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Contents

English Language Teaching Materials and Testing Methods Nexus at the Primary Level Education in Bangladesh

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Abstract

This article aims at evaluating the effectiveness of the primary English Language Teaching materials designed by NCTB and the testing systems approved by NAPE, and the corollary of their consistency in the success of ELT at the primary level education in Bangladesh. The current study, being a mixed method research, elicited data from a set of questionnaire and semi-structured interviews with English teachers of both urban and rural schools in Bangladesh. The study explores that the materials, though comprise four language skills, the evaluation system focuses only on the reading and writing skills. Consequently, the practice and assessment of listening and speaking skills are neglected in schools. This mismatch between the materials and the assessment system along with inapt teaching methods, untrained teachers, and scarcity of classroom resources greatly hinders the development of learners' communicative competence. So, the paper recommends a harmonizing alliance between the teaching materials and the testing methods to attain the goal of the curriculum.

1 Introduction

In this highly communicative era, realizing the immense importance of English as a way of local and worldwide communication, Bangladesh government has emphasized English language learning (ELL) from the very initial stage (from Grade 1) to prevent the language being fossilized in the advanced stage. As acquiring a language is much more difficult and ultimately less successful after the 'critical period' i.e. between age 5 and puberty (Lenneberg 1967) (qtd. in Ara 162), the primary level is the best time to develop learners' competence in English language because the imperfect learning at this fundamental level may impede the purpose of ELL. Besides, earlier beginning of language learning provides more practice and experience, leading ultimately to greater fluency and effectiveness (Curtain and Dahlberg 2004) (qtd. in Ara 163). Considering this fact, English language is taught as a compulsory subject from the primary level education in Bangladesh. Still most of the learners cannot attain the desired proficiency in English. So, this paper investigates the reasons of the failure of learning English as to whether it is the deficiency in the processes of English language teaching (ELT) i.e. poor materials design and faulty teaching methods to attain communicative competence, or the imperfect evaluation system.

This paper scrutinises English language study in the Bangla medium primary schools (the major branch of primary education system in Bangladesh comprising

more than 82,218 schools of ten different types i.e. Government Primary School, Registered Non-Government Primary School, Non-Registered Non-Government Primary School, Experimental schools, Community schools, Kindergartens, NGO schools, Ebtedayee madrasahs, primary sections of high madrasahs and primary sections of high schools) (UNICEF 1). The study attempts to examine English materials (English For Today 2013) of Grade II-Grade V designed by National Curriculum and Textbook Board (NCTB) and the testing systems prescribed by National Academy for Primary Education (NAPE), and proceeds analyzing the objectives of the primary English curriculum, teaching methods and classroom practices.

Today, English as a global language, has become a lingua franca in Bangladesh. So, the primary English curriculum 2012, modified in the light of the National Education Policy 2010, has emphasized the development of learners' communicative competence in English. In 1992, NCTB mentioned the following four English language competences (among 53 terminal competences) to be attained after the completion of primary education:

- to read simple material hand written or printed in English,
- to listen to and understand simple conversation, story and rhymes in English and to get pleasure out of them,
- to speak simple sentences in English in order to make others understand one's own observation and ideas and
- to write brief accounts of known things in correct English.

In ELT, instructional materials have an influential role in facilitating the learning process as they are the primary sources of learning contents and activities, guidance for performing tasks, and techniques to evaluate learning outcomes (Richards 15). But the effective application of the materials in the classrooms should be ensured to get the benefit from them. Besides, the testing systems that aim to measure students' competence affect the teaching methods and classroom practices and thus the success of the curriculum as the education system in Bangladesh is conventionally based on examinations. So, it is worth investigating whether primary English textbooks, teaching techniques, learning environment and assessment methods are complementary to develop learners' competence in all language skills.

2 Literature Review

To achieve terminal competence in English, it is important to build up learners' communicative competence. Communicative competence refers to the knowledge of using 'language for a range of different purposes and functions' (written and spoken communication); varying 'the use of language according to the setting' (formal and informal) and 'the participants'; 'knowing how to produce and understand different types of texts (e.g. narratives, reports, interviews, conversations)'; using 'different kinds of communication strategies' (Richards 3); the abilities to use language effectively and appropriately in communicative functions (Richards & Rodgers 156); and the relationship between linguistic

competence (rules and grammar) and socio-linguistic competence (rules for use) (Canale and Swain 6).

Selection of appropriate teaching method is crucial in getting the maximum benefit from the materials. In the 1990s the Communicative Language Teaching (CLT) has been introduced in Bangladesh as an effective approach to develop learners' communicative competence in English (NCTB 2003). This method enables the learners to interact meaningfully in real life situations. Here the meanings of language are exerted through involving classroom activities instead of direct translation. Learners' grammatical competence is built up in an inductive way. Richards & Rodgers suggest three types of CLT materials for communicative language use - text-based, task-based, and realia. Text-based materials consist of texts containing information, themes, and tasks promoting learners' thematic, comprehensive and communicative competence. Task-based materials contain games, role plays, simulations, task-based communication activities, etc, and realia includes authentic and real life materials (169-170). Brian Tomlinson depicts materials as having relevant and useful contents (10) and tasks providing opportunities for the learners 'to use the target language to achieve communicative purposes' (14).

To Canale and Swain, learners' competence, linguistic or communicative, can be realized only through social interaction "in the actual production and comprehension of utterances" (6). The classroom is a "real social context in its own right, where learners and the teacher enter into equally real social relationships with each other" (Littlewood 44) and the teaching materials are 'the way of influencing the quality of classroom interaction and language use' (Richards & Rodgers 168). The classroom teaching that provides an enjoyable learning environment and interesting activities such as songs, rhymes and games should be ensured to make the learners motivated in learning (Ara 161-172).

But in Bangladesh the traditional and dominant way of teaching in most schools tends to focus on memorizing facts with little emphasis on developing analytical, practical or vocational skills (UNICEF 3); teachers follow the grammar explanation, lecture based, and memorization-oriented ELT pedagogy' (McKay 2011); and classroom instructions focus on 'mere skill-drill with substantial memorization and repeated practice' instead of connecting bridge between 'the oral language experiences to the written or visual world of literacy' (Banu 2). Moreover, teachers cannot give individual attention to each learner as teacher-student ratio at the primary level is 1:49 (DPE 2009); 'Approximately 24% of Government Primary School and Registered Non-Government Primary School teachers are untrained' (UNICEF 2); and important ELT resources like 'trained teachers, communicative teaching materials; and financial, infra-structural and management facilities' are not equally available or favorable in all the educational institutions in Bangladesh (Sadek 2002) (qtd. in Salahuddin, Khan and Rahman 36).

A 2008 study by English in Action (EIA) on an observation of 252 English classrooms of primary and secondary schools in Bangladesh shows that 'most lessons observed did not encourage a communicative approach; 2% to 6% of classes used the teaching aids (other than the textbook); and in 2% to 4% of classes individual students or groups were encouraged to speak in English' (EIA 1). Most significantly, the lack of "a concordance between the examination, the syllabus, their notions about the process of learning, and the teaching method" is considered as the main confrontation against CLT (Quader 19). Teachers feel pressure to make the learners prepared for the exam, 'the pressure being much higher in grade V partly due to meeting the primary completion of examination demand' (Banu 2) that ultimately affects the classroom practices.

3 Research Objectives
This study has been conducted to

- study the effectiveness of primary English materials to develop learners' communicative competence
- investigate learners' involvement in practicing English language skills in the classrooms
- ovserve the challenges of the proper implementation of English materials in the classrooms and
- assess the validity of testing methods in executing the purpose of the primary curriculum.

4 Significance of the Study
The study observes the reasons of the primary learners' failures in developing English language skills. The findings of the study give ideas about the present situation of ELL in Bangladesh. It also offers suggestions for overcoming the prevailing challenges that have made the curriculum less effective. The results of the study would be a guideline for the material designers, the school authorities, and all concerned for ELT at the primary level.

5 Methodology
This empirical study has been conducted to have an in-depth observation of English textbooks of Grade II to Grade V designed by NCTB, the sample question pattern of primary completion examination approved by NAPE, and other testing tools adopted to evaluate learners' progress in ELL. The data of the study have been obtained from surveys. This research has also got data from some secondary sources on primary education, materials design, language teaching and testing. Therefore, observation, survey and document analysis have been used as the methods of collecting data in the research.

This research has used a mixed method approach with an analysis of both quantitative and qualitative data where questionnaire (comprising close ended and open ended questions) for teachers, face to face semi-structured interviews with the teachers, and classroom observation were used as data collection tools. A descriptive and interpretative analysis of the data was carried out. Teachers, being the real consumers of the materials, were especially selected as the respondents of the research.

The research was conducted in the area of Mirpur and Maghbazar in Dhaka; Jajira, and Palong in Shariatpur district; and Keshabpur in Jessore district. The samples of the schools were selected by purposive sampling procedure. 8 reputed non-government private schools of Dhaka and 14 government primary schools of Jessore and Shariatpur were visited; 32 primary English teachers were selected as respondents for data collection. Among them 22 teachers were given questionnaires; and other 10 teachers were selected for interviews by purposive sampling. 8 classes from Grade III to Grade V were surveyed to observe teachers' pedagogical strategies applied in the classrooms. Grade I and II were not considered because formal teaching in English does not begin at these levels.

6 Data Analysis and Findings

The data of the study have been analyzed into four categories such as: (1) English Language Teaching materials analysis, (2) testing system evaluation, (3) teachers' attitudes and roles in ELT, and (4) actual classroom practices.

6.1 English Language Teaching Materials Analysis

The primary English materials, 'English For Today' (Grade II-Grade V) cover four basic skills of English - listening, speaking, reading, and writing providing opportunities for the learners to practice as per the purpose of teaching English i.e. 'to help students develop competence in all four language skills in English through meaningful and enjoyable activities' (NCTB 2012).

To improve listening and speaking skills of the learners, basic English sound recognition, sound differences using minimal pairs, rhythm of speaking, stress, and intonations have been brought into practice in the materials. The learners are instructed to perform these in rhymes and songs with rhythm to make them feel interested in learning. To improve learners' comprehensive skill teachers have been instructed to read aloud and act out dialogues, sounds, and texts.

To develop learners' speaking skill, the materials aim to teach some useful linguistic expressions needed for social interaction such as exchanging greetings and farewells, making introductions, giving commands and instructions, asking and answering questions, making requests, etc through some authentic and simple conversations. The subject matters of the conversations have been taken from real life situations. The activities like describing pictures, talking about easy events and things, working in pairs and in groups are included for speaking practice.

