation of Saline Lands National Conference, Fremantle.

9. Hengchaovanich, D. (1998). “Vetiver Grass for Slope Stabilization and Erosion Control”, Tech. Bull. No. 1998/2, PRVN/ORDPB, Bangkok, Thailand.
10. Verhagen, H. J., Jaspers, F. D. J., Algera, A. and Vu, M. A. (2008). “The Use of Vetivers in Coastal Engineering”, Copedec VII, Dubai, UAE.
11. ASTM, Annual Book of ASTM Standards, Vol.04.08, Soil and Rock; Building stones; Geotextiles, 1989.
12. Islam, M. S., Arifuzzaman, Shahin, M. H. and Nasrin, S. (2013a). “Effectiveness of Vetiver Root in Embankment Slope Protection: Bangladesh Perspective”, International Journal of Geotechnical Engineering, Vol. 7, No. 2, pp. 136–148.
13. Islam, M. S., Nasrin, S., Moury, F. R. and Islam M. S. (2013b). “Use of Vegetation and Geo-Jute in Erosion Control of Slopes in a Sub tropical Climate”, Journal of World Academy of Science, Engineering and Technology, Vol. 73, pp. 1162–1170.

Significance of Ecosystem Services of Soil in Food Security, Climate Change Adaptation and Mitigation

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Abstract

Food security exists when all people at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Nowadays unstable level of natural temperature, humidity and rainfall has created an apprehension of climate change. Both issues are closely interconnected with soil. Soil is the most noteworthy natural building block in our environment for biological communities. It is very essential natural resource as it cannot be replaced if it is cracked through excessive soil erosion caused by an anthropogenic activities and it is the base for the evolution and development of human civilization. Proper utilization of soil ensures the food security and helps to acclimatize with climate change. Soil or land is the mother of resource and industry is the father, so it is a mediator of food security and a mitigating factor of climate change. This study highlights the significance of soil in food security and climate change adaptation and mitigation.

Keywords: Soil, Ecosystem services, Food Security, Climate Change

Introduction

Healthy status of soil is fundamental for our natural environment. Structured and fertile soil works as a medium of ensuring food security as well as an adaptation and mitigation factor of climate change. Soil is a natural body comprised of minerals, organic matter, liquid and gases that occurs on the land surface, occupies space, and is characterized by one or both of the horizons or layers that are distinguishable from the initial material as a result of losses, transfers, and transformations of energy and matter or the ability to support rooted plants in a natural environment. Soil provides water, nutrients for plants and trees in natural forests and Grasslands, perennial crops and planted grassland. It provides the habitat for decomposer organisms which have an essential role in the cycling of carbon and mineral nutrients. Soil acts as a buffer for temperature change and for the flow of water between the atmosphere and ground water. Soil has ion exchange properties and it acts as a pH buffer, retains nutrient and other elements against loss by leaching and volatilization. The increasing human population, particularly in the third world, presents a new problem. In many parts of the world, the development of higher-yielding crop varieties and more intensive use of fertilizers, pesticides and irrigation have led to the over production of food. In addition, there is a public concern about the quality of food, drinking water and air.

Methodology of the study

Data has been collected by studying and reviewing diverse journals and articles, textbooks and news papers. Primary source includes informal conversation with experts who understand the pros and cons of 'ecosystem services of soil'. In general, personal views have been integrated in this learning.

Soil: A Component of Ecosystem

An ecosystem can be defined as a community of interacting organisms and its environment functioning as a reasonably self-sufficient unit. A terrestrial ecosystem consists of primary producers (trees, herbs, grasses) and decomposers (microorganisms, herbivores, carnivores). The primary producers are photoautotrophic, that is, they use some of the energy from the sun to convert atmospheric carbon dioxide into organic compounds, a process that requires water and nutrients which are supplied from the soil. The organic compounds are used by herbivores and carnivores as a source of energy, and carbon compounds are used to build their tissues; some of the energy is lost as heat and some of the carbon is respired as carbon dioxide. The most active group of decomposers is the soil microorganisms. The end product of oxidation of carbon in organic compounds is carbon dioxide, which returns to the atmosphere. The nutrients taken up from the soil are partly retained in the vegetation and the animals and partly returned to the soil. Although there are additions from outside, especially of water and there are usually leakages, for example in drainage water, the soil, vegetation and associated animals form a unit which is roughly self-contained. Soil is an essential component of the terrestrial ecosystem of Earth. It supports plant growth and provides a habitat for large numbers of animals and microorganisms that decomposes leaf, litter and plant residues, thereby helping to cycle the nutrients on which plant growth depends. Soil also supports the growth of arable crops, grassland and trees on which man depends for food, fiber, and wood for fuel and as a building material. An increasing world population requires more of these resources. This requirement can be met by bringing more land into cultivation, by more intensive use of land, or by a combination of the two. Soil creates an ecosystem which interacts with each other and with their physical and chemical environment. The inputs are carbon compounds from the primary producers, water, oxygen and nitrogen from the atmosphere, and essential nutrients from mineral weathering. Between these extremes are life zones, in which soils support a particular type of flora and fauna and there is a characteristic climate. Tropical rainforest and boreal forests are examples of life zones.

Soil: Ecosystem Services

The ecosystem services provided by soil are linked to its key functions. These functions include Production of biomass, Storage, filtration and transformation of nutrients, substances and water, Provision of habitat, species and genetic biodiversity, Provision of the physical and cultural environment for humans and their activities, Provision of raw materials, Carbon storage and cycling, Protection of archaeological heritage. Soil condition

and type determine its ability to function and to provide ecosystem services. There are different types of ecosystem services of soil. Such as, 1. Water purification and soil contaminant reduction which functional processes are atmospheric deposits, applied fertilizers, pesticides, clay particles, organic matter degraded by soil biota as well as contributing factors are soil texture, soil structure, organic matter, genetic and functional biodiversity of soil biota. 2. Source of biochemical's and pharmaceuticals which functional processes are Bio-diverse soil biota could be a source of new pharmaceuticals, recycle dead vegetative matter and organic waste products releasing nutrients available for plants and contributing factors such as soil structure, organic matter, availability of water and oxygen, PH ,toxic ions etc. 3. Carbon sequestration which functional processes are carbon, soil organic matter, 58% organic carbon as well as contributing factors are carbon storage capacity, nutrient availability, temperature, soil moisture, biotic activity of soil, vegetation. 4. Terrestrial ecosystem life support which functional processes are soil horizon and ecosystem development as well as contributing factors are topography, climate, temperature, vegetation, surface materials, rainfall and succession. 5. Nutrient cycling including food fiber production which functional processes are soil biota, mineral, organic matter as well as contributing factors is fungi, different roots, chemical fertilizers, nutrient availability. 6. Foundation for human infrastructure which functional processes are soil and surface materials, bedrock as well as contributing factors are bulk density, void space and moisture content. 7. Regulation of green house gases which functional processes are CO₂, CH₄ and N₂O as well as contributing factors are soil moisture, nutrient content, microbial activity. 8. Remediation of Soil contaminated by diffuse airborne pollution which functional process is Soil biota metabolize contaminants through oxidative or reductive processes as well as contributing factors are Microorganisms require nutrients (C, N, P or trace amounts), moisture (generally at 40-60%), and appropriate pH (5.5-8.5) and appropriate temperature (15-45⁰C), plus oxygen for the oxidative processes.

Soil and Food Security

The Food Security Insight series provides balanced analysis of food related research, for use by policy-makers. Soils are vital for the production of crops and fodder. Soil and its management are very essential to ensure food security. Nowadays farmers of third world countries use inimical chemical pesticides for colossal production. But the pesticides are dreadfully inimical for soil health. DDT, Dieldrin, Eldrin has scratched our soil resources. People have to understand the importance of soil. It helps to keep plants, crops after all our life. We see in urban area people throw solid waste, liquid waste on soil that hampers the soil body. It is important to mention here that, polythene has also disrupted our soil which decreases our crop production. Soil is interconnected with food security. When soils are in good condition, they have the potential to provide society with a range of ecosystem services. Ecosystem services of soil provide effective nutrient cycling, water retention, soil formation, habitat for biodiversity, exchanging capacity of greenhouse gases with the atmosphere, capacity to degrade of complex materials. Besides healthy soil regulates flooding, screens the pathogen,

keeps the limit contaminants and agrochemicals and storages of carbon and other greenhouse gases as well as provides a basis for food and fiber production and for recharging water supplies.

Soil Fertility and Food Security

Globally, two thirds of the world's population lack one or more of the essential nutrients, with over 60% being iron deficient, over 30% being zinc deficient, nearly 30% iodine deficient and about 15% selenium deficient. The reason for this deficiency is either because of the low availability of these essential mineral elements in the soil or because the crops that people consume have inherently low tissue concentrations of certain mineral elements. One way of enhancing the nutritional value of crops or fodder is to increase the nutrient content of plants by adding mineral fertilizers to soils. Other methods include carrying out conventional breeding or genetic modification. To improve the fertility of soil, a number of interventions are often made (e.g. the use of fertilizers and tillage, which can also affect soil properties such as nutrient status, pH, organic matter content and physical properties). Such interventions can be detrimental to other ecosystem services, leading to conflict management options for agricultural soils. Regarding the environment and economic development the following practices can be adopted by farmers to improve agricultural soils, (e.g. the organic matter content, climate change mitigation potential, physical properties and water holding capacity of soil) reduced tillage practices can benefit soil structure, fertility, rates of root growth, water infiltration.

Global Food Security and Soil Carbon Sequestration

Depletion of Soil, oxygen, carbon stock from the root zone has adversely affected the soil productivity and environmental quality of these regions. The soil carbon sequestration is a bio membrane that filters pollutants, reduces sediment load in rivers, decreases hypoxia in coastal ecosystems, degrades contaminants and is a major sink for atmospheric CO₂ and CH₄. Fertilizer application is an important strategy of increasing crop yield in Agriculture, but its effectiveness is enhanced when used in conjunction with crop residue mulch or trees. Soil Carbon sequestration is a strategy to achieve food security through improvement in soil quality. While reducing the rate of enrichment of atmospheric concentration of CO₂, soil Carbon sequestration improves and sustains agronomic productivity. It has the potential to offset fossil-fuel emissions by 5 to 15% of the global emissions. Soil organic carbon is an extremely valuable natural resource. Irrespective of the climate debate, the Soil Oxygen Carbon stock must be restored, enhanced and improved. The soil Carbon sequestration potential of this win-win strategy is finite and realizable over a short period. The close link between soil Carbon sequestration and world food security on the one hand and climate change on the other can neither be overemphasized nor ignored.

Soil, Climate change and Carbon Cycle

Soil helps to combat and adapt with climate change by playing a key role in the carbon cycle. When managed sustainably, soils can play an important role in climate change

mitigation by storing carbon and decreasing greenhouse gas emissions in the atmosphere. Restoration of degraded soils and adopting soil conservation practices, there is major potential to decrease the emission of greenhouse gases from agriculture, enhance carbon sequestration and build resilience to climate change. The carbon cycle is the exchange of carbon between the atmosphere, ocean, terrestrial biosphere and geological deposits. Most of the carbon dioxide in the atmosphere comes from biological reactions that take place in the soil. Carbon sequestration occurs when carbon from the atmosphere is absorbed and stored in the soil. This is an important function because the more carbon that is stored in the soil, the less carbon dioxide there will be in the atmosphere contributing to climate change. Such as, Plants use carbon dioxide from the atmosphere, water from the soil and sunlight to make their own food and grow in a process called photosynthesis. The carbon they absorb from the air becomes part of the plant. Animals that feed on the plants pass the carbon compounds along the food chain. Most of the carbon the animals consume is converted into carbon dioxide as they breathe, and is released back into the atmosphere. When the animals and plants die, the dead organisms are eaten by decomposers in the soil and the carbon in their bodies is again returned to the atmosphere as carbon dioxide. In some cases, the dead plants and animals are buried and turn into fossil fuels, such as coal and oil, over millions of years. Climate change represents a serious threat to global food security, not least because of its effects on soils. Changes in temperature, humidity and rainfall patterns can have a great impact on the organic matter and processes that take place in our soils, as well as the plants and crops that grow from them. In order to meet the related challenges of global food security and climate change, agriculture and land management practices must undergo fundamental transformations. Improved agriculture and soil management practice increases soil organic carbon, such as agro-ecology, organic farming, agricultural conservation and agro forestry. They produce fertile soils that are rich in organic matter, keep soil surfaces vegetated, induce fewer chemical and promote crop rotations and soil biodiversity.

Organic and Peat Soils to Mitigate Climate Change

The vital role peat lands play in avoiding and reducing greenhouse gas emissions as well as in water regulation and unique biodiversity conservation. The Organic Soils and Peat lands Climate Change Mitigation Initiative is a network of organizations established to raise awareness about peat lands, promote strategic action for reducing greenhouse gas emissions from peat lands and organic soils, and safeguard their other vital ecosystem services. It includes secure untrained peat lands to prevent emissions; rewet drained peat lands to reduce emissions; adapt management strategies for peat lands that cannot be rewetted. The natural carbon cycle includes natural char production from wildfires, the ensuing transport of char from the soil to watercourses and the ultimate burial in marine or estuarine sediments. The potential of this system enhances the contribution that char makes to the natural carbon cycle through the addition of biochar in soil is a topic of much public discussion and a rising profile in influential policy circles. It is useful to consider a biochar-based strategy against more established approaches to increase the organic carbon stored in

soil, such as the use of manures and composts.

Soil Organic Matter and Climate Change

To understand the significance of carbon in soil in the form of biochar, its characteristics and dynamics should be compared to those of the remaining soil organic matter which accounts for most of the carbon that exists in soil. Peat soils comprise mainly organic matter and contain much more carbon on a per unit area basis. Most organic matter in soil is derived from plant roots, plant debris and microbial re-worked substances. The presence of soil organic matter is important for a range of useful soil properties. The process of microbial energy acquisition from substrate is accompanied by a release of various nutrient elements which may be conserved in the soil in microbial biomass. A portion of certain nutrients may also be released in soluble form and a fraction may be lost from the soil through leaching or run-off; which is essential to crop nutrition. It is a case where external nutrient provision is limited. Overall, a balance slowly develops between the rate of carbon addition and the emission of CO₂, which are specific to the land-use and environmental conditions. The amount of organic matter maintained once this balance is reached, depends on its average rate of turnover. Although conversion of soil has been promoted as an approach to enhance soil organic matter as well as to control erosion and conserve water. Managing decomposition in soil by manipulating the quality of inputs has been explored extensively in tropical environments where decay is rapid. Thus the main emphasis in the sequestration debate has been focused on increasing soil carbon by increasing organic matter additions in the form of straw or other crop residues, and from external sources such as manures and a range of organic wastes: sewage sludge, municipal compost, paper waste and so on.

Soil Carbon Sequestration to Mitigate Climatic Hazards

Adaptation to climate is the process through which people reduce the adverse effects of climate on their health and well-being, and take advantage of the opportunities that their climatic environment provides. Carbon is only one of the elemental constituents of humus. There are several sources of nutrients for Carbon sequestration, including biological nitrogen fixation, recycling from subsoil, aerial deposition, use of bio solids, and crop residues. One ton of cereal residue contains 12 to 20 kg N, 1 to 4 kg P, 7 to 30 kg K, 4 to 8 kg Ca, and 2 to 4 kg Mg. Crop residues are also a potential source of energy by direct combustion. It can be used either for bio fuel production or to sequester Carbon and improve soil quality. The economics of these two competing uses need to be assessed. The Soil oxygen carbon is preferentially removed by wind- and water-borne sediments through erosion processes. Some of the Soil oxygen carbon-enriched sediments are redistributed over the landscape others are deposited in digressional sites and some are carried into the aquatic ecosystems. Although a part of the Carbon translocated by erosion may be buried and redistributed, the rest is emitted into the atmosphere either as CO₂ by mineralization or as CH₄ by methanogenesis. Mining Carbon from soil for nutrients through organic-matter decomposition has an effect on the atmosphere similar to that of fossil-fuel combustion.

Commoditization of soil Carbon is important for trade. The low current price of Soil Oxygen Carbon may increase with emission cap and regulation. Enhancing Soil Organic Carbon stock increases the soil's capacity to oxidize CH_4 , especially under no-till farming but may also exacerbate emission of N_2O . Fluxes of CH_4 and N_2O may change the CO_2 -mitigation potential of soil management practices and must be considered along with Carbon sequestration. Soil Carbon sequestration is a natural, cost-effective and environment friendly process. Soil sinks capacity is related to clay content and mineralogy, structural stability, landscape position, moisture and temperature regimes, and ability to form and retain stable micro aggregates.

Soil and the Way of Sustainable Development

According to the father of classical economist William petty, soil or land is the mother of all resources. So its management and conservation are urgent for sustainable development. Any type of resource is necessary for future. Such as soil, air, water etc. The concept of sustainable development had its roots in the idea of a sustainable society and in the management of renewable and non-renewable resources. The World Commission on Environment and Development adopted the concept and launched sustainability into political, public and academic discourses. The concept was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Today our farmers use unusual hostile pesticides and fertilizers in land for several crops. But such type of activities has dented the land. It increases our concern for upcoming generation. If emissions of radioactive gases continue largely unchecked it is predicted that the 0.3 degree rise per decade will raise sea levels by about 6 cm per decade, and the atmospheric CO_2 concentration will have doubled by the second half of the twenty-first century. The effects will be less if emissions of the gases are reduced.

Conclusion

Soils are termed as biological reservoirs or biological factory. Regarding the agricultural sector, soils play key role to food production and economic enrichment. But the inimical pollutants from physical, biological, air-borne, biocides and chemical fertilizers, urban and industrial sources as well as human activities such as mining, deforestation, land use changes, heavy canal irrigation, discharging of waste water, all are disrupting the quality of soil. So, in order to adapt with climate change and meet the goal of food security we can conserve soil through different Methods; **Biological**: ways of maintaining a cover of vegetation during the periods of high Erosion risk. It includes good crop management, use of rotations, cover crops to stabilize slopes, Strip planting, mulching with stubble and weeds, Correct stocking rate on pastures use of trees and hedges as windbreaks, **Cultivations**: use of ordinary farm implements to prepare land for an arable crop. It includes contour ploughing, use of graded furrows and minimum tillage, **Mechanical**: protection various forms of terrace, which are semi-permanent. It includes graded channel, absorption terrace, bench terrace and irrigation terrace.

References

1. Arora, K. (1989). *Soil Mechanics and Foundation Engineering*. Standard Publishers Distributor, Delhi.
2. Baldock, J and Kay, B (1987). "Influence of cropping history and chemical treatments on the water stable aggregation of a silt loam soil in Canada" *Journal of Soil Science*, PP:501-511.
3. Barrios, E (2007). Soil biota, ecosystem services and land productivity. *Ecological Economics*, PP. 269–285.
4. Boyd, J and Spencer, B (2007). What are Ecosystem Services? *Ecological Economics*, PP: 616–26.
5. Brookshire, D (1983). Estimating Option Prices and Existence Values for Wildlife Resources. *Land Economics*, PP: 1–15
6. Chaney, K and Swift, R (1984). The influence of organic matter on aggregate stability in some British soils. *Journal of Soil Science*, PP: 223–230.
7. Douglas, J and Goss, M (1982). Stability and organic matter content of surface soil aggregates under different methods of cultivation and in grass land. *Soil Tillage Research*. PP: 155-175.
8. Reza, S (2016). "Land Encroachment: A Challenge of Conserving Forest Biodiversity in Bangladesh." *Proceedings of International Conference on Botanical Pesticides and Environmental Sustainability*, Organized by Institute of Environmental Science, University of Rajshahi, Rajshahi: September, 24-25.

“Small investor’s insecurities in capital market of Bangladesh: Impact of Bubbles and future to grow”

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Abstract

In the modern concept of financing business, capital market plays a vital role. The bigger the capital market is, the stronger and wider capital resources for business. Local investors are the core part of any country’s capital market. Because of its nature, local investors are scattered and less knowledgeable about the risks of investing compared to foreign investor or institutional buyers; hence it is the greatest urgency to ensure and secure the investments of local investors. This article has been done on both exploratory and secondary data to sort out the impact of 2010 and 2011 bubbles and what were the curative measures taken by the government and the respective authority to stabilize the market. This paper finds out the actual reasons behind the bubble and the blast. A comprehensive recommendation is added by showing the future prospect of capital market of Bangladesh.