The materials have included authentic reading texts selected from learners' familiar environment to associate learning in real life context. Reading the texts with proper understanding, sound, stress, intonation and punctuation is accentuated to develop learners' reading competence.

With a view to having a good command in writing skill, some fundamental syntactic structures such as formation of words, phrases, statements, questions, commands, requests, instructions and some simple grammatical items (e.g. contractions, capitalization & punctuation, tense aspects, nouns & pronouns, common prepositions, etc.) are introduced inductively in different contexts so that the learners can acquire the rules naturally. Important grammatical rules are especially pointed out in 'Language Focus' for more practice. The materials also intend to teach technical writing such as letters, paragraphs, short stories, short composition writings, dialogue writing, filling up forms, etc.

Considering the tender age and the competency level of the learners, the lessons are presented in a very interesting way with appealing contents, attractive colors, and photographs. Variations in subject matter and activities are maintained to remove monotony in studies and to raise curiosity to know new things. Simple rhymes and poems, games, pictures and simplified stories are also included to make the learners motivated in learning

Useful and meaningful exercises are planned to assess the outcome of learning. In the textbooks different skill based tasks such as filling in the gaps, pair work, group work, chain drill, sound practice, matching, drawing and coloring, answering simple questions, identifying true or false, describing familiar objects, etc are intended to be done.

6.2 Evaluation of the Assessment Methods Evaluation

The sample question approved and provided by NAPE is considered to be the yardstick for measuring the expertise of the primary level learners. But it is unfortunate that in the public examinations, questions are set to assess only reading and writing skills. Different writing tasks such as attempting multiple choice questions, filling in the blanks, matching columns and comprehension check of reading texts (one seen and another unseen) are to be attempted in the public exams. Some test items i.e. the ability to use punctuations and capital letters, and to form correct sentences are selected to evaluate learners' grammatical competence. Competence on technical writing is assessed by the test items such as letter writing, paragraph writing, short composition writing, filling up forms, etc. But assessment of listening and speaking skills is regrettably absent from the question. Rather, two test items on translation have been included.

6.3 Classroom Observations

The study observed real classroom practices to examine the challenges of implementing the English textbooks. These observations provided information on the use of languages and teaching aids in the classroom, teaching strategies, classroom environment, and the frequency of learners' participation in classroom interactions.

6.3.1 Language Used in the Classroom

In the classrooms, teachers mainly used Bangla for interpersonal talks and English only while reading from the textbooks. Code switching between the two languages was frequently observed in the conversations between teachers and students.

6.3.2 Use of Teaching Aids in the Classroom

In most of the classrooms nothing but English textbooks, blackboard and chalk or white board and marker were used as teaching aids.

6.3.3 The Teaching Strategies Applied in the Classes

In the classes, teachers were translating English texts into Bangla and completing mainly the exam-oriented exercises from the textbooks. Grammatical items pointed out in the 'Language Focus' were taught deductively. In some classes, students were involved in speaking by practicing dialogues which were rather the 'scripted dialogues' constructed for the purposes of language teaching than the 'authentic dialogues' i.e. naturally occurring discourses (Tomlinson 68). Contents of the lessons rather than the language skills were focused.

6.3.4 Classroom Environment

The classrooms were highly dense with a large number of students ranging from 45 to 80. So, the teachers could not pay much attention to monitor the activities and written tasks of all the students as they had to spend much time in managing the classrooms.

The sitting arrangements in the classrooms were not suitable for accomplishing group discussions as there was no sufficient space to sit in a circle. Instead, the learners were to sit in rows in the classrooms that persuaded teachers to conduct the class by giving lectures.

6.3.5 Communication Process Followed in the Classrooms

In most of the classes, teachers were found to give lectures. In some classes, students were involved in speaking to answer some questions. But most of these answers were in one-word sentences or phrase like sentences instead of in complete sentences. Natural interactions in English among the students were never allowed to be accomplished.

6.4 Questionnaire for Teachers

To elicit data for the study a written questionnaire (Appendix 1) was distributed to 22 English teachers of some government primary schools and some non-government primary schools. The questionnaire included 13 questions with both open ended questions and with fixed alternatives. Results of the questions for multiple responses were prepared considering the highest frequency of responses.

6.4.1 Teachers' Subject-based Academic Degree/Professional Training

Question 1 was intended to find out teachers' qualification in teaching English.

6.4.1.1 Subject-based Academic Degree

Subject -based academic degree	Yes	(%)	No	(%)	Total
Number of responses	8	36%	14	64%	100%

Table No.1 (Teachers with relevant subject-based academic degree)

The above table shows that among the respondents, 36% teachers had relevant subject-based academic degree, whereas 64% teachers did not have.

6.4.1.2 Professional Training

Name of the training	Number of Respondents	(%)	Total
ELT	3	14%	
Subject-based CPD training	3	14%	100%
Subject-based training from PTI	10	45%	
No training	6	27%	

Table No.2 (Teachers' Professional Training)

The above results showed the fact that 14% teachers had ELT training, 14% teachers had subject-based CPD training sponsored by TQI-SEP (Teaching Quality Improvement in Secondary Education Project), 45% teachers had subject-based training from Primary Training Institute (PTI), and 27% teachers had no professional training at all.

6.4.2 The Class Size

The responses to Question 2 revealed the fact that the number of students, the respondents taught in each class, were 80, 60, 75, 40, 70, 80, 75, 85, 80, 15, 35, 50, 70, 40, 45, 70, 45, 60, 50, 65, 75 and 80. Then the mean of the numbers of students of each class was 1345/22= 61.13, to be precise, 61.

6.4.3 The Frequency of Languages Used in the Classroom

The responses to Question 3 showed that 100% teachers used both Bangla and English languages in the classrooms.

Languages	Number of respondents	(%)
English only	-	-
Bangla only	-	-
Both Bangla and English	22	100%

Table No.3 (Languages used in the classrooms)

6.4.4 Teaching Methods

The survey investigated that almost 91% of the respondents followed the GTM whereas only 9% followed the CLT method in teaching English.

Teaching methods	Number of responses	(%)	Total
GTM	20	91%	100%
CLT	2	9%	

Table No.4 (Teaching methods)

6.4.5 The Teaching Aids Used in the Classrooms

Teaching aids	Always (%)	Sometimes (%)	Rarely (%)	Never (%)
Textbooks	22 (100%)	-	-	-
Black/White board and chalk/marker	22 (100%)	-	-	-
Visual aids (picture, chart, poster, etc.)	-	4 (18.5%)	10 (45%)	8 (36.5%)
Audio aids	-	-	4 (18.5%)	18 (81.5%)
Audio-visual aids	-	-	2 (9%)	20 (91%)
Multimedia or Overhead Projector (OHP)	-	-	2 (9%)	20 (91%)

Table No.5 (Teaching aids used in the classrooms)

The results disclosed the fact that 100% teachers always used textbooks, board and chalk or marker, 45% teachers seldom used visual aids, but (82-91) % teachers never used audio aids, audio-visual aids and multimedia or OHP in the classrooms.

6.4.6 The Frequency of Selecting Classroom Activities

Activities	Frequently (%)	Occasionally	Seldom	Never	Total
Listening practice	-	-	5 (22.5%)	17 (77.5%)	100%
Speaking practice	2 (9%)	4 (18.5%)	2 (9%)	14 (63.5%)	100%
Vocabulary practice	10 (45%)	8 (36.5%)	4(18.5)	-	100%
Reading practice	16 (72.5%)	6 (27.5%)	-	-	100%
Writing practice	22 (100%)	-	-	-	100%
Group discussion	-	-	4(18.5%)	18 (81.5%)	100%
Conversation practice	-	2(9%)	4(18.5%)	16 (73%)	100%
Pair work	-	-	4(18.5%)	18 (81.5%)	100%
Chain drill	-	2(9%)	4(18.5%)	16 (72.5%)	100%
Fun activities (Learning through rhymes, songs, games, pictures and stories)	-	5 (22.5%)	9 (41%)	8 (36.5%)	100%

Table No.6 (Classroom activities)

The study showed that 77% teachers never did listening practice; speaking was never practiced by 64% teachers; 45% teachers frequently did vocabulary practice; reading was often practiced by 73% teachers; 100% teachers frequently engaged students in writing practice; (73-82) % teachers never involved students in group discussion, conversation practice, pair work, and chain drill; and teaching through fun activities were seldom performed by 41% teachers.

6.4.7 Effectiveness of English Materials

Question 7 was an open ended question and was meant to elicit the respondents' observation on the effectiveness of English materials. Most of the participating teachers mentioned that English materials covered four skills of the language, but no audio CD was provided with the textbooks for English sound and speech practices. Some teachers observed that the proper implementation of English textbooks was not possible for the limitations of the teaching environment.

6.4.8 Use of Teachers' Guide (TG)

It was observed that 23% teachers used TG whereas 77 % teachers had not found TG, let alone following it.

Use of TG	Yes	(%)	No	(%)	Total
Number of responses	5	(22.5%)	17	(77.5%)	100%

Table No.7 (Use of TG)

6.4.9 Teachers' Pedagogic Styles in ELT

Teachers' pedagogic styles	Number of responses	%
Practicing tasks relevant to the public exam	22	100%
Practicing skill-based tasks	4	18.5%
Translating English text into Bangla and completing the exercises	22	100%
Giving emphasis on grammar	20	91%
Encouraging the students to memorize	18	81.5%

Table No.8 (Teachers' pedagogic styles in ELT)

The survey revealed the fact that 100% teachers selected classroom activities relevant to the public exam question, 18% teachers chose skill-based tasks, 100% teachers taught by translating English text into Bangla and completing the exercises, 91% teachers gave emphasis on grammar, and 82% teachers encouraged students to memorize.

6.4.10 Testing Tools Selected in Schools

Testing tools selected in schools	Number of responses out of 22 (100%)
Public exam question-based test items	21 (95.5%)
Skill-based test items	1 (4.5%)

Table No.9 (Testing tools selected in schools)

The research found that 95% respondents selected testing tools following the sample public exam questions and 5% respondents took skill-based tests in schools.