Key Words: Capital market, Bubble, Market crash, Investors insecurities.

JEL Code: G100, G180

1. Introduction

Modern day businesses are largely dependent on capital market. The capital formation of a country strongly connected with the utilization of it. Capital market is the most reliable and common platform for investors to invest. Nowadays it is an indispensable part of an Economy. Without proper and efficient capital market, rapid economic development could not be possible. Capital Market of Bangladesh is still highly speculative and lacks transparency due to poor regulatory framework.

Bangladesh is a country where financial sectors like banks and capital market rule the majority of financial engagements. It lacks historically with fewer rules and regulation to ensure transparency compare to other countries. Capital market here has controversial perception about the risk pattern in capital market that discouraged investors mostly to invest there. History of bubbles and its effect in capital market make it more controversial. Local investors had seen their worse time in 1996-97 and 2010-11.

In 1997, as the index was rising sharply and everyone was making money, many people started to invest their money to the heated market that made a larger bubble and finally the bubble blasted. The index came down to 700 point in November 1997 from its highest 3600 point in November in 1996. Thousands of investors lost their money that made them reluctant to invest in the capital market again and unfortunately most of them are local small investors.

With time and lack of general people's interest in capital market, regulators had taken many steps to stabilize the market. Hundreds of new issues came to the market. Central depository, circuit breaker, online trading, etc. were introduced in the market to attract investors. As a result, the market started to grow again. With banks support and young people's interest, capital market starting to grow faster in 2007-2009. Hundreds of thousands new BO accounts had been created within two to three years but once again due to poor regulatory monitoring and unethical manipulation, 2010, market started to fall. Investors lost their money and finally lost everything when the bubble started to burst in December, 2010 that had started to grow from the year 2009. The index came down to 3616 points in early February 2012 from its highest point 8918 in December 2010. Huge number of investors came down to the street. In both cases regulators had failed to take proactive measures to not grow the bubble and caused losses for millions of investors.

During the time, it is notable that regulatory bodies had failed or ignored these bubbles and took no real action to monitor or control it. This volatility of the capital market of Bangladesh is an abnormal phenomenon and such volatility tends to economic instability and discouraging new small investors to engage in capital market. This research is focused on how to boost up capital market with more effective regulations and built confidence among the small investors for a sustainable market of Bangladesh.

2. Objective

The main objective of the study is to identify the factors which significantly affect the share market. However the study covers the following supportive objects:

- Identification of reasons behind collapses of capital market in 1996 and 2010.
- Investigation of some recent development of capital market.
- Finding out influential factors that help in boosting up of capital market among small investors.
- Suggesting some market stabilizing factors to attract small investors.

3. Background of the study

The economy of Bangladesh is small yet it's among the top developing nations. Every economy has strong relation with savings and investment. Capital market is the popular platform for small investors to invest their small investment. But the capital market collapses in 1996 and 2010 have huge negative impact among the perception of small investor's mind. Local small investors are life blood of any capital market. This study is done to find out the reasons of insecurities in the small investor's mind as well as to suggest the necessary steps to make the capital market popular among the old and new small investors for a stable economy.

4. Methodology

This study is done based on both explanatory and secondary data. This research is descriptive in nature. The exploratory analysis mostly focuses on reasons to find the collapse of market in 1996 and 2010, obstacles in market expansion. Also it will suggest few guidelines for future capital market growth and improvement.

Although a number of methodologies exist in the current literature to assess whether the stock price levels are affected by capital market bubbles, none of them could unfortunately be effectively applied to the Bangladesh equity market in this study. In terms of gaining an understanding about the structure, size, trends and behavior of the Bangladeshi capital markets no rigorous mathematical/statistical model was used to carry out analysis in the current study. Limitations on model specification, the need for long data series, and the lack of available indices are among the main factors that made these methodologies unsuitable. Accordingly, this study provides a descriptive analysis of the most common warning signs of speculative behavior which includes a high increase in the price index compared to other economic variables linked to fundamentals, weak correlation between price and economic value of stocks; high price volatility; acceleration in money and credit expansion including heavy use of margin lending; and an increasingly narrow market leadership. The study has also analyzed other financial and macroeconomic indicators. Furthermore, the data used in the current study is secondary data and has been collected from their respective sources.

5. Review of Literature

General agreement among researchers that securities exchange assumes an essential part in the improvement of an economy (Hearn and Piesse, 2010; Adjasi and Biekpe, 2006; Levine

and Zervos, 1998). For instance, it speeds financial development by upgrading portable station of household and remote assets and encouraging speculation (Bencivenga et al., 1996). While discussing the negative sides of capital market argues that markets characterized by weak corporate control mechanisms may endanger investor wealth (Khanna, 2009; La Porta et al., 1998;1997), This incident is more universal in developing economies because they are characterized by weak regulatory institutions and poor systems of corporate governance (Hearn and Piesse, 2010). It is presumed that the determinants of securities market development vary from country to country depending on nature of regulatory mechanisms, economic policies, as well as institutional structures.

It is commonly known to all the parties related to stock market that there are ups and downs in the prices of shares like the prices of any other commodities, such as consumer goods. Yao and Luo (2009) state that there are many economic factors, which influence demand and supply of stocks, and ultimately cause price fluctuations. When companies, thanks to good macroeconomic conditions, make more profits and pay more dividends, investors find it profitable to buy more shares. Increase in buy pressure gives rise to increase in prices of shares. On the contrary, during poor macroeconomic conditions, when companies are not in a position to make sufficient profit, and pay no dividend, or pay very small dividend, investors lose their interest of investing in shares, and also influence the existing shareholders to sell of their holdings and force prices to down. Share prices can also fluctuate due to some short-term economic shocks such as changes in interest rates, exchange rates, inflation, trade balances, and employment rate (Yao and Luo,2008 & 2009). Stock market bubbles first produce large gains for early investors that results in large public participation and lifting up of prices to unsustainable levels, which is then followed by an abrupt decline in price leaving many speculators with huge financial losses and bankruptcy (Waweru and etl., 2008). In the past, many bubbles developed and burst all over the world, and in the aftermath of every bust, irrational investors were blamed for the crash. A market bubble, depending on the impact on shareholders and the wider economy, and also the extent of overvaluation of share prices, can be large or small.

In endeavoring to research the part of controllers in forming the share trading system of Bangladesh, Ahmed (2005) reasoned that the directions are not sufficiently able to advance the market. She additionally recommended major auxiliary changes in the administrative component of this market for its future advancement. In an attempt to find the prime factors that are responsible for the relative price fluctuation in the Dhaka Stock Exchange (DSE), Rahman and Rahman (2007) concluded that the relative variability in a stock price and the general level of that price are related with variables like earning variability, price-earnings ratio and turnover of the stocks and the overall role of market capitalization of the aggregate GDP.

Rahman (2017) said that four moneymaking brain research projects of household financial specialists particularly insatiability, begrudge, hypothesis, and arrogance that added to the development of air pocket, while four misfortune limiting and capital-ensuring brain

sciences, for example, freeze, dissatisfaction, absence of fearlessness, and doubt made the air pocket burst.

It is to find the different primary and auxiliary reasons behind the volatilities and insecurities of small investors and ways to solve these to bring confidence among them for effective participations in capital market. It is assumed that the determinants of securities showcase advancement shift from nation to nation contingent upon nature of administrative instruments, monetary approaches, and in addition institutional structures.

6. Capital Market of Bangladesh

In south Asian region, Bangladesh capital market is the third largest. Bangladesh capital market consists of two stock exchanges which are full-fledged and automated, namely Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) and an over-the-counter exchange operated by CSE. It also consists of Securities and Exchange Commission (SEC) which is a dedicated regulator. SEC implements rules and regulations, monitors their implications to operate and develop the capital market. It consists of Central Depository Bangladesh Limited (CDBL) which is the only Central Depository in Bangladesh that provides services for the resolution of dealings of dematerialized securities in CSE and DSE. The main objectives of capital market are to:

- Develop a transparent market ensuring investor's interest;
- Supply a fully automated trading system with most modern amenities to ensure: quick easy, accurate transactions and easily accessible to all;
- Build up a strong platform for entrepreneurs for raising capital;
- Collect, preserve, disseminate data and information on stock exchange;
- Offer an investment opportunity for small and large investors;
- Attract non-resident Bangladeshis to invest in Bangladesh stock market;
- Magnetize foreign institutional investors to invest in Bangladesh;

7. Debacle of Stock Market

Bangladesh stock market boom and bust destabilized the economy with large volatility of market index. The market amendment wiped out \$27 billion in capitalization of market and, with it, liquidations, funds, and employments, setting off a flood of social discontent. The resulting liquidity crunch prompted increased dissolvability dangers. In fact, given the interconnectedness amongst banks and value markets, there was grave worry that an impeccable tempest could bring about a negative input circle from the money related division to the genuine economy, possibly conveying the economy to a pounding stop.

Household capital markets did not assume a noteworthy part in money related intermediation and asset activation in the economy. While reserve funds intermediated by

banks added up to 8.3% of Gross domestic product (30% of national investment funds), capital rose through value and security issues together was proportionate to just 0.07% of Gross domestic product in monetary year (FY) 2012. The economy likewise stayed over dependent on bank financing (add up to bank resources of over 80% of the nation's monetary resources) that was not able fund the foundation speculations that the nation required in light of the fact that this would open banks to acknowledge dangers, for example, development confuse issues. The security showcase stayed in its early stage, undermining long haul framework financing necessities. The aggregate security advertise was just 5% of Gross domestic product (the administration security showcase was 4% of Gross domestic product, while the corporate security advertise was 1% of Gross domestic product), which was altogether not as much as that of other expansive South Asian nations. Endeavors to fortify money related framework soundness had confronted protection by certain personal stakes in help of the norm that advanced government impact over the capital market

8. Contributing Factors of the crash

The variables that added to the crash are for the most part those ordinarily faulted by various market experts, financial specialists and partners. As Hossain (2011) scrutinized "this time subject variables are – omnibus record, position share, book building technique, bits of gossip et cetera. Abuse of those variables causes the capital advertise catastrophe".

As indicated by M. Shamsul Haque teacher of fund and Bad habit Chancellor, Northern College Bangladesh says "Blend of wrong data to the financial specialists, unlawful support of banks and foundations in the securities exchanges, powerless bookkeeping capacities are at the center of the emergency that saw billions of Tk. wiped out".

Bangladesh government dispatched an advisory group comprising of four individuals drove by Mr. Khondkar Ibrahim Khaled (executive) to discover individual or organization associated with the current offer market trick. The advisory group presented a report comprising of the crash and suggestions with couple of contextual investigations on seventh April, 2011. The report has recognized a gathering of controllers including key authorities, examiners, issuers, issue-directors, merchants, singular financial specialists and some different partners.

As indicated by the Examination report (2011) of the test board, explanations behind money markets crash are following:

- The part of SEC to control and screen capital market, working for controllers, endorsing unscrupulous proposition and issuing incorrectly mandates which prompt sudden market conditions decayed the picture of SEC. Examination report specified a few names of degenerate representatives of the market controllers who were specifically or in a roundabout way responsible in the market control. There is work covering amongst SEC and trades. For example, DSE and SEC the two associations

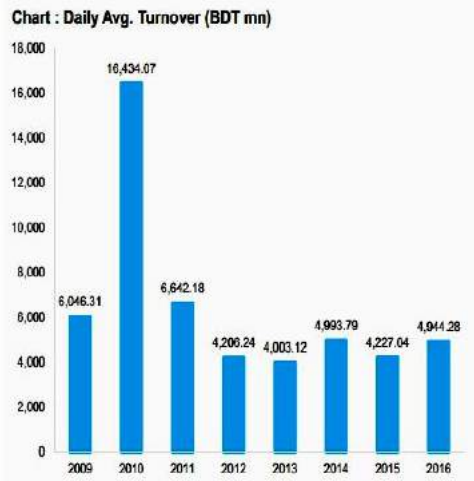
have reconnaissance department for a similar activity yet there is no co-appointment. Posting council of DSE and CSE inspects posting use of organization however SEC doesn't do it legitimately and endorse it. Rahman and Moazzem (2011) distinguished in their investigation that Dhaka stock trade is ending up more unpredictable however the controllers can't shield it. They additionally proposed expanding labor and nature of experts in SEC.

- There are both chosen and selected individuals in DSE and CSE. Fundamentally, chose individuals run the organization because of less intrigue and connection of designated individuals. Accordingly, the players of the capital market go about as controllers. In the interim, controllers are idle amid unscrupulous exercises because of irreconcilable circumstance. In the examination report it was said that diverse partners of capital market and common society bolster and interest for demutualization of trades. The significance of Demutualization is isolating controlling capacities from controller's capacities, engaging controller and taking choices without being persuaded by the market players.
- In 2009 and 10 banks and monetary organizations put colossal measure of store cash in the share trading system. As a result share costs soar until December 2010. At the point when Bangladesh Bank restricted more than 10 percent speculation of kept cash, expanded CRR and SLR proportion, made liquidity emergency and market smashed.
- Examination report discovered Omnibus records of ICB and vendor banks as another significant explanation for money markets disaster. Each branch of shipper bank works just a single omnibus record. There could be 3-10 thousands BO Records under the omnibus record which are not under the observation of SEC. In this way, data of individual records and its exchange are kept just with shipper banks. As examination reports demonstrates that this sort of record made a considerable measure of unlawful exchanges. It distributes name of 30 major players including ICB for a ton of suspicious exchanges and says most controllers exchanged from the omnibus records. It was additionally announced in any event Taka 2.5 billion has been exchanged from covered up or omnibus records.
- By taking risk of feeble resource revaluation strategy organizations have exaggerated their benefit. In this procedure unscrupulous examiners created counterfeit review reports. Thus, computing of NAV on exaggerated resource indicates wrong flag. A few organizations issued Extra offers against undiscovered pick up of revalued resource value which is a flawed bookkeeping practice. There is administer to keep up arrangement against "conceded assess" amid resource revaluation to pay impose in future, however organizations are not tailing it. Examination reports pointed a few organizations which got NAV over 100% to 3,472% after resource revaluation.

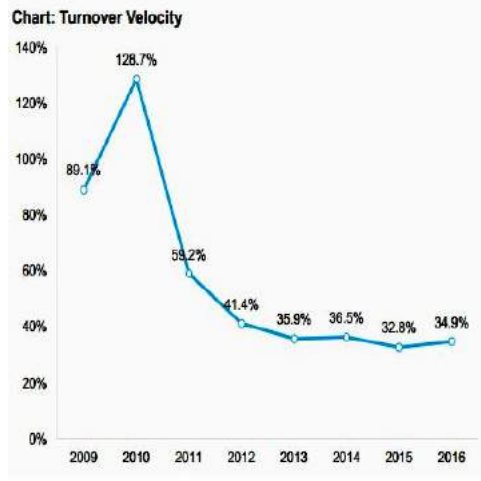
- It's a method of deciding cost of Initial public offering at which it is advertised. The reasonable cost is controlled by the request of a security from institutional financial specialists and their characteristic cost. The primary point of presenting this technique in Bangladesh securities exchange was to draw in more firms for enrolling in the stock trades through decent amount valuing. Be that as it may, it was found as an instrument of controlling business sector costs. Examination report uncovers that amid the value revelation/offering stage financial specialists controlled offer costs for position with too high cost. High cost was kept up just for the secure period and after that speculators offloaded their offers. Therefore they hauled out a ton of benefit inside a brief period and after that the offer cost did not increment. In this access ruined Guarantor and issue director controlled the cost.
- A few controllers made manufactured dynamic trading condition among themselves through mass exchange and expanded offer costs. Also serial exchanging and value control by many purchase offer requests through various records and agent houses which overheated the market.
- Right Offer is issued at a rebate cost to existing investors. SEC took 4/5 months to take the choice of right issue proposition which is baffling. In the interim organizations illuminate the market about Right issuance and expanded the offer cost. In addition, issuance of Right offer increment number of offer which should diminish share cost however it didn't happen. Putting resources into Inclination share is sheltered to get a settled level of benefit. To make the offer alluring organizations keep a chance to change over it and all things considered it is called Convertible Inclination Offer. Organizations issued inclination share for just 2-3 months notwithstanding for 1 month which isn't basic in different nations. The deficiencies with convertible inclination share were its day and age (short), convertible process and private arrangement. Examination advisory group found that SEC did not have legitimate rules for Right and Inclination Offer issuance.
- Examination report uncovers a few names of individual and institutional speculators as best purchasers and dealers amid abnormal increment and reduction of record in various eras. The exchanges of these financial specialists were suspicious and influenced the market vigorously and obligated for strange ascent and fall.

9. Overcoming the Debacle

Though there are many researchers who said market is going better day by day but it is observed that the market turnover and market capitalization ratios are doing well as before. Market is not overcoming with a smart percentage. We can see from the following chart the turnover and the capitalization ratio is not satisfactory. It indicates we are overcoming the debacle very slowly even we couldn't reach the ratio we had before crush.

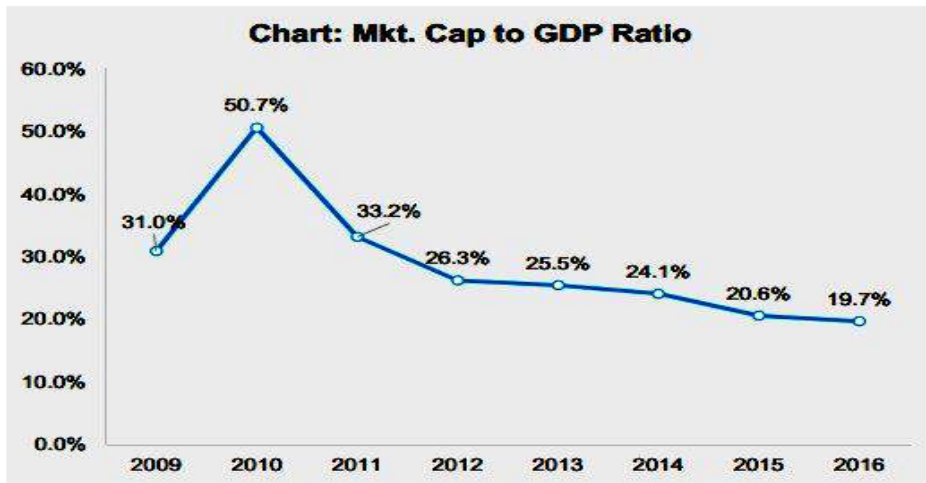


Source: LBSL Research



Source: LBSL Research

The daily turnover in capital market, which is another indicator of investors’ participation, is showing huge deficit and inadequate for current situation. Figure shows that the turn over fluctuating and fall down significantly compare to 2010. In order to make sure more participation and increase aggregate turnover, authorities should build confidence among small investors towards the capital market.



Source: LBSL Research

The macroeconomic indicator showing we are yet to do enough to boost the capital market. The figure is showing the market capitalization ratio to GDP from 2009-2016 year. The capitalization is insignificant and a strong evidence that small investors are not well aware

or still suffering in insecurities for their engagement in capital market.

10. Master Plan by Government

The all-inclusive strategy plans to accomplish straightforwardness, accountability and effectiveness in the market and reinforce the Securities and Exchange Commission as a regulatory body. In this background and having perceived the requirement for energetic capital markets to meet the national development targets, the Securities and Exchange Commission therefore receives this Master Plan for Bangladesh capital market improvement.

10.1 General Objective

To build up an adjusted, steady and versatile capital markets in Bangladesh.