6.4.11 The Frequency of Testing four Language Skills in the Classroom

Tests	Always	Sometimes	Rarely	Never
Listening tests	-		2 (9%)	20 (91%)
Speaking tests	-	2 (9%)	2 (9%)	18 (82%)
Reading tests	16 (73%)	6 (27%)	-	-
Writing tests	22 (100%)		-	-

Table No.10 (Testing the skills in the classrooms)

The investigation showed that 91% teachers never attempted listening tests; 82% teachers never gave speaking tests; 73% teachers always tested reading skills; and 100% teachers always tested writing skills.

6.4.12 Obstacles to Make the Classroom Communicative

Question 12 was meant to find teachers' perceptions about the obstacles to make communicative classroom. Large classes to 82% teachers; insufficient classroom space to 18% teachers; unavailability of teaching aids to 41% teachers; lack of training to 27% teachers; and the pressure of the exam preparation to 91% teachers were viewed as obstacles to make the communicative classes.

Obstacles to the communicative classroom	Number of responses	(%)
Large classes	18	82%
Insufficient classroom space	4	18%
Unavailability of teaching aids	9	41%
Untrained teachers	6	27%
The pressure of the public exam preparation	20	91%

Table No.11 (Obstacles to the communicative classroom)

6.4.13 Validation of the Evaluation System to Attain Learners' Communicative Competence

Question 14 was an open ended question and was meant to draw the respondents' opinions about the public exam system. All teachers viewed that the evaluation system did not include testing items on all language skills and thus failed to develop learners' communicative skills absolutely. In the words of a teacher:

The traditional English exam questions have little impact on attaining communicative competence as the questions are designed only to test the students' ability to read and write.

6.5 Interviews with Teachers

In the interviews, 10 primary English teachers were selected to share their opinions and experiences regarding ELT. Qualitative approach was applied to analyze the responses of the teachers. Most of the teachers viewed English materials effective to fulfill the purpose of the primary curriculum but were skeptic about their successful implementation. One of the teachers opined:

The precondition of achieving competence on the four language skills is to arrange a teaching-learning environment that includes trained teachers, attractive decoration of classrooms, and most importantly, utilization of modern technology. As these amenities are acutely absent in the institutions of our country, only English materials are not enough to serve the purpose.

Another teacher observed: "The purpose of teaching English to make the learners competent in all the skills can be fulfilled only if the teachers concerned are competent and sincere."

The interview disclosed the fact that most of the teachers of the government primary schools (except few teachers in non-government primary schools) had no academic education (Honors/Masters) in English. Few of them took subject based training from PTI. Most of the teachers did not have access to TG. They mentioned that the test items on translations promted them to conduct classes in the GTM.

The teachers stated that the teaching method selection and classroom practice were accomplished considering the public exam questions. So, they significantly emphasized reading and writing practices to ensure good exam results. A few teachers in some urban elite schools, though, started listening and speaking practices at the beginning of the academic year, the practices were being gradually left because of the pressure of completing the syllabus for the public exam. A teacher suggested: "English public exam question should have four parts to justify the four language skills accurately."

Another teacher expressed: "I think the traditional exam questions are not up to the standard to justify all the skills of English language. It is noticed that students follow some note books to prepare themselves for the exam and surprisingly, attain good marks too. But they face a great difficulty in the practical sphere of life."

Teachers also mentioned large classes, unavailability of teaching aids, unfavorable classroom environment, and inadequate time as some of the challenges to the proper implementation of English materials in classrooms.

7 Discussion

To ensure effective ELL at the primary level, NCTB has designed English textbooks comprising four language skills to put into practice the communicative approach. Useful linguistic expressions for real life interaction are intended to be taught to enhance learners' communicative efficiency. But success in achieving the target level proficiency in English language skills is still disappointing as there is an immense incoherence between the purpose of the curriculum and the proper application of its basic elements, especially teaching materials and testing tools.

Though English materials are designed with a good number of communicative activities on all language skills, the testing system does not let the learners explore their natural conversational talents as testing items on listening and speaking skills are absent there. This inconsistency ultimately affects the teaching techniques and classroom practice.

The study showed that only reading and writing tasks were practiced in schools and assessed in intra-school examinations. On the contrary, the practices of listening and speaking skills were avoided as no marks were allotted for these skills in public exams.

Traditionally, what is actually meant by ELL in Bangladesh is to read the texts (even sometimes without proper understanding) to do exercises, to know grammatical rules, and to practice exam related test items. The study observed that English textbooks at the primary level contained different communicative tasks such as pair works, group works, role plays, chain drill, etc, but the real classroom context seldom provided the learners opportunities to practice them properly. Rather, teachers often involved learners in controlled practice that highly affected their accuracy to make new structures and their fluency in English. Script conversation rather than natural interaction was practiced. Teaching through fun activities was seldom accomplished. Consequently, English speech and grammar did not emerge naturally in the learners. Thus, one of the objectives of English curriculum 2012 i.e. to enable the learners 'to speak English to talk about day to day life and fulfill communicative functions' remained yet to be achieved.

The findings of the study revealed that teachers and students tended to interact in phrase-like sentences or in short utterances in the classrooms that often contributed to erroneous performances by the learners. Lecture based teaching system also deprived students of getting enough language production time. The classes which were the only arenas for the learners to have exposures to English language were not always conducted in English. This short-term practice resulted in the learners' poor speaking abilities. As audio CDs were not provided with the textbooks, often teachers' faulty speeches were the only source of learning

English sounds and pronunciation. It, however, sometimes caused students' imperfect phonological development since most of the teachers were untrained.

Besides, most of the teachers did not follow TG which might help them to select the appropriate teaching methods. The government's unfortunate failure to provide TG to a large number of teachers (Sadek 2002) (qtd. in Salahuddin, Khan and Rahman 48) and teachers' improper orientation with the CLT approach hindered the appropriate utilization of materials. Generally, teachers followed the GTM by translating English text into Bangla, using Bangla language in giving lectures, teaching grammatical rules deductively, and encouraging memorization. Notably, the test items on translations in public exam question encouraged teachers to apply the GTM. Furthermore, the pressure of exam preparation, bulky classes, and unavailability of the modern teaching aids got in the way of achieving the desired goal of the curriculum.

8 Limitations of the Study

Though the study aims to portray the incoherence between English Language Teaching materials and testing methods at the primary level and its influence on the entire primary education system in Bangladesh, only two types of primary institutions e.g. government primary institutions and non-government private institutions were examined. Among them only 14 government primary schools of rural areas and 8 urban non-government private schools were selected for data collection. Only teachers' perceptions were studied as the teachers were directly involved in the utilization of materials in classrooms. Only 10 classes were monitored to observe the actual classroom practices. If more classes had been observed, the study could have been more holistic.

9 Recommendations

Based on the findings of the research the following recommendations are of real importance to overcome the challenges to the achievement of the purpose of the primary English curriculum. Teachers must follow TGs for the selection and application of perfect teaching methods; CLT training should be organized for all English teachers; adequate modern teaching aids appropriate for CLT should be made available; audio CDs should be supplied with textbooks for listening and speaking practices; teachers should speak in English in classrooms; number of students in each class should be reduced to a manageable figure so that teachers can give attention to all students properly; learning through fun activities and natural interactions should be sustained for language acquisition; the public exam system must include testing items on all the language skills; and continuous assessment of all language skills of English should be ensured in intra-school examinations.

10 Conclusion

To achieve enduring proficiency in English Bangladesh government has emphasized competency based ELL from the primary level education. Still most

of the learners cannot reach the target competency level due to prevailing deficiencies and challenges in our education system. The findings of the study showed that though English textbooks were designed accentuating four language skills of English, the inauspicious and inadequate teaching environment obstructed the proper utilization of materials. Besides, the traditional faulty evaluation system was found to be an obstacle to the success of the primary English curriculum as it did not provide equal opportunities to practice all language skills and thus impeded the development of learners' competence in written and spoken communication. So, an effective and timely synchronization between the primary English materials and the testing systems should be ensured to build up learners' linguistic and socio-linguistic competences in English.

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Appendix-1
QUESTIONNAIRE FOR TEACHERS

Please answer the following questions by putting tick (?) marks for the options you assume or writing down your answer in the space provided.

1. Name of the last academic degree/professional training (if any):

………………………………………………………………………………..

2. The number of students on average you teach in each class:

3. Please check the frequency in which you use the following languages in the English classes.

Languages	Always	Often	Sometimes	Rarely	Never
English					
Bangla					
Bangla and English					

4. What method do you often use in teaching English in the classroom?

………………………………………………………………………………

5. What teaching aids do you use in the classroom? Please check the frequency and put tick (?) marks.

Teaching aids	Always	Sometimes	Rarely	Never
Textbooks				
Black/White Board and chalk/marker				
Visual aids (picture, chart, poster, etc.)				
Audio aids				
Audio-visual aids				
Multimedia or OHP				

6. What type of activities do you often select for the students to do in the classroom? Please check the frequency and put tick (✓) marks.

Activities	Frequently	Occasionally	Seldom	Never
Listening practice				
Speaking practice				
Vocabulary practice				
Reading practice				
Writing practice				
Group discussion				
Conversation practice				
Pair work				
Chain drill				
Fun activities (Learning through rhymes, songs, games, pictures and stories)				

7. Please write your observation as to whether the primary English materials are enough to develop learners' competence in all four skills of English.

…………………………………………………………………………………….

8. Do you follow the instructions of TG in conducting classes? ☐ Yes   ☐ No

9. How do you teach English language to the learners in the classroom? Please indicate your response by putting tick (?) marks in the box. You can tick more than one box.
    ☐ practicing tasks relevant to the public exam
    ☐ practicing skill-based tasks
    ☐ translating English text into Bangla and completing the exercises
    ☐ giving emphasize on grammar
    ☐ encouraging the students to memorize

10. What type of testing tools do you select in school?
    ☐ Public exam question related test items
    ☐ Skill based test items

11. How often do you conduct the following tests?

Tests	Always	Sometimes	Rarely	Never
Listening tests				
Speaking tests				
Reading tests				
Writing tests				

12. What do you think to be major obstacles to make your class communicative? Please indicate your response by putting tick (?) marks in the box. You can tick more than one box.
    ☐ Large classes
    ☐ Insufficient classroom space
    ☐ Unavailability of teaching aids
    ☐ Untrained teachers
    ☐ The pressure of the public exam preparation

13. How far are the traditional English exam questions effective to attain communicative competence? Please opine.

Live TV Coverage in Bangladesh:
A Genre Locally and Socially Created

Dr. Waliul Islam

In the recent years, Bangladesh has experienced an 'unprecedented expansion of TV media industry' (Rahman et al., 2009). Besides the satellite channels run by the outside-Bangladesh owners, there are as many as 28 local TV channels in Bangladesh of which three are state-owned and the rest twenty-five are owned by different business groups and individuals having political bias and identity. This widespread use of television media has a tremendous impact on the viewers. Reconfirming the over-arching influence of TV as a media, communication theorists argue that television has become not only a national unifier but also a 'preacher' (Katz, 2008). With such an increasing popularity and important role of TV, the credibility of television news has become an important issue, and this importance gets its climax during political turmoil, national disasters, particularly in the contexts like Bangladesh. Because of the differences in the media agenda of the Channels, their programs - especially news and talk shows - are mixed with some bias, and viewers often take that critically.