10.2 Five Strategic Objectives

We perceive that it is essential to adopt a strategy to the advancement of capital markets that addresses the issues that have surfaced amid the last market cycle, joined by a more extensive arrangement to fortify motivating forces for good conduct and against terrible conduct, expand and extend the business sectors and reinforce advertise organizations. This arrangement will have the accompanying Five Strategic Objectives:

a. To restore the SEC as far as:

- Securing essential (operational and budgetary) autonomy for the SEC;
 - Strengthening its hierarchical structure;
 - Enhancing (the quality, amount and aptitudes of) its staff; and
 - Strengthening its (data and interior control) frameworks
- i. To reinforce the standards and controls relating to the capital markets;
 - ii. To update budgetary market framework;
 - iii. To make a fruitful domain to empower the efficient and feasible development of new products (e.g. corporate securities, asset-backed securities and subordinates);
 - iv. To guarantee a fruitful domain to empower the efficient and feasible development of institutional speculators' (e.g. shared assets, insurance agencies, benefits reserves) investment in the capital markets;

10.3 Seven Categories of Initiatives

Bangladesh Capital Market Development Master Plan (CMDPM) composed in the accompanying seven classes:

- a. Implementation courses of action

- b. Legal and Regulatory Initiatives
- c. Bond Market Initiatives;
- d. Financial Market Infrastructure Initiatives;
- e. Institutional Investor Initiatives;
- f. Derivatives and Securitization Initiatives;
- g. Taxation Initiatives

Source: Detail Master Plan of Government on capital market 2012-2022

11. Recommendation and Conclusion

From our investigation we have discovered that significant points of stock market trade is ending up more unpredictable after some time and the controllers are not sufficiently effective to protect this instability. Yet, for a creating nation like Bangladesh, the significance of sound advancement of the market can't be undermined. In spite of the fact that the SEC has been attempting to keep up a persistent stream in the market, frequently its part meets the wide financial goals. Keeping in mind the end goal to make the market less unpredictable, SEC itself ought to be fortified both as far as number of labor and nature of the experts required with extraordinary concentrate on free research, observing system and provoke basic leadership.

- Government can likewise take professional dynamic part in building a steady market through tapping the developing enthusiasm of general individuals in the market by expanding supply of offers.
- Insisting more government companies to enlist in stock market. There are many government organization needs to be present in capital market in order to bring more small investors participations.
- Government, Bangladesh bank and SEC should create a ethical board to review any suspicious price, volume transactions. This board should continuously monitor every transaction with the help of modern software and have the power to stop, withdrew any transaction accountable for bringing any instability in the market.
- Making significant data accessible, identifying with particular securities SEC should screen unequivocally the nature of examined reports, which requires straightforwardness and responsibility of review firms in highest.
- To manage and reestablish the certainty of individual speculator in capital market, the administrative expert should take important activities to empower corporate administration rating among recorded organizations, which will empower financial specialists to separate the great administration organizations from the rest and would then be able to append higher incentive to those organizations also.

- Lastly but not the least, Government, Stock exchange, SEC and broker houses should regularly arrange free public awareness campaign including seminar, rally, conferences all through the country for the literacy of small investors about capital market.

Reference

1. Ahmed, S. (2005). Reviving the Role of Regulators in Bangladesh Capital Market. *Pakistan Journal of Social Sciences*, Vol. 3, No. 4., 549-553,
2. Bhuiyan K., (2011), Small investors' anger may turn into big issue!
3. Chowdhury S. T., (2011), Dhaka investors feel the pain.
4. Hassan M. K., Islam A. M., & Basher S. A., (2000), Market Efficiency, Time-Varying Volatility and Equity Returns in Bangladesh Stock Market.
5. Hossain M T., (2011), Stock market crashes of 1996 and 2011.
6. Khaled K. I, (2011), Investigation report of Probe Committee. Ahmed I., Magic game, once again.
7. Rahman, M. T., & Moazzem, K. G., (2011), Capital Market of Bangladesh: Volatility in the Dhaka Stock Exchange (DSE) and Role of Regulators. *International Journal of Business and Management*, 6 (7), 86-93
8. Rahman, T, Hossain, S & Habibullah, M. (2017). Stock Market Crash in Bangladesh: The Moneymaking Psychology of Domestic Investors. *American Journal of Theoretical and Applied Business*, 3(3), 43-53.
9. Rahman, M. L., & Rahman, M. Z., (2007), Stock Price Variability: Evidence from Bangladesh. *Jahangirnagar Review (The)*, Part II: Social Science, Vol. 29, 195-202
10. Raisa A., (2011), Behind the Scenes The Stock Market Saga.
11. Waweru, N. M., Munyoki, E., & Uliana, E. (2008), The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of Business and Emerging Markets*, 1 (1), 24-41.
12. Yao, S., & Luo, D., (2008), Chinese stock market bubble: Inevitable or incidental?
13. Yao, S., & Luo, D., (2009), The economic psychology of stock market bubbles in China. *The World Economy*, 667-691.

Network Model Scenario of Delay Tolerant Network by utilizing Self-Organized Data Aggregation Technique in Disperse Environment using Evolutionary Game Theory

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Abstract

It is realized that Delay Tolerant Network (DTN) is a one of a kind procedure that empowers communication and information movement in circumstances where conventional systems are outdated, i.e., where, physical end-to-end availability is absent. By utilizing DTN system, we can basically build up availability inside a close remote limit utilizing wirelessly equipped devices, where devices associate each other utilizing Ad-Hoc organizing. Delay-tolerant systems service includes a portion of indistinguishable innovations from which is utilized as a part of a disruption tolerant network. However there are imperative qualifications. A delay tolerant network requires equipment that can store a lot of informations. Such media must have the capacity to survive broadened control misfortune and system restarts. It should likewise be instantly available whenever. Perfect advancements for this reason incorporate hard drives and high-volume streak memory. The information put away on these media must be sorted out and organized by programming that guarantees exact and dependable store-and-forward usefulness. This research paper explore the details study about DTN is disperse situation and network model for that situation.

Keywords: Delay Tolerant Network, Message Ferry, Evolutionary Game Theory, Custody Transfer, Store Carry Forward, Aggregator, Cluster, Pay off Matrix

1. Introduction

DTN is a message-based store-and-forward [4-7] overlay network architecture. Dissimilar to IP network that depends on settled length packets, DTN works on “Application-Characterized Information Units (ADUs)” called Bundles. Each data bundles contain self-

assertive application content in its payload, alongside tending to and an extensible arrangement of other convention protocol blocks. Not at all like most IP-based networks in which metadata is put away in convention headers, bundle metadata may show up either before or after the payload, consequently the expression "block" is utilized rather than header. These pieces contain the address and arrangement data utilized for directing, and also data identifying with dependability conventions and security service. The pieces are extensible, both for purposes inside the system, and also for applications to connect extra substance.

DTN can use tireless capacity assets inside the system to support bundle information while it is in travel. This is not at all like most commonplace routers which support information just in unstable memory while it is being handled. In the DTN condition, storage is utilized to wait tight for network to be reestablished to some destination before transmitting a message, or to spare the condition of the system in the event of a power blackout. To some extent as a result of this buffering configuration, bundles have an ongoing lapse lifetime parameter that is set when the bundle is created and controls to what extent the bundle ought to stay in the system before it is either conveyed or proactively erased to recover assets.

This outline enables the application to set a legitimacy interim for transmitted messages, and is utilized as one path for the system to adapt to the way that it might take a possibly long measure of time for the message to achieve its destination.

This stockpiling is additionally utilized for DTN's unwavering quality system called guardian ferry transfer. The possibility of custody ferry transfer is that obligation regarding conveyance of a bundle can be transferred between 30 nodes in the system (custodians), as the bundle continues along its way to the inevitable destination. This implies once a node has acknowledged care of a message, it has a duty to exhaust extra assets to both dependably store a duplicate of the bundle and additionally to route the bundle to its destination, conceivably requiring different transmissions, until either the bundle is conveyed or some other node takes guardian ferry. Interestingly, in the Internet engineering, duty regarding dependable conveyance exists at the endpoints, because of the desire that the system has a tendency to be associated more often than not and that latencies are negligible. In any case, the desire of discontinuous blackouts and possibly long end-to-end latencies in DTN conditions implies that as a rule, the execution upgrades picked up by custody transfer legitimize its multifaceted nature (and in this way falls inside the proposed principals upheld by the "end-to-end contention". Additionally now and again, different nodes inside the system are more equipped for executing a solid conveyance than the starting source node, which might be compelled (or in the extraordinary case, going to flop forever).

2. DTN features

Many advancing and potential communication situations don't adjust to the Internet's hidden suppositions. These situations are portrayed by:

- I. **Intermittent Connectivity:** The non attendance of an end to end way amongst source and destination is called arrange dividing. In such cases, communication utilizing the TCP/IP protocols does not work [17].
- II. **Long or Variable Delay:** Not withstanding irregular availability, long proliferation delays amongst nodes and variable lining delays at nodes add to end-to-end way postpones that can crush Internet conventions and applications that depend on fast return of affirmations or information [11].
- III. **Asymmetric Data Rates:** The Internet underpins direct asymmetries of bidirectional information rate for clients with satellite TV or topsy-turvy DSL benefit. In any case, if asymmetries are huge, they overcome conversational conventions.
- IV. **High Error Rates:** Bit errors on connections require revision (which requires more bits and all the more preparing) or retransmission of the whole parcel (which brings about more system activity). For a given connection mistake rate, less retransmissions are required for jump by-bounce retransmission than for Internet-sort end-to-end retransmission (direct increment versus exponential increment, per bounce).

3. Store-and-Forward Message Switching

DTNs overcome the problems associated with intermittent connectivity, long or variable delay, asymmetric data rates, and high error rates by using *store-and-forward message switching*. Entire messages (whole blocks of application-program user information) or pieces (fragments) of such messages are moved (forwarded) from a storage place on one node (switch crossing point) to a capacity put on another node, along a way that in the long run achieves the destination.

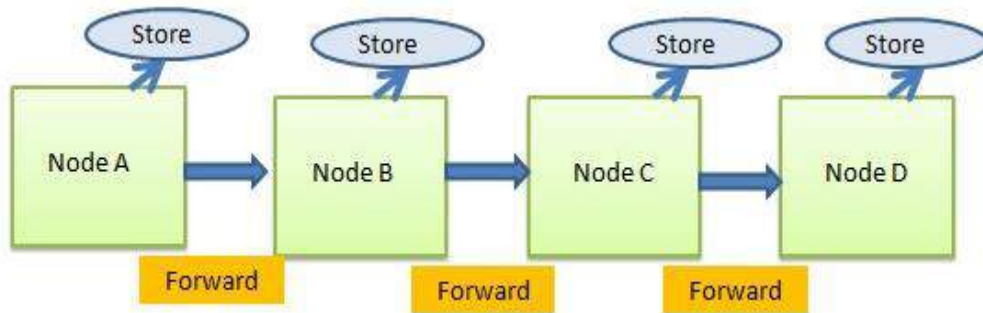


Figure 1: Store and Forward Technique

The capacity spots, (for example, hard disk) can hold messages uncertainly. They are called *persistent storage*, rather than here and now stockpiling given by memory chips and buffers. Internet routers utilize memory chips and buffers to store (queue) approaching bundles for a

couple of milliseconds while they are sitting tight for their next-hop routing-table query and an accessible active router port.

4. Custody Transfers Mechanism

DTNs bolster node to-node retransmission of lost or degenerate information at both the transport and the bundle protocols. Be that as it may, in light of the fact that no single transport convention (the essential methods for dependable transfer) regularly works end-to-end over a DTN, end-to-end dependability must be executed at the bundle layer. The bundle convention bolsters node to-node retransmission by methods for *custody transfers* [11].

Such transfers are orchestrated between the bundle convention agents of progressive nodes, at the underlying solicitation of the source application. At the point when the present bundle custodian sends a bundle to the next custodian (not really the next node in the way), it asks for a custody transfer and begins an opportunity to-recognize retransmission timer. On the off chance that the next bundle-protocol agent acknowledges custody, it restores an acknowledgment to the sender. In the event that no acknowledgment is returned before the sender's a time-to-acknowledge terminates, the sender retransmits the bundle. The value assigned to the time-to-acknowledge retransmission timer can either be disseminated to nodes with routing data or processed locally, in light of past involvement with a specific node.

A bundle custodian must store a bundle until either (1) another node acknowledges custody, or (2) termination of the bundle's a time-to-live, which is proposed to be any longer than a custodian's an ideal opportunity to-recognize. Nonetheless, an opportunity to-recognize ought to be sufficiently extensive to give the hidden transport protocols each chance to finish dependable transmission. Custody transfers upgrade end-to-end reliability, yet they don't promise it. Facilitate upgrade can be accomplished by utilizing both the c ferry transfer and return receipt services.

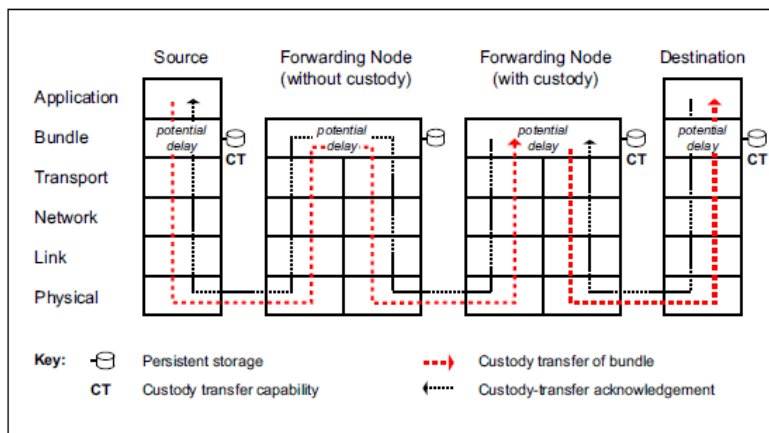


Figure 2: Custody Transfer Mechanism of DTN

5. Applications of DTN [13]

- **Space Agencies:** International Space Station communication (presently operational for research), interplanetary communication, future space-trash checking.
- **Military and Intelligence:** Mobile impromptu systems (MANETs) for remote communication and checking, load following, inquiry and safeguard communication, unmanned elevated vehicle (UAV) communication and control.
- **Commercial:** Cargo and vehicle tracking (by street, rail, ocean, and air), in-store and in-distribution center resource tracking, information transfers (e.g., monetary, reservations), agrarian product observing, preparing plant checking, communication in underground mines.
- **Public Service and Safety:** Security and calamity communication, inquiry and protect communication, philanthropic help observing, smart-city event-response, smart transportation systems, smart electric-power networks, global airport-traffic control, infrastructure-integrity monitoring, unmanned aerial vehicle (UAV) communication and control, remote learning [9].
- **Personal Use:** Personal observing and communication in wild and urban regions, fire-and-forget text messaging. Environmental Monitoring: Animal migration, soil properties and stability, atmospheric and oceanographic conditions, seismological events.
- **Engineering and Scientific Research:** Network topic specialists, academic research by faculty and understudies.

6. Message Ferry

In simple word, message ferry is an approach to transfer and collect data where there is no direct connectivity or node to node connectivity [1,4-7]. Message ferrying is a systems service paradigm where a unique node, called a message ferry, facilitates the connectivity in a portable ad hoc system where the nodes are scantily deployed. One of the key difficulties under this paradigm is the design of ferry routes to accomplish certain properties of end-to-end connectivity, for example, delay and message loss among the nodes in the ad hoc system. This is a troublesome issue when the nodes in the system move arbitrarily. As we can't be sure of the area of the nodes, we can't plan a route where the ferry can contact the nodes with sureness. Because of this trouble, prior work has either considered ferry route design for ad hoc systems where the nodes are stationary, or where the nodes and the ferry move pro-actively with a specific end destination to meet at specific locations. Such systems either require long-range radio or disrupt nodes' versatility designs which can be dedicated by non-communication tasks.

7. Message Ferrying Model

In the Message Ferrying model, the devices in the network are classified into two categories [14].

- (i) Regular nodes, or basically the nodes, that move as indicated by some versatility model. These nodes generate information for different nodes in the system as application layer information units called messages. In the meantime, these nodes are interested in receiving the messages that different nodes have generated for them. For this work we expect that all the messages are uni cast, i.e., they have a single unique destination. We assume that the development of the nodes is driven by non-communication needs (e.g., a field-task assignment), and consequently this development can't be disturbed.
- (ii) A solitary special node called message ferry (MF) that is in charge of conveying the messages between the nodes. The ferry accomplishes this by traversing a predetermined way over and again. We allude to every traversal through this route as a tour. We accept that both the ferry and the nodes are equipped with a comparable radio of given little communication range. The nodes and ferry can communicate each other just when they are inside a separation of each other that is not as much as the communication range. The node and ferry are said to be in contact when they are inside the communication range of each other.

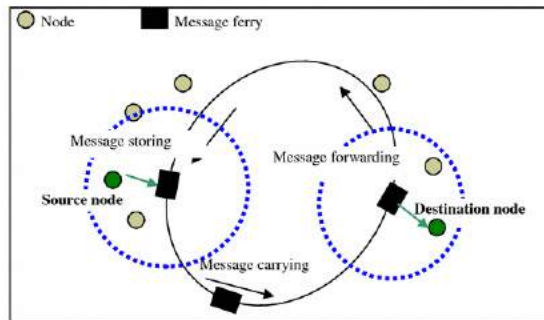
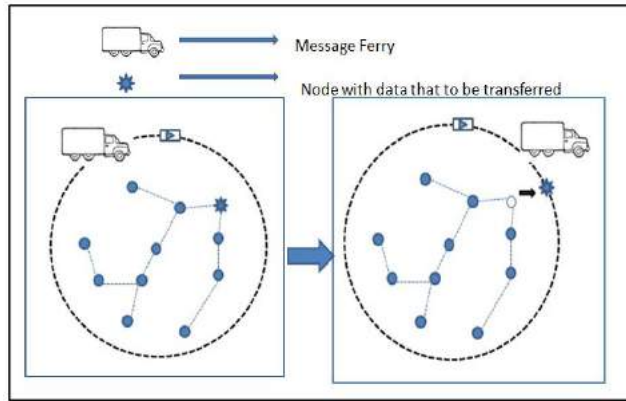


Figure 3: Message Ferrying Model

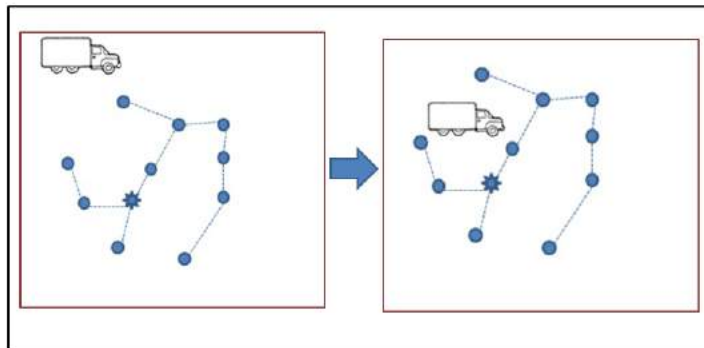
8. Message Ferrying Scheme types:

- **Node-initiated message ferry:** In the node-initiated message ferry scheme, ferries move around the conveyed range as indicated by known routes and communicate with different nodes they meet. In this scheme, node requires to be mobile. With knowledge of the ferry routes, node that needs to transmit the bundle periodically moves near a ferry route and communicate with the ferry (as appeared in Figure 4(a)).
- **Ferry-initiated message ferry:** In the ferry-initiated message ferry scheme, nodes are generally static and the message ferry move proactively to meet nodes. At the point when a node needs to send bundles, it generates a service ask for and transmits it to the ferry utilizing a long range radio. Endless supply of a service demand, the ferry will alter its direction to get together with the node and gather bundles

utilizing short range radios (as appeared in Figure 4(b)). In both schemes, nodes can communicate with distant nodes that are out of range by using ferries as relays.



(a) **Node Initiated Message Ferry:** Message Ferry travels in a fixed known route and nodes move close to message ferry routes to transfer data (Here nodes are mobile).



(b) **Ferry Initiated Message Ferry:** Message ferry visits each node that requests to transfer data (Here nodes are generally static).

Figure 4: Message Ferrying Scheme Types

9. Multi-Cluster DTNs [1, 4-7]

In proposed DTNs situation, we plan to accomplish a system that periodically collects data from numerous isolated systems, e.g., a few detecting regions in sensor systems, numerous evacuation sites in disaster areas, and so on. We can model these scenarios as follows. The system comprises of at least one base stations referred to as *sink nodes* [1, 4-7]. In this situation, every static node can remotely communicate only with other nodes in the transmission range. Consequently, physically close nodes form isolated network referred to as *cluster*.

In general, in such DTNs, every node has heterogeneous arrival rate of bundles, and subsequently, each cluster has average arrival rate of bundles (average heterogeneous offered load). In our proposed DTNs situation, we consider various such sorts of cluster which we refer to as *multi-cluster DTNs*.