In order to draw public confidence, impartiality in their approaches plays a very important role. Underscoring the importance of impartiality, the BBC Guideline suggests how the notion of impartiality can be maintained. The Guide prescribes that due impartiality

> requires us to be fair and open minded when examining the evidence and weighing all the material facts, as well as being objective and even handed in our approach to a subject. It does not require the representation of every argument or facet of every argument on every occasion or an equal division of time for each view (BBC: 2005. P.1)

While the BBC Guideline (2005) details the alchemy of impartiality, Bridcut (2007) identifies the basic ingredients of such alchemy: "Impartiality involves a mixture of accuracy, balance, context, distance, evenhandedness, fairness, bjectivity, open-mindedness, rigour, self-awareness, transparency and truth." (p.7).

In the recent years we notice that the TV channels in Bangladesh have opted, among other strategies, live telecasting of events that carries significant national interest such as BDR Mutiny in 2009, Rana Plaza Tragedy in 2013, and the political unrest before and during the 10th Parliamentary election in 2014. Television programs that are live conventionally use a 'continuity' approach (Bourdon:2000). Live broadcasting is getting more and more popular among the viewers as it is 'a prime exponent of rhetorical values that have been ascribed often to the television more generally, such as the real, the authentic and he immediate' (White 2004 in Ytreberg:2006 p.424).

As the Channels go on live coverage of the news items and events, it seems that they are ushering in a new genre of televising, such as Interactive TV (ITV) to some extent. Of the three approaches to interactive TV (ITV) mode - the crawl, the walk and the run - Jens (2005) describes the Crawl approach:

> The *crawl* phase refers to the applications where the interactive content is embedded in the broadcast-flow in the same way as is the case for teletext services. There is no request or information coming from the viewer, but the viewer can by his own choice reach information such as e.g., news, weather reports, and sports, which are made available at the viewers' disposal in the flow. (Jens: 2005, pp. 89)

The 'walk' phase refers to simple data collection and   the 'run' phase refers to the complete interactivity, which includes a return channel within the ITV system through which the viewer can send various kinds of input back to the broadcaster or other TV-users. In this approach to interactive TV, the assumption is that it is necessary with a slow adaptation of the viewers for them to become interactive users of the TV medium. (For details: see Jens 2005).

Whilst the Channels in Bangladesh are following certain approach(es) to broadcasting and using a discourse style that can be termed unique with their linguistic and other discursive features, this paper attempts to explore which approach - the crawl, the walk or the run approach - the Channels are pursuing, if they are following any of them at all. The paper also examines if the use of unique linguistic features of the live coverage by Bangladeshi TV channels is leading to creating a new genre in the field of telecasting.

The discussion of the paper evolves around some key constructs like discourse, coherence, and genre. So I give a brief overview of each of the key constructs to facilitate the discussion.

Discourse

Discourse is an indiscriminately used term, often without being defined. The concept has become vague, either meaning almost nothing, or being used with more meticulousness, giving different meanings in different contexts. In a wider sense, discourse is the general idea that language is structured according to different patterns that people's utterances follow when they take part in different domains of social life. To linguists, discourse is viewed as a 'continuous stretch of (especially spoken) language larger than a sentence, often constituting a coherent unit, such as sermon, joke or narrative' (Crystal 1992, p 25). Adding an extra property, Nunan (1993, p.6) says that 'discourse refers to language in context'. Van Dijk (1983) sees bright prospect of developing a new paradigm for the study of media.

Coherence

Making a sense of a piece of discourse depends not only on the 'syntactic structures and lexical items used in that discourse' (Brown and Yule: 1989). Nunan (1993: p.116) who views cohesion as a linking device that formally 'mark various types of inter-clause and inter-sentence relationships with discourse. The unity that cohesion provides to a piece of text is achieved through some mechanism that utilizes referencing, substitution, ellipsis, conjunction and lexical devices. Being relevant to this study, I will be limited to the discussion of referencing to some extent. Reference cohesion employs mainly two types of techniques: Anaphoric and cataphoric. While in anaphoric technique, a word or phrase or clause is interpreted by referring back to other ideas in the earlier part of the text, the cataphoric technique looks for some ideas in the later part of the text (discourse) for the meaning and interpretation of a word, phrase or clause. The referencing techniques are sometimes labeled as 'reframing', which is a way to talk about going back and re-interpreting the meaning of the first sentence. Frame analysis is a type of discourse analysis that asks what activity speakers are engaged in when they say this, what they think they are doing by talking in certain way at certain time.

Genre

'Genre' is a concept for which an all-agreed definition is almost impossible to find. In a broader sense, genre is a mode of categorization, which according to Edgar and Sedgwick (1999, p. 160) denotes a set of shared characteristics, which allows for the grouping together of different forms of artistic expression or cultural production.

Indicating the ever increasing horizon of genre as a notion, Swales (1990), who at one point defined 'genre' as a "class of communicative events, members of which share some set of communicative purposes" (p. 58), and also as "a distinctive category of discourse of any type, spoken or written, with or without literary aspirations" (p. 33), is reluctant to define genre in his recent writing, on the grounds that any given definition of genre would delimit its scope and fail to encompass its increasing dimensions. In his most recent formulation, Swales (2004) defines genre very flexibly as a metaphor of 'frames of social action' (p. 61).

In a survey of the field of genre studies, Freedman and Medway (1994a) have distinguished between the Northern American and Sydney schools, which they see as having developed independently. Swales' perspective is characteristic of Northern American tradition that uses a social constructivist approach, which focuses on "unpacking complex relations between text and context" and lays emphasis on the 'dynamic quality of genres' (Freedman & Medway 1994a, p. 9) and sees knowledge as 'something that is socially constructed in response to communal need, goals and context' (Freedman & Medway 1994a, p. 5). For this tradition, genres evolve, develop and decay as a result of social and technological changes (Freedman & Medway 1994a, p. 9).

In contrast, Freedman and Medway (1994b) characterize the Sydney School, influenced by Halliday's Systemic Functional Linguistics, as having a stronger focus on forms and an approach that is marked by prescriptivism and a more static vision of genres.

Despite these differences in emphasis, Freedman and Medway (1994a) argue that both the traditions recognize the 'primacy of the social in understanding genre' and 'the role of context' (p. 9). New Rhetoric, a perspective that has evolved recently, strongly focuses on context and its embedded ideology (Johns: 2002b, p. 9).

Freedman and Medway (1994a) have summed up the traditional formulation of genres as '(a) primarily literary, (b) entirely definable textual regularities in form and content, (c) fixed and immutable, (d) and classifiable into neat and mutually exclusive categories and subcategories' (p. 1). In contrast, for Martin (1985), genre is "a staged goal oriented social process of how things are done' (p.25).

> Though the rhetoric looks different, linguists have viewed genre not much differently. Genre has been referred to by Johns (2002b, p.6) as "named socially constructed discourses" conventionalized forms often labeled as 'external features' (Pilegaard & Frandsen 1996).

Bhatia (2002), at the same time, arguing flexibility and fluidity of boundaries within genres has identified more than two mixed and embedded genres which he classifies under three major headings:

> i.   Genre group that is independent of any grounded realities of social context.
> ii. Genre Colonies, which are loosely grounded in broad rhetorical contexts and have overlapping of generic boundaries.
> iii. Individual genres, which are typically and narrowly grounded in typical socio-rhetoric contexts (Bhatia 2002, p. 282).

Regarding the format of genres in the field of media and films, a genre may also have its own original *format* invented for or original to a movie or show (Creeber, 2001). While genres are not original, format is "a production category with relatively rigid boundaries that are difficult to transgress without coming up with a new format" (p. 7). For example, what the talk-shows in our channels reveal is that they represent live telecast as well as spontaneity of action which is unpredictable.

In line with the notion that genres are grounded in the social context - meaning that they are locally constructed - the well accepted definitions of genres tend to be based on the perception that they constitute particular conventions of content (such as themes or settings) and/or form (including structure and style) which are shared by the texts which are regarded as

belonging to them. The attempt to define particular genres in terms of necessary and sufficient textual properties is sometimes seen as theoretically attractive but it poses many difficulties (Chandler 2000, p2). This happens more in classifying films and media. We sometime see the alignment of some kind of creative art with both form and content. Referring to films, Chandler argues that some films can be aligned with one genre in content and another genre in form. Stam, a film theorist argues that 'subject matter is the weakest criterion for generic grouping because it fails to take into account how the subject is treated' (Stam 2000, p.14). Referring to the difficulties of setting a rigid set of criteria for labeling a genre, particularly film genre, Stam (2000) points out that defining genres may not initially seem particularly problematic but it should already be apparent that it is a theoretical minefield. Stam identifies four key problems with generic labels (in relation to film and media): (i) extension (the breadth or narrowness of labels); (ii) normativism (having preconceived ideas of criteria for genre membership); (iii) monolithic definitions (as if an item belonged to only one genre); (iv) biologism (a kind of essentialism in which genres are seen as evolving through a standardized life cycle) (Stam 2000, pp: 128-129).

With these complexities in formulating a genre, I am going to examine whether the live coverage of the significant national events by Bangladeshi TV channels is leading to creating a new genre locally suitable for it viewers. If we take the structure of live telecasting of Bangladeshi channels and the viewer's engagement with it into consideration, we can notice quite a good number viewers participate in the live talk shows. People send their opinions and reactions to the talk shows instantly through mobile SMS, facebook entries, email messages and phone calls. Of these four modes, mobile SMS dominates, and this has been possible because of the revolutionary expansion of mobile phone facilities throughout Bangladesh. Although the viewer's participation through these distance modes cannot control the programs such as talk shows as it is possible in a full-fledged interactive TV mode what Jens (2005) terms as 'the run approach', the TV audience are no longer passive viewers as they used to be ten years ago. The poor socio-economic condition and the non-availability of adequate technological facilities and low level technological knowledge of our local viewers are still the major impediments to having a full-fledged interactive TV mode available. I tend to feel, with the present portfolio of the viewers, that Bangladeshi TV channels are at a threshold between 'the crawl approach' and 'the walk approach'.