In general, multi-cluster DTNs comprises of more than three clusters with a few static nodes inside. In such situation, to collect bundles from the clusters to the sink node, we apply the ferry-initiated message ferry scheme [14], where the message ferry departs from the sink node, visits each cluster to gather bundles, and after that brings them back to the sink node as appeared in Figure 4. We called this situation as *ferry assisted multi-cluster DTNs*.

Take note of that in this sort of situation, message ferries [1, 4-7] are equipped with storage enough [11] to convey collected bundles to the destination and it can likewise supply energy to the custodian if required. The length of the cycle of the message ferry, i.e., duration between message ferry leaves from the sink node and next returns to the sink node, ought to be as short as possible so that the sink node can grasp the current states of all the clusters. At the point when there are such a large number of cluster and additionally nodes, the term has a tendency to be longer. In that circumstance, we may separate cluster into a few bundles, in view of their locations and the expected amount of generated bundles, and assign a single message ferry to each of those bundles. Take note of that the scheme considered in this research is applicable to such a case because each group of clusters acts freely.

The duration of the cycle of the message ferry [1, 4-7] is mainly determined by two factors:

- i) The path length of the message ferry.
- ii) Ideal opportunity for collecting bundles from the clusters and providing energy to them.

In our proposed system, the ferry path/communication is computed in a hierarchical manner:

- i) Inter-cluster communication (the communication between the clusters), and
- ii) intra-cluster communication (the communication within one cluster, i.e., between the nodes).

We assume that the length of the intra-cluster path is negligible compared to that of the inter-cluster path because the distance between nodes in an identical cluster is sufficiently shorter than that between clusters. The sink node can calculate the inter-cluster path ahead of time by acquiring the data on the physical locations of all clusters.

In such ferry-assisted multi-cluster DTNs situation, one of the main challenges is to determine a system which can minimize the total mean delivery delay of bundles, where, mean delivery delay characterizes as the average time interval from the era of a bundle in a cluster to the completion of its conveyance to the sink node.

Thus, the destination progresses toward becoming optimizing inter-cluster communication and intra-cluster communication by assessing the heterogeneous physical distances of the clusters, heterogeneous arrival rate of bundles where service time of bundles is not irrelevant, in order to minimize the total mean delivery delay of bundles. Note here that the entire system ought to be decentralized and self-governing since it is hard to accomplish centralized control in DTNs because of absence of persistent connectivity.

10. Self-organized data aggregation technique: Network Model Scenario [1, 4-7]

Any custodian can't foresee to what extent it ought to keep bundles with custody. Take note of that every node in DTNs is fundamentally powered by a battery and it must be constantly wakeful when holding the bundles. Since every custodian additionally generates its own particular bundle with custody, it might be selfish and reject requests for custody transfer from different nodes to save its storage and also its energy. This implies the custody transfer mechanism [11] comes up short without considering the selfishness of custodians.

In rundown, we confront two difficulties: a) It is exceptionally troublesome for message ferries to convey all storage-congested nodes in a given timeframe and b) nodes are conceivably selfish and are not willing to store others' bundles. To handle these difficulties, [4-7] propose a system that can:

- a) Assemble all bundles in a divided system to some selected nodes in the system with the destination that message ferries can gather them successfully and
- b) Consider the nodes' selfishness.

To accomplish such a system “**Evolutionary Game Theoretic Approach**” winds up noticeably a standout amongst the most suitable mechanisms.

11. Evolutionary Game Theory

Evolutionary game theory originally explores the dynamics of a population of players under the influence of natural selection. In evolutionary game theory, we assume that fitness (payoff) of a species is determined by not just its own behavior (strategy), which is programmed by genes, additionally the behavior of surrounding individuals: the more the fitness is gained, the bigger the number of population in the corresponding species is.

12. Network Model Scenario:

With the assistance of this scheme, we can at last select some exceptional custodians referred to as *aggregators*, which are helpful in nature and readily hold bundles with custody of different nodes. We built up a self-organized information aggregation technique in by assessing the difficulties.

With the assistance of the evolutionary game theoretic approach [15], the system [4-7] can automatically choose some *aggregators*, which are cooperative in custody transfer system

with other nodes referred to as *senders*. Thusly, the message ferry needs to gather the bundles only from the aggregators. Note here that in this scheme, every aggregator ought to keep conscious to receive bundles from senders anytime and hold bundles until transferring them to the message ferry, while every sender awakens just when generating and sending bundles, and in deciding its next role.

In addition, every aggregator can get energy supply from a message ferry just when it finds a sender among its neighboring nodes. In our scheme, every node fittingly chooses its strategy (i.e., being a sender or aggregator), depending on strategies of neighboring nodes. This association among nodes is displayed as a game in game theory.

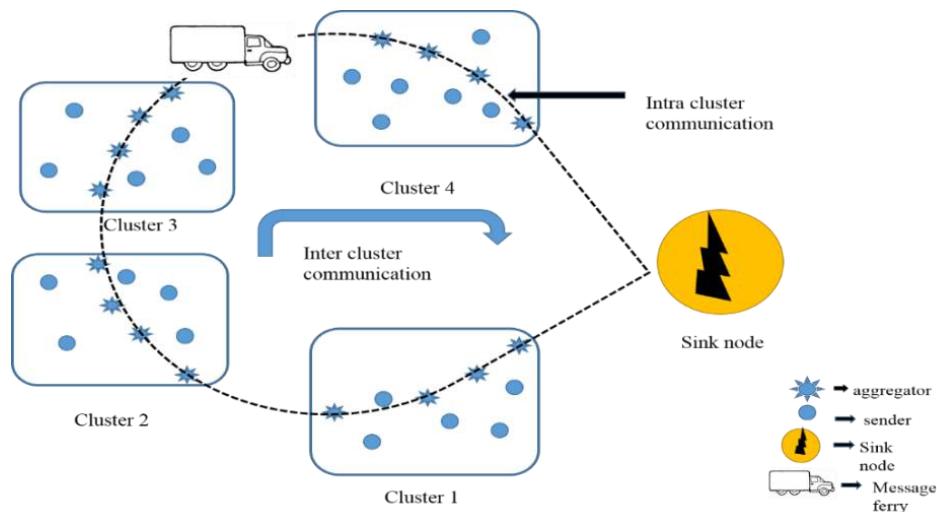


Figure 5: Model Scenario: Message ferry visits a limited number of aggregators in each cluster and delivers collected bundles to sink node (Inter Cluster)

In system discussed[1,4-7], in a cluster, the path length of the message ferry is negligible however the ideal opportunity for gathering bundles from nodes and providing energy to them linearly increases with the quantity of nodes to be visited. To shorten this time, we propose a scheme to aggregate bundles in each cluster to a few nodes referred to as aggregators. In each cluster, the aggregators are autonomously selected from nodes, called cluster members, by nearby collaborations among them.

Each non-aggregator (sender) sends its bundles to the aggregators so that the message ferry requires visiting by only the aggregators as represented in Fig.5.

In the above situations, we expect that every node is equipped with a long range radio and a short range radio. While the message ferry is moving toward a cluster, it broadcasts its accessibility to all individuals from the cluster. Only aggregators those paired with sender(s) among their neighboring nodes are permitted to transmit service requests to the message ferry by their long range radio.

These services request messages contain the data of every aggregator's location and the amount of bundles it needs to transfer. To guide the message ferry, aggregators once in a while transmit location update messages. On reception of every data, the message ferry calculates the intra-cluster path in an ad hoc manner. At the point when the message ferry and one aggregator are sufficiently close, the aggregator transfers bundles by its short range radio to the message ferry. In the meantime, it acquires energy supply from the message ferry. In such situation, wireless energy transfer can decrease the overhead and time for energy supply.

Take note of that the range of long range radio transmission of every aggregator may not really cover the entire deployment area because of power constraints. Then again, every sender sends its bundles to the aggregators inside the transmission range by its short range radio. At the initial stage, none of cluster members have any bundles, so they act as senders. While some cluster members generate their own initial bundles, they look for aggregators inside the transmission range. In the event that no aggregator is available, the initial bundle's generators progressed toward becoming aggregators. Under cluster individuals' mutual connections, aggregators in the next round are chosen with the assistance of evolutionary game theory. We portray the choice system of a set number of aggregators in the following sub-segment.

In Summary, We can condense the above situation in each cluster as the repetition of the following three stages:

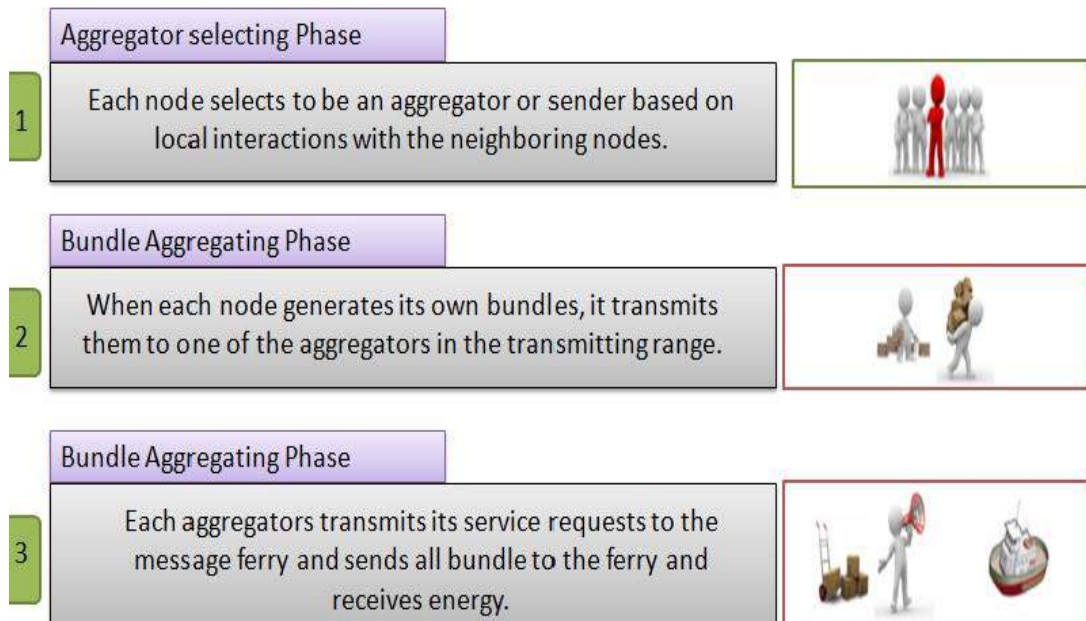


Figure 6: Phases

We characterize a *round* as the unit of this repetition. During each round, every node plays out these three stages. We presume that all nodes synchronize each other and know the length of the round. The length of the round is pre-determined by the sink node which can likewise be updated through the communication between the ferry and nodes if necessary.

Then again, in such sort of isolated systems, every custodian node needs to consume, i.e., battery life by generating its own bundle and awaking all the time by holding bundles until delivering to the message ferry. Note here that the awaking period of nodes is proportional to the energy consumption.

There are two approaches to keep their batteries in high levels:

- 1) Obtaining the battery supply from the message ferry at the stage 3 of the round and
- 2) Reducing the battery utilization by sleeping as long as possible in the round. The former (latter) case can be regarded just like an aggregator (a sender). In our proposed situation, aggregators ought to be conscious all the time in the round to receive bundles from senders. As a result, they consume much energy than senders however can likewise obtain the battery supply from the message ferry.

Then again, senders can't obtain the battery supply yet can reduce the battery consumption by awakening only when it needs to generate and transmit its own bundle to the aggregators. Fig.6 presents the above characteristics of aggregators and senders.

Assessing these qualities, we expect that the system functions admirably under the conditions:

- 1) There exist few aggregators and numerous senders.
- 2) The role of a node ought to change per round. In each round limited number of aggregators is equal to 2 and the role (to be an aggregator or a sender) changes among nodes in each round.

These difficulties can be partitioned into two issues:

- 1) How to choose aggregators independently under circumstances where all nodes are potentially selfish, and
- 2) How to control the number of aggregators. To adapt to these issues, we receive evolutionary game theoretic approach.

13. Modeling as a game: Selection of the Aggregators:

Since it is hard to accomplish a centralized control in DTNs because of absence persistent connectivity among arbitrary nodes, the selection of DTNs should be realized in a decentralized way. Additionally, centralized control builds communication overheads among cluster members and it is defenseless against node failure. More particularly, every node

determines to be an aggregator or a sender in view of its own benefit, through mutual communication among neighboring nodes.

14. Pay-off Matrix

- Now, the interaction among nodes can be modeled as a game between two neighboring nodes in evolutionary game theory [5], which is represented by a payoff matrix.
- In our scenario, there are two strategies for each node: to become an aggregator (aggregate) and a sender (send).
- There are four possible combinations of the strategies of the two nodes, and payoff of each node depends on the combination of strategies.

Table 1: Payoff Matrix for case no retransmission and retransmission

Node 2 Node 1	Sender	Aggregator
Sender	$-s, -s$	$-s, b-c$
Aggregator	$b-c, -s$	$-c, -c$

Node 2 Node 1	Sender	Aggregator
Sender	$-c, -c$	$-s, b-c$
Aggregator	$b-c, -s$	$-c, -c$

Let c and s denote the amount of energy consumption per round for aggregators and senders, respectively. s increases with the rate of generating bundles. If retransmissions in the bundle layer do not allow in the sender, we have $c > s > 0$.

On the other hand, when senders allow retransmitting bundles without limit, energy consumption of senders increases but never exceeds c . The bundle layer's retransmissions mechanism, i.e., reliable transmission of bundles by custody transfer mechanism is required when a sender cannot find an aggregator in its neighboring nodes, and failures of transmission in a sender mainly occur due to the mismatch of the waking time of neighboring sender nodes. Next, let b represents the energy supplied by the message ferry to each aggregator. Intuitively, the larger b is, the more the aggregators increase.

We assume $b > c$, which is necessary to suppress the number of senders as well as to avoid battery shortages of nodes. Figure 6 illustrates the node level behavior for no-retransmission case and retransmission case.

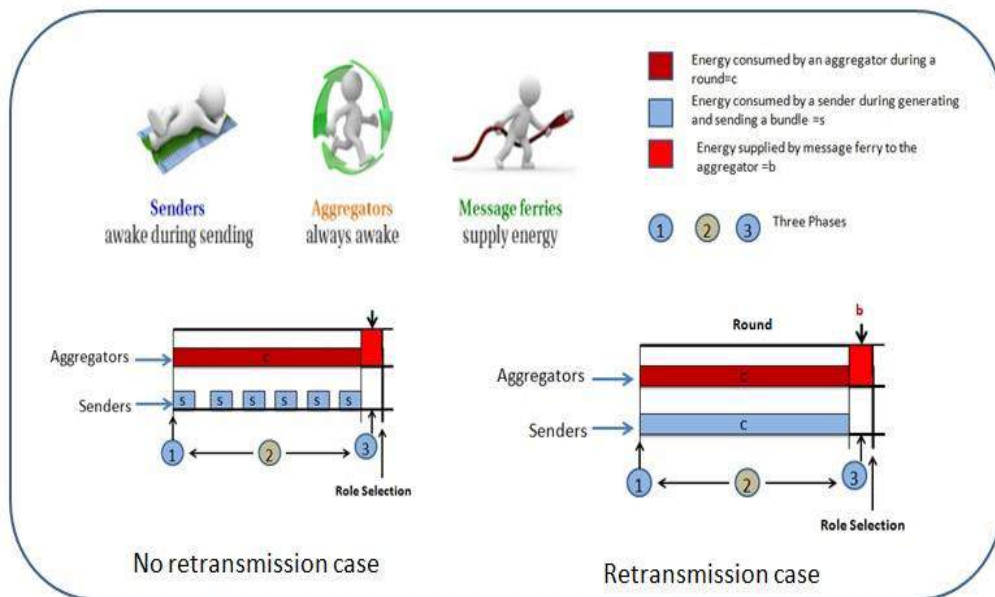


Figure 7: Role and node level energy consumption of an aggregator and a sender in one round. During the role selection period all nodes wakeup for a short time and select their next role based on their current conditions.

15. Conclusion:

Delay tolerant Network is most important where there is no direct connectivity. In this study, we tried to show details study about Delay Tolerant Network. For this, we show some special features like custody transfer, message ferrying model, model scenario etc. We shown pay off matrix for the case of no re transmission and retransmission. Delay Tolerant Network is getting popularity day by day. Japan, China introduced Delay Tolerant Network when there is disaster. In Bangladesh, Delay Tolerant Network should be implemented very soon for disastrous situation.

This research study considered data aggregation in a cluster for ferry-assisted multi-cluster DTNs. We considered that nodes were inherently selfish and non-cooperative in nature. Applying evolutionary game theory, the Self-Organized Data Aggregation scheme in such an environment is discussed. In this scheme, the selection of aggregators is conducted through decentralized processes with the help of strategic decisions of evolutionary game theory.

References

1. S.F.Kader, M.M.Hossain, S.Ghose and K.R.Zafreen, "Selection of Better Approach for Self Organized Data Aggregation Techniques using Evolutionary Game Theory" International Conference on Innovations in Science, Engineering and Technology (ICISSET 2016).

2. Hang Guo, Xingwei Wang, Hui Cheng, Min Huang, "A routing defense mechanism using evolutionary game theory for Delay Tolerant Networks", Elsevier Science Publishers B. V. in *Applied Soft Computing*: Volume 38 Issue C, January 2016.
3. Tarek AlSkaif, Manel Guerrero Zapata, Boris Bellalta, "Game theory for energy efficiency in Wireless Sensor Networks", *Journal of Network and Computer Applications*: Volume 54 Issue C, August 2015 in Academic Press Ltd..
4. K. Habibul Kabir, Masahiro Sasabe, and Tetsuya Takine, "Evolutionary Game Theoretic Scheme for Stable and Resilient Data aggregation in DTNs," *International Journal of Autonomous and Adaptive Communications Systems (IJAACS)*, 2013.
5. K. Habibul Kabir, Masahiro Sasabe, and Tetsuya Takine, "Self-Organized Data Aggregation among Selfish Nodules in an Isolated Cluster," in *Proceedings of the 1st Workshop on Bio-inspired Models and Technologies for Ambient Information Society (BioAmbIS 2010 workshop)*, Boston, MA, USA, December, 2010.
6. K. Habibul Kabir, Masahiro Sasabe, and Tetsuya Takine, 'Evolutionary game theoretic approach to self-organized data aggregation in delay tolerant networks', *IEICE Transactions on Communications*, vol.E93-B,no.3, pp.490-500.
7. K. Habibul Kabir, Masahiro Sasabe, and Tetsuya Takine, "Design and Analysis of Self-Organized Data Aggregation Using Evolutionary Game Theory in Delay Tolerant Networks," in *Proceedings of The Third IEEE WoWMoM Workshop on Autonomic and Opportunistic Communications*, Kos, Greece, June, 2009.
8. Z. Zhang, "Routing in Intermittently Connected Mobile Ad Hoc Networks and Delay Tolerant Networks: Overview and Challenges", *IEEE Commun. Surveys & Tutorials*, vol. 8, no. 1, pp. 24-37, 2006.
9. Cerf, V., Burleigh, S., Hooke, A., Torgerson, L., Durst, R., Scott, K., Fall, K., Weiss, (2003) 'Delay tolerant network architecture', IETF RFC4838 draft.
10. Fall, K. (2003) 'A delay-tolerant network architecture for challenged Internets'. *Proceedings of ACM SIGCOMM 2003*, pp.27-34.
11. K. Fall and W. Hong, "Custody transfer for reliable delivery in delay tolerant networks." Tech. report, in *Delay Tolerant Networks*, Intel Research, Berkeley TR-03-030, 2003.
12. Guo, H., Li, J., Washington, A. N., Liu, C., Alfred, M., Goel, R. et al, "Performance Analysis of Homing Pigeon based Delay Tolerant Networks In: *Military Communications Conference*", 2007. MILCOM2007. IEEE, pp. 1-7, 2007.
13. Kevin, F, "A delay-tolerant network architecture for challenged internets," In: *Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications* Vol. 33, pp. 27-34. ACM 2003.

14. Zhao, W., Ammar, M., Zegura, E.: A message ferrying approach for data delivery in sparse mobile ad hoc networks. In. ACM MobiHoc, pp.187–198 (2004).
15. M. A. Nowak, Evolutionary dynamics: exploring the equations of life. HarvardUniversity Press, 2006.