As we notice some changes in their approaches and macro level structures, we also notice some changes at the discourse level. Unlike the western TV media like CNN, Bloomberg News, Voice of America and even Al Jazeera TV that they use very straightforward rhetoric in their broadcast discourses, Bangladeshi TV channels seem to use more circular and referential discourses. A few examples from both sides may help clarify the differences in the discourses:

"Steven Fish from University of California, Berkeley, John Marsheimer of University of Chicago, both professors of Political Science. Thank you for joining us."

<div align="right">(Cold war tensions Surface, CNN, Feb 26, '14)</div>

"Diana, as you look at the troop behind you, I couldn't see any insignia onuniform appearing. Do they - do they tell you that they are Russian troop?"

<div align="right">(John Vause from CNN studio, March 04, 2014)</div>

Diana replies from the spot:

"No, they haven't. That's the case. They have no insignia, but they haven't been so careful here as they have been in Simferopol . . . they if you look closely, they do have a Russian flag in one of their trucks. They also have number plates nowwhich identify them as being Russian." (CNN, March 04, 2014)

The discourse shows that they have been very straightforward in their delivery, shuttle references are missing in the western delivery discourses in the western TV media. On the contrary, what we see in the delivery of Bangladeshi channels, they tend to provide back and forth references while they present the information:

gRbyt Avcib Rutbb ïh, ivZ 10t01 wgwbtU gwbeZwæ‡iivaxgvgjvq mRivcÖ Kut`i ïgvjvi dwvm KihRi ntqtQ| (mÎ:  Kut`i ïgvjvi dwvm 13/12/13 ivZ

11:28, ETV Bangladesh) Majnu: As you know that the death sentence of convicted Kader Mollah has been executed at 10:01 pm] (ETV Bangladesh, 13/12/13 11:28 pm)

AvcbutK AvtNB Rubtqvu ...   Ave`ynmgv' (mZ¶]ìvcÖZvbva Gvkqvuvf nüjv 6:49,
[I have already informed you earlier ……] (Asia TV 13-1213, 6:49 pm)

- GKULzAvtNB AvcbutK Rubtqvu ïh... GjivKevmxtc‡Uïj cvt¤vu Av¸b avitq ï`q... (Avdmbv byj vbvivqbtNÄ,

Bangla Vision 10:30 pm)
- [I have informed you earlier that the local people burned down a petrol pump…..]

<div align="right">(Afsana Nila from Narayanganj, Bangla Vision 10:30 pm)</div>

A close analysis of the discourse above shows that the reporters are drawing anaphoric references to what they have said earlier. This might be a cohesive strategy to unify the message using flashback approach. This type of referencing is not frequently noticed in western media delivery discourse. Moreover, the reporter's discourse is addressed to the newscaster in the studio, not the viewers, though the message is mainly meant for them. It is too early to establish that this type of discourse patterns is going to be stable for quite some time to be labeled as a new genre. Although it is evident that some discursive changes are taking place in the genre patterns in the live telecasting discourse of the Bangladeshi channels, but we have to wait and see if the changes get institutionalized.

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Delineating the Relationship among Entrepreneurial Intention, Intensity and Locus of Control Dimensions: A Conclusive Study on Bangladeshi Undergraduate Business Students

Zannatul Ferdus
Shirin Akter

Abstract

With a preliminary aim to assess entrepreneurial intention in the light of one's intensity towards its confinement by locus of control dimensions, a total of 1144 conveniently samplified undergraduate business students from different private universities were surveyed by a structured questionnaire. Through Chi-square test for independence, this study found a significant association between students' intention and intensity. Besides, it was also found in the study that, there was a very strong, inverse and statistically significant monotonic correlation between students' intensity for doing business and their intensity to do employment in future (rs= -.930, p<0.01). Moreover, it also found that, students' higher level of internality had a positive correlation (rs= .749, p<0.01), higher score in powerful other locus of control is inversely correlated (rs= -.635, p<0.01) and higher belief in chance dimensions of locus of control had moderately positive relationship (rs= .424, p<0.01) with entrepreneurial intention and vice-versa.

1 Introduction

The term 'Entrepreneurship' can be defined as a process by which an individual's intention of possessing a business is firstly inflamed by proactive and/or reactive set of behavioral responses towards identified opportunities and then, tangibly turns into a realistic business enterprise as an upshot. Due to its prospective developmental virtues, entrepreneurship is globally considered as the most potent economic force, the world has ever experienced (Kuratko 2005). More precisely, developing countries consider it as an engine of economic progress, job creation and social adjustment (Mohar, Singh and Kamal 2007) and the developed economies consider it as a revitalizing socioeconomic agent, a way of coping with unemployment problems, a potential catalyst and incubator for technological progress, product and market innovation. However, to pursue entrepreneurship successfully is not a trouble-free task from any viewpoint. Studies have shown that success and/or failure of an entrepreneur significantly depends on their demographic characteristic, individual characteristic, personal traits, entrepreneurial orientation, and entrepreneurial readiness (Aminul, Aktaruzzaman, Zafar and Syed 2011) which consequently determines and influence their desire for wealth (Cassar 2007; Hisrich and Peters 2005; Shane et al. 2003), desire for independence (Collins and Moore 1970; Douglas and Fitzsimmons 2005; Lee and Wong 2004), need for achievement (McClelland 1961), risk taking propensity (Brockhaus 1982; Baum et al. 2007; Shane 2003; Zimmerer and Scarborough 2001), tolerance for ambiguity (Brockhaus 1980; Teoh and Foo 1997), self-discovery and job satisfaction (Shapero 1982), abilities

and experiences (Bird 1988), curiosity (Kashdan and Roberts 2004; Reio and Wiswell 2000), creativity (Riyanti 2007; Scott 1999), innovation (Carland et al. 1984; Drucker 1985; Saks and Ganglio 2002)and finally attitudes toward entrepreneurship(Begley et al. 1997; Brandstätter 1997; Davidsson 1995; Robinson et al. 1991; Segal et al. 2005). Amongst the aforementioned determinants of entrepreneurship, locus of control as a personality construct has been found to influence one's need for achievement and need for power (Atkinson 1957; Chiemeka 1991; Goodnow and Pettigrew 1955; Goodnow and Postman 1955; McClelland, Atkinson, Clark, and Lowell 1953,), risk-taking propensity (Lüthje and Franke 2003), innovativeness (McClelland 1961), and ability to seek opportunities in the environment (Gifford 2003). In the context of this relationship between locus of control and entrepreneurial intention, this study has primarily assessed the entrepreneurial intention among the undergraduate business students and then validates it by crosschecking their definite intensity of entrepreneurship against employment based on their heredity to locus of control dimensions.

2 Literature Review
The term 'locus of control' was firstly introduced in 1966 by American psychologist J. Rotter as a personality construct which reflects an individual's belief about the source of reinforcement for results obtained from it (Andreeva 2007; Schultz and Schulz 2006). According to Rotter (1966), a person's "locus" is conceptualized as either internal (the person believes they can control their life) or external (meaning they believe that their decisions and life are controlled by environmental factors like chance and powerful other which they cannot influence). Earlier studies have significantly documented the relationship of both internal and external locus of control dimensions with an individual's objective knowledge of the risk (Crisp and Barber 1995); degree of religiosity (Jackson and Coursey1988; Rasmussen and Charman 1995; Spilka et al. 1985; Wong-McDonald and Gorsuch 2004); learning approaches (Cassidy and Eachus 2000; Green et al. 2010); academic achievement (Cooper 1983; Gifford, Briceño-Perriott and Mianzo 2006); subjective and emotional well-being (Armstrong and Boothroyd 2008; Kulshrestha and Sen 2006 ; Pinto, Mansfield, and Parente 2004); self-esteem (Abouserie 1994; Griffore et al. 1990); self-motivation and social maturity (Nelson and Mathias 1995); aggression (Zainuddin and Taluja 1990); depression (Aiken and Baucom 1982; Garber and Seligman 1980; Grob 2000); longer life span (Chipperfield 1993) and their belief in paranormal, supernatural, and superstitious phenomena (Belter and Brinkmann 1981; Groth-Marnat and Pegden 1998; Irwin 1994; Peterson 1978 ; Randall Desrosiers 1980; Scheidt 1973). In terms of entrepreneurship, some recent studies have shown that one's intention to become self-employed is influenced positively by their internal locus of control (Lüthje and Franke 2003) and negatively by External locus of control (Gifford 2003).

2.1 Research Gap and Specific Objectives

In the context of Bangladesh, a huge body of literature can be found in the field of entrepreneurship but specifically entrepreneurial intention had not sufficiently been studied here. This study found three significant studies on entrepreneurial intention conducted in Bangladesh in very recent times. By studying the impact of childhood experiences on entrepreneurial intentions in Bangladesh, Judy and Saleh (2008) found that, a difficult childhood, frequent relocation and family business background indirectly influence entrepreneurial intentions, and they also indicated that this finding has a cross-cultural validity. Moreover, Reaz and Tarun (2012) tested a causal model in the context of business students of Bangladesh to identify what determines their intentions to be an entrepreneur. Hence, the results of their proposed model had shown that, tendency of taking risk, need for achievement, education and environment for starting business are statistically significant and positively associated with the intention of students to be an entrepreneur. Moreover, they also mentioned in their same study that job security has significant negative relationship with the students' intention to be an entrepreneur. Most recently, based on the argument that entrepreneurial intention will be depended on the perception of both feasibility and desirability of a business venture, Chen, Naznin, Wang, Wu (2014) tested whether or not people experiencing different types of poverty (the poor, the unsatisfied, and the complacent) have a different degree of likelihood of starting up a business. Their result showed that the poor were the most likely to start a business after graduation, followed by the unsatisfied, and the complacent had the lowest score for probability of starting a business after graduation. However, in the context of Bangladesh, this study had found no mentionable study which had significantly detailed the impacts of locus of control dimensions on the entrepreneurial intention and intensity except the work of Mohiuddin, Parveen, Rahman and Mazumder (2013) who found a strongly positive and statistically significant association between entrepreneurship motivation and internal locus of control. Moreover, they mentioned in their study that, amongst the other driving factors of entrepreneurial motivation in Bangladesh internal locus of control is important with higher correlation value ($r = .727$, $p<0.00$) (Mohiuddin, Parveen, Rahman and Mazumder, 2013). But they neither addressed the possible impacts of external locus of control dimensions (Powerful others and Chance) on entrepreneurial motivation, and nor verified the respondents substantial intensity towards it. Hence to bridge up this gap the study has specified its objectives which are:

a. study the entrepreneurial intention and intensity among the target respondents towards an opposite career choice and
b.   to see/observe the impact of locus of control dimensions (internality, powerful others and chance) on entrepreneurial intention and intensity among the respondents.

3 Theoretical Framework

It is assumed that, merely measuring entrepreneurial intention is not sufficient to understand one's actual intensity and commitment towards it. Hence, to validate entrepreneurial intention of an individual, their intensity towards it must be supported in contrast with alternative career options. This study considered employment intention as an alternative career option because it is easy to start in terms of less investment and legal requirement, less risky with certainty in income and less prerequisite of diversified knowledge, experience and skill. This study hence, defined both entrepreneurial and employment intention as one's plan to have possession of it as career choice. Besides, it defined both entrepreneurial and employment intensity as a sum total of an individual's degree of willingness, scope of ability and level of readiness to pursue it within a certain span of time. Thus, based on these defined scopes and findings from aforementioned literature, this study hypothesize that-

H1 : There must be a positive association between entrepreneurial intention and intensity as well as employment intention and intensity.

H2 : Entrepreneurial intention and intensity among individuals will be negatively correlated with their intention and intensity for being employed.

H3 : An individual's entrepreneurial intention and intensity will be a positively related with their high belongingness in internal locus of control dimensions and their employment intention as well as intensity will be negatively related with the same locus of control dimension.

H4 : An individual's higher level of believe in the external locus of control dimensions will positively influence their employment intention and intensity and will negatively influence their entrepreneurial intention and intensity.

4 Methodology of the Study

4.1. Research Design

The most appropriate type of research design for this study was causal research design because in accordance with Malhotra (2009, P. 246) causal research is "a type of conclusive research where the major objective is to obtain evidence regarding cause-and-effect (causal) relationships".

4.2 Data Collection Procedures

According to the top authority of higher education in Bangladesh, University Grants Commission (UGC), there are 78 private universities operating in Bangladesh now and about 90% of these universities have business streams along with other non-business specialized academic streams. By dint of the predefined objective, the population of this study was the undergraduate business students of those aforementioned private universities in Bangladesh and thus, by using convenient sampling technique, all the samples of this study were collected from 12 convenient private universities which are currently operating in Dhaka Metropolitan City.

4.3 Operationalization
4.3.1 Entrepreneurial Intention and Intensity
The dependent variable of this study was the entrepreneurial intention among the undergraduate business students of different private universities in Bangladesh. Two different types of non comparative scaling techniques were adopted to understand the intention of those students to become entrepreneurs in future. At first students were asked to respond on a dichotomous (yes/no) scale to express whether they have any intention to become entrepreneur in future life and then they were asked to assign a percentage (ranging from 0% - 100%) to expose their probability of starting own business in future or becoming an employee to support the business own ed by someone else. Thus, on receipt of the feedbacks assigned percentages were categorized into four further categories (0% - 24%, 25% - 49%, 50% - 74% and 75% -100%).

4.3.2 Locus of Control
The sole independent variable of this study was locus of control and to measure the Bangladeshi undergraduate business student's locus of control, this study had adapted Levenson's (1973) Multidimensional Locus of Control Scales (as found in Lefcourt, H. M. 1981) which is commonly known as Levenson's IPC Scale. It is because, rather than rating people as simply external, this scale had distinguished multiple dimensions within the external side of the Locus of Control continuum and thus it distinguished three factors namely, Internality (I), Powerful Others (P) and Chance (C). In IPC scale, each of these factors had been made up of 08 different staple scales and hence, there were in total 24 staple scales under this IPC Scale. Thus scores calculated on each factor were ranged between 0 and 48. After receiving the feedbacks from respondents this study had categorized the scores of each factor into three dimension i.e. low (0-15), moderate (16-31) and high (32-48).

4.4 Data Analysis Techniques
To measure the received responses, some parametric statistical techniques like frequency distribution followed by measures of central tendency and dispersion were conducted. For analyzing nominal and ordinal data, non-parametric statistical techniques namely, Cross tabulation, Spearman's rank-order correlation (rho) and chi-square test for independence also had been exploited. As Spearman's rank-order correlation analysis identifies monotonic correlation which is actually an effect size, this study considered the following guide to verbally describe the strength of the identified monotonic correlation by using the absolute value of r_s:
  - .00 - .19 "very weak"
  - .20 - .39 "weak"
  - .40 - .59 "moderate"
  - .60 - .79 "strong"
  - .80 - 1.0 "very strong"

To interpret the findings from the chi-square test for independence, instead of reporting the values of Phi Coefficients, the value of creamer's V was reported because, according to Gravetter and Wallnau (2004, p. 605), for tables larger than 2 by 2 the value to be used to report the effect size is Cramer's V. As a result, for reporting the effect size derived from the value of Cramer's V, this study firstly had determined which criteria to use in each case and accordingly it had subtracted 1 from the number of categories in row variable (R-1), then subtracted 1 from the number of categories in column variable (C-1) to pick whichever of these values was smaller (Gravetter and Wallnau, 2004). Thus, this study had chosen to judge the value of Cramer's V on the basis of following standards:

i. for either R-1 or C-1 equal to 1 (two categories): small=.01, medium=.30, large=.50

ii. for either R-1 or C-1 equal to 2 (three categories): small=.07, medium=.21, large=.35

iii. for either R-1 or C-1 equal to 3 (four categories): small=.06, medium=.17, large=.29

5 Analyses and Discussion

5.1 Response Rate

The convenience sample of this was surveyed with a total set of 1250 questionnaires. After receiving the feedbacks, because of fragmentary responses and centrality bias, 106 questionnaires were declined and 1144 copiously completed questionnaires were finally retained which consequently engendered 91.52% response rate for this study.

5.2 Sample Demographics

Out of the total 1144 samples, 33.1% of the total respondents were female and 66.9% were male. The average age of all students were 21.41 years along with a standard deviation of 1.485, standard error of mean .044 and 2.205 years of variance. Majority (55.2 %) of the students were aged less than 22 years and both the median and modal age were found to be 21 years. In terms of marital status, 91.1% students were either bachelor or spinsters and in terms of academic tenure in a 4 years undergraduate program, 72.4% students were in between 1st to 3rd year of their undergraduate academic life, 316 (27.6%) respondents were found to be studying in the 4th year and finally, most (46.9%) of the students were in the 1st semester irrespective of their academic years (see APPENDIX 01).

5.3 Entrepreneurial Intention among Students

Table 01 depicted below is a contingency table which shows Bangladeshi undergraduate business students' intention to become entrepreneurs in future (in columns) along with self-reported probability (in rows) to expose the extent of their commitments to their intentions.

Probability		Respondents Gender									
		Male					Female				
		Intention of Starting Own Business in Future					Intention of Starting Own Business in Future				
		No		Yes		Total	No		Yes		Total
		N	N %	N	N %		N	N %	N	N %	
Owning a Business in Future	0%-24 %	147	72.4%	0	.0%	147	131	75.7%	0	.0%	131
	25%-49%	28	13.8%	30	5.3%	58	27	15.6%	18	8.7%	45
	50%-74%	28	13.8%	192	34.2%	220	15	8.7%	115	55.8%	130
	75%-100%	0	.0%	340	60.5%	340	0	.0%	73	35.4%	73
Total		203	100%	562	100%	765	173	100%	206	100%	379
Doing Employment in Future	0%-24 %	0	.0%	307	54.6%	307	0	.0%	67	32.5%	67
	25%-49%	7	3.4%	168	29.9%	175	7	4.0%	72	35.0%	79
	50%-74%	51	25.1%	87	15.5%	138	47	27.2%	66	32.0%	113
	75%-100%	145	71.4%	0	.0%	145	119	68.8%	1	.5%	120
Total		203	100%	562	100%	765	173	100%	206	100%	379

Table 01: Contingency Table

From the above table 01, it can be seen that out of the total 765 male students, 562 students had an intention to start their own business in future. Amongst them, 60.5% (340 students) assigned 75% to 100% intensity to their entrepreneurial intention and remaining 222 students (39.5%) showed such intensity below 75% (0%-74% specifically). When their responded entrepreneurial intentions were cross-checked against their self-reported intensity to become engaged in employment services, majority (307 students or 54.6%) showed a very low (0%-24%) intensity, 29.9% showed 24% to 49% intensity and remaining 138 students (15%) had mentioned their 50% to 74% intensity of future involvement in employment services. Besides, 203 students mentioned that they do not want to become an entrepreneur in future and majority of them, (72.4 % students) reported poor intensity ranges in between 0%-24% and remaining 56 male students (27.6%), who had reported that they have no intention to become entrepreneur, had mentioned 25%-74% intensity of starting their own business in future. Moreover, 71.4% students confirmed that rather than doing own business employment services were more preferable to them. Furthermore, from table 01 above, it can be seen that, out of 379 female students, 206 students had an intention to start their own business in future and 55.8% of them assigned 50%-74% probability, 35.4% reported 75%-100% and only 18 students (8.7%) showed 0%-24% probability to pursue their entrepreneurial intentions. Moreover, amongst the 173 female students who had no entrepreneurial intentions, 131 (75.7%) students mentioned 0%-24% probability of doing business and 68.8% of them reported 75% to 100% probability of doing employment services. There was only one exceptional female student who had entrepreneurial intention as well as a high (75%-100%) self-perceived probability of doing employment services.

However, there is a clear indication in the above table 01 that gender difference among the samples of 1144 students neither endowed with any significant difference in their self-perceived entrepreneurial intentions nor

showed any major deviation when they assigned probability to expose the degree of concentration towards their intentions. But, Chi-square test for independence proved that the depicted relationship between undergraduate business students' entrepreneurial intention and their exposed intensity of starting own business was statistically significant where the probability of the chi-square test statistic (X2= 856.897) was p=0.000 (less than the alpha level of significance of 0.05) and the effect size for this finding was large (Cramer's V=.865 was higher than V=.50 for two categories) which was also supported by other symmetric measures: Phi=.865, Contingency Coefficient=.654, Pearson's R=.841 and Spearman's rho=.794, and each of these measures were statistically significant where p=0.000 was less than p=0.005 (see APPENDIX02: A). In addition, another Chi-square test for independence was conducted in this study which showed that the relationship between students' entrepreneurial intention and their self-reported probability of doing employment in future was found to be statistically significant where X2=808.796 with p<0.005. The effect size of this finding, in accordance with different symmetric measures, was also large (Cramer's V=.841 > Standard V = .50; Phi=.841, Contingency Coefficient=.644 and p<0.005 in each case) and student's entrepreneurial intention was negatively associated (Pearson's R= -.789, Spearman's rho= -.776 and p<0.005 in each case) with their intensity to do employment in future (see APPENDIX02: B). The above findings provided support for the predefined hypotheses H1 and H2.

5.4 Impacts of Locus of Control Dimensions on Students' Entrepreneurial Intentions

Table 02 below depicts students' intensity and belongingness to different types of locus of control dimensions along with their entrepreneurial intentions. From this table it can be seen 64.51% students had a high level of internal locus of control, 472 students (41.26%) believed that their fate is being controlled by other power people and 73.60% of the total students mentioned that they highly believe that their fate is controlled by chance.

Students' Locus of Control		Frequency of Students in each Dimensions		Intention of Starting Own Business in Future			
				Yes		No	
		N	N%	N	N %	N	N %
Levels of Individual's Internal Locus of Control	Low	83	7.26%	1	0.13%	82	21.81%
	Moderate	323	28.23%	92	11.98%	231	61.44%
	High	738	64.51%	675	87.89%	63	16.76%
	Total	**1144**	**100.00%**	**768**	**100.00%**	**376**	**100.00%**
Degree of Individual's Belief that Fate is Controlled by Powerful Others	Low	402	35.14%	367	47.79%	35	9.31%
	Moderate	472	41.26%	356	46.35%	116	30.85%
	High	270	23.60%	45	5.86%	225	59.84%
	Total	**1144**	**100.00%**	**768**	**100.00%**	**376**	**100.00%**
Degree of Individual's Belief that Fate is Controlled by Chance	Low	23	2.01%	4	0.52%	19	5.05%
	Moderate	279	24.39%	120	15.63%	159	42.29%
	High	842	73.60%	644	83.85%	198	52.66%
	Total	**1144**	**100.00%**	**768**	**100.00%**	**376**	**100.00%**

Table 02: Students' Locus of Control and Entrepreneurial Intentions

Table 02, depicted above, shows that, irrespective of gender, among the 1144 students 768 students intended to have their own business in future and the remaining 376 students had no entrepreneurial intentions. With regards to the dimensions of internal locus of control, it can be seen from table 02 that, out of those 768 students who intended to be entrepreneurs in future, majority (87.89%) had a high level of internal locus of control and rest of the 93 students (12.11%) were fitted in between 'low' to 'moderate' level of internal locus of control. Likewise, by considering the both (Powerful others and Chance) dimensions of external locus of control this study had found out of 768 students who had wished-for becoming future entrepreneurs that, 52.21% (401 students) had a moderate to high degree of belief in powerful other as controllers of their fate and 83.85% (644) students highly believed that their fate is being controlled by chance. And, 47.79 % students had lower level of belief in powerful other and 16.15% students had possessed a lower to moderate level of belief that their fate is controlled by chance. In contrast, among 376 students who did not expose any future entrepreneurial intention, 83.25% were found to possess 'low' to 'moderate' level of internal locus of control, 90.69% had a 'moderate' to 'high' level of belief that their fate is on the hand of powerful other and 94.95% students were found to believe that their fate is controlled by chance. To understand the direction of the depicted association between student's locus of control dimensions and their entrepreneurial intentions shown in the table 02, Spearman's rank-order correlation analysis was conducted (see Table 03).

Spearman's rho	Intention of Starting Own Business in Future	Levels of Internal Locus of Control	Degree of Belief that Fate is Controlled by Powerful Others	Degree of Belief that Fate is Controlled by Chance
Intention of Starting Own Business in Future	1.000	-	-	-
Levels of Internal Locus of Control	.712**	1.000	-	-
Degree of Belief that Fate is Controlled by Powerful Others	-.561**	-.720**	1.000	-
Degree of Belief that Fate is Controlled by Chance	.337**	.480**	-.374**	1.000
**. Correlation is significant at the 0.01 level (1-tailed).				

Table 03: Coefficients of Spearman's Rank-Order Correlation Analysis between Students' Locus of Control Dimensions and their Entrepreneurial Intentions

Table 03 above shows the values of non-parametric correlation analysis (Spearman's rho) between Students' Locus of Control Dimensions and their Entrepreneurial Intentions. As shown in the table 03, it was found by this study that there was a strong, positive and statistically significant monotonic correlation between students' exposure in internality dimension of locus of control and their entrepreneurial intentions (r_s= .712, p<0.01). Besides, the monotonic correlation between Students' entrepreneurial intention and their

degree of belief in powerful other dimensions of locus of control was moderately inverse and statistically significant (r_s= -.561, p<0.01) and there was a weak but statistically significant monotonic correlation (r_s= .337, p<0.01) between Students' entrepreneurial intention and their exposed belongingness towards the chance dimension of locus of control. Moreover, for the purpose of more assurance and justification of aforementioned findings, impacts of students' exposure in the locus of control dimensions on their self-reported probability of starting business and/or doing employment in future were assessed through a series of Spearman's rank-order correlation analysis which is envisaged by the table 04 pointed out below.

Spearman's rho	Probability of Starting Own Business in Future	Probability of Doing Employment in Future	Levels of Internal Locus of Control	Degree of Belief that Fate is Controlled by Powerful Others	Degree of Belief that Fate is Controlled by Chance
Probability of Starting Own Business in Future	1.000	-	-	-	-
Probability of Doing Employment in Future	-.930**	1.000	-	-	-
Levels of Internal Locus of Control	.749**	-.693**	1.000	-	-
Degree of Belief that Fate is Controlled by Powerful Others	-.635**	.602**	-.720**	1.000	-
Degree of Belief that Fate is Controlled by Chance	.424**	-.407**	.480**	-.374**	1.000
**. Correlation is significant at the 0.01 level (1-tailed).					

Table 04: Coefficients of Spearman's Rank-Order Correlation Analysis between Students' Locus of Control Dimensions and their extent of determination for Entrepreneurship

According to the values of Spearman's monotonic correlation shown in table 04 above, this study found that, there was a very strong, inverse and statistically significant monotonic correlation between students' intensity for doing business and their intensity to do employment in future (r_s= -.930, p<0.01). It verbally means that students' greater valid intentions for doing business significantly lessens their intention for doing employment in future. By considering the internal and external locus of control dimensions, this study found that, a higher level of internal locus of control among students had a moderately positive and statistically significant monotonic association (r_s= .480, p<0.01) with their degree of belief in chance as controllers fate. In contrast, it also found a strongly inverse and statistically significant monotonic correlation in between students' internal dimensions and powerful others dimensions (r_s= -.720, p<0.01) which means that students who highly believed in their individual capabilities to control their own fates had a lower level of belief that their fate is controlled by powerful others. Moreover, by dissecting the possible influence of locus of control dimensions on

students' entrepreneurial and/or employment intention, this study found that students' higher level of internality had a significantly strong and positively monotonic correlation (r_s= .749, p<0.01) with their entrepreneurial intentions and there was a significantly strong but inverse association (r_s= -.693, p<0.01) between the extent of students' internality dimensions and their intention of doing employment in future (see Table 04 above). This result means that students who had high entrepreneurial intentions were also the high believers of controlling their own fates and those who intended to pursue employment in future were found to be less confident about controlling their own fates. This generalization was supported by the results of powerful others dimensions of external locus of control which had shown that the degree of students' belief in their fate being controlled by powerful others had a strong and statistically inverse monotonic correlation (r_s= -.635, p<0.01) with their entrepreneurial intentions and it had a strong as well as a significantly positive monotonic correlation (r_s= .602, p<0.01) with their employment intention. However, in the context of chance dimensions of external locus of control, this study had uncovered that, student's extent of belief in the chance dimensions of locus of control had a significantly positive and moderate influence on their entrepreneurial intention (r_s= .424, p<0.01) and it had a moderate as well as significantly inverse influence (r_s= -.407, p<0.01) on their employment intention in future. However, the above findings provided support for the predefined hypothesis H3, but in the case of H4, this study found that the chance dimension of external locus of control is positively associated with entrepreneurship and negatively associated with employment.

7 Conclusion and Future Research Directions

In the context of Bangladesh, development of entrepreneurship abilities among indigenous people have recently received a serious attention because, as reported by the Intelligence Unit of The Economist (2014), it ranks second in terms of unemployment after Afghanistan for having 30 million able-bodied unemployed labor forces, 47% unemployed graduate and 60 million projected unemployed people by 2015. Especially among the undergraduate business students of different universities, entrepreneurship as a concept, has reached to such an extent that they are not only considering it as an alternative to the unemployment problems, but also willingly accepting it as their future career. So, to capitalize this trend among students, it is the pick time for Bangladesh to train up, subsidize and provide proper support to make students confident enough for pursuing entrepreneurship. However, this study may fall short of expectation to its prospective stakeholders because of its non parametrical nature of data and their limitations to draw any in-depth analyses. Moreover, it just has studied the entrepreneurial intention and intensity in the light of locus of control dimensions among the undergraduate business students of different private universities because of which other levels and types of tertiary educational institutions were not considered. Besides, this study has neither assessed the inter-disciplinary effects nor had addressed inter-institutional variances across industries in this context. Hence, it suggests all the upcoming studies in the similar field to incorporate the aforementioned issues.

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APPENDIX 01
Sample Demographics of
Undergraduate Business Students of
Different Private Universities in Bangladesh

Sample Demographics		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	765	66.9	66.9	66.9
	Female	379	33.1	33.1	100.0
	Total	**1144**	**100.0**	**100.0**	
Age	Age below 22 Years	632	55.2	55.2	55.2
	Age of 22 years and above	512	44.8	44.8	100.0
	Total	**1144**	**100.0**	**100.0**	
Marital Status	Married	95	8.3	8.3	8.3
	Bachelor/Spinster	1042	91.1	91.1	99.4
	Widow / Widowed	3	.3	.3	99.7
	Others	4	.3	.3	100.0
	Total	**1144**	**100.0**	**100.0**	
Academic year	1st Year	204	17.8	17.8	17.8
	2nd Year	226	19.8	19.8	37.6
	3rd Year	398	34.8	34.8	72.4
	4th Year	316	27.6	27.6	100.0
	Total	**1144**	**100.0**	**100.0**	
Semester	1st Semester	536	46.9	46.9	46.9
	2nd Semester	415	36.3	36.3	83.1
	3rd Semester	193	16.9	16.9	100.0
	Total	**1144**	**100.0**	**100.0**	

Descriptive Statistics of Sample Demographics						
		Gender	Age	Marital Status	Academic Year	Semester
Mean		1.33	21.41	1.93	2.72	1.70
Std. Error of Mean		.014	.044	.010	.031	.022
Median		1.00	21.00	2.00	3.00	2.00
Mode		1	21	2	3	1
Std. Deviation		.471	1.485	.335	1.054	.740
Variance		.222	2.205	.112	1.111	.548
Sum		1523	24491	2208	3114	1945
Total N	Valid	1144	1144	1144	1144	1144
	Missing	0	0	0	0	0

APPENDIX 02: A
Chi-Square Tests for Independence and Symmetric
Measures Between Student's Entrepreneurial Intention
and Probability of Starting Own Business

Chi-Square Tests						
	Value	df	Asymp.Sig. (2-sided)	Monte Carlo Sig.(2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	856.897[a]	3	.000	.000[b]	.000	.004
Likelihood Ratio	1045.721	3	.000	.000[b]	.000	.004
Fisher's Exact Test	1032.829			.000[b]	.000	.004
Linear-by-Linear Association	807.992[c]	1	.000	.000[b]	.000	.004
N of Valid Cases	1144					

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 33.85.
b. Based on 1144 sampled tables with starting seed 126474071.
c. The standardized statistic is 28.425.

Symmetric Measures								
		Value	Asymp. Std. Error[b]	Approx. T[c]	Approx. Sig.	Monte Carlo Sig.		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Nominal by Nominal	Phi	.865			.000	.000[a]	.000	.004
	Cramer's V	.865			.000	.000[a]	.000	.004
	Contingency Coefficient	.654			.000	.000[a]	.000	.004
Interval by Interval	Pearson's R	.841	.010	52.482	.000[d]	.000[a]	.000	.004
Ordinal by Ordinal	Spearman Correlation	.794	.011	44.173	.000[d]	.000[a]	.000	.004
N of Valid Cases		1144						

a. Based on 1144 sampled tables with starting seed 126474071.
b. Not assuming the null hypothesis.
c. Using the asymptotic standard error assuming the null hypothesis.
d. Based on normal approximation.

APPENDIX 02: B
Chi-Square Tests for Independence and Symmetric
Measures between Student's Entrepreneurial Intention
and Probability of Starting Employment

Chi-Square Tests						
	Value	Df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	808.796[a]	3	.000	.000[b]	.000	.004
Likelihood Ratio	991.508	3	.000	.000[b]	.000	.004
Fisher's Exact Test	979.992			.000[b]	.000	.004
Linear-by-Linear Association	712.333[c]	1	.000	.000[b]	.000	.004
N of Valid Cases	1144	-	-	-	-	-

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 82.50.
b. Based on 1144 sampled tables with starting seed 126474071.
c. The standardized statistic is-26.690.

Symmetric Measures								
		Value	Asymp. Std. Error[b]	Approx. T[c]	Approx. Sig.	Monte Carlo Sig.		
						Sig.	99% Confidence Interval	
							Lower Bound	Upper Bound
Nominal by Nominal	Phi	.841	-	-	.000	.000[a]	.000	.004
	Cramer's V	.841	-	-	.000	.000[a]	.000	.004
	Contingency Coefficient	.644	-	-	.000	.000[a]	.000	.004
Interval by Interval	Pearson's R	-.789	.011	-43.461	.000[d]	.000[a]	.000	.004
Ordinal by Ordinal	Spearman Correlation	-.776	.011	-41.527	.000[d]	.000[a]	.000	.004
N of Valid Cases		1144	-	-	-	-	-	-

a. Based on 1144 sampled tables with starting seed 126474071.
b. Not assuming the null hypothesis.
c. Using the asymptotic standard error assuming the null hypothesis.
d. Based on normal approximation.

Numerical Solution of Fredholm Integral Equation by Using Wavelet Method

Md. Abdul Hye

Abstract

In this paper, we solve numerically Fredholm Integral equations, which are based on the CAS wavelets. CAS wavelets are mathematical functions which give an efficient and accurate method for solving the Fredholm integral equations. For this, we derive a simple and efficient identity matrix formulation by reducing an integral equation into a set of algebraic equations. Numerical examples are presented to compare the results obtained with some existing results found in literatures.

Keywords: Wavelets, CAS Wavelets, Fredholm Integral Equations

1. Introduction

In the history of mathematics, wavelet analysis shows many different origins. Much of the work was performed in the 1930s. Before 1930, the main branch of mathematics leading to wavelets began with Joseph Fourier (1807) with his theories of frequency analysis, now often referred to as Fourier synthesis. He asserted that any 2π -periodic function $f(x)$ is the sum

$$a_0 + \sum_{k=1}^{n}(a_k \cos kx + b_k \sin kx)$$

of its Fourier series. The coefficients a_0, a_k and b_k are calculated by

$$a_0 = \frac{1}{2\pi} \int_0^{2\pi} f(x)dx, \quad a_k = \frac{1}{\pi} \int_0^{2\pi} f(x)\cos(kx)dx, \quad b_k = \frac{1}{\pi} \int_0^{2\pi} f(x)\sin(kx)dx$$

Fourier's assertion played an essential role in the evolution of the ideas that mathematicians had about the functions. He opened up the door to a new functional universe.

After 1807, by exploring the meaning of functions, Fourier series convergence and orthogonal systems, mathematicians gradually were led from their previous notion of frequency analysis to the notion of scale analysis. That is, analyzing f(x) by creating mathematical structures that vary in scale. Construct a function, shift it by some amount and change its scale. Apply that structure in approximating a signal. Now repeat the procedure. Take that basic structure, shift it and scale it again. Apply it to the same signal to get a new approximation and so on. It turns out that this sort of scale analysis is less sensitive to noise because it measures the average fluctuations of the signal at different scales. Algorithm processes data at different scales or resolutions. If we look at a signal at a large 'window', we would notice a gross feature. Similarly, if we look at a signal with the small 'window', we would notice small 'window'. Wavelet permits the accurate representation of a variety of functions and operators. Moreover, wavelets establish a connection with fast numerical algorithm (Beylkin 141).

For Fredholm-Hammerstein integral equations, the classical method of successive approximation was introduced in [3]. A collocation type method was developed in (kumar 123). In (Wickerhauser 237), Wickerhauser applied a Wavelet Analysis from Theory to Software of integral equations.

2. Materials and Methods

2.1 Wavelet Transform

Wavelet transform analysis uses little wavelike functions known as wavelets. Wavelets are used to transform the signal under investigation into another representation, which presents the signal information in a more useful form. This transformation of signal is known as the wavelet transform. Mathematically speaking, the wavelet transform is a convolution of the wavelet function with the signals. Jean Morlet in 1982, first considered wavelets as a family of functions constructed from translations and dilations of a single function called the "mother wavelet", $\psi(x)$ are defined by

$$\psi_{j,k}(x) = \frac{1}{\sqrt{|j|}} \psi\left(\frac{x-k}{j}\right) \qquad j,k \in R , \ j \neq 0$$

The parameter 'j' is the scaling parameter or scale and it measures the degree of compression. The parameter 'k' is the translation parameter which determines the time location of the wavelet. If $|j| < 1$, then the wavelet is in the compressed version of the mother wavelet and corresponds mainly to higher frequencies. On the other hand, when $|j| > 1$, then $\psi_{j,k}(x)$ has a larger time-width than $\psi(x)$ and corresponds to lower frequencies.

2.2 Wavelet Series

If a function $f \in L_2(R)$, the series $\sum_{j \in Z} \sum_{k \in Z} \langle f, \psi_{j,k} \rangle \psi_{j,k}(x)$ is called the wavelet series of f.

2.3 Wavelet Coefficients

If a function $f \in L_2(R)$, then $\langle f, \psi_{j,k} \rangle = d_{j,k} = \int_{-\infty}^{\infty} f(x)\psi_{j,k}(x)dx$ are called the wavelet coefficients of f.

2.4 Linear Fredholm Integral Equations

In this thesis, we are concerned with the application of CAS wavelets to the numerical solution of a Fredholm integral equation

$$y(x) = f(x) + \int_0^1 K(x,t)y(t)dt \qquad 0 \leq x, t \geq 1 \qquad (1)$$

The general linear Fredholm integral equations of the second kind for a function $\varphi(x)$ is an equation of type

$$\Phi(x) - \lambda \int_0^1 K(x,y)\Phi(y)dy = f(x) \qquad (0 \leq x \leq 1) \qquad (2)$$

While the linear Fredholm integral equations of the first kind is given by

$$\int_0^1 K(x,y)\Phi(y)dy=f(x) \qquad (0\leq x\leq 1) \qquad (3)$$

In eq.(1), where $f(x)$ and the kernel $K(x,t)$ are assumed to be in $L^2(R)$ on the interval $(0 \leq x \leq 1)$ and eq. (1) has a unique solution   to be determined.

2.5 Wavelets and CAS wavelets

Wavelets constitute a family of functions constructed from dilation and translation of a single function called the mother wavelet. When the dilation parameter b varies continuously then we have the family of continuous wavelets as [6].

$$\psi_{a,b}(t) = |a|^{\frac{1}{2}}\psi \;\;\left(\frac{t\text{-}a}{b}\right) \; a, b \in R, a \neq 0$$

If we restrict the parameters a and b to discrete values as

$a = a_0^{-k}, b = nb_0 a_0^{-k}, a_0 > 1, b_0 > 0$ and n and k are positive integers

we have the following family of discrete wavelets

$$\psi_{k,n}(t) = |a|^{\frac{k}{2}}\psi\left(a_0^k t - nb_0\right),$$

where $\psi_{mn}(t)$ form a wavelet basis for $L^2(R).$ In particular when a_0=2

and $b_0 = 0$ then $\psi_{k,n}(t)$ forms an orthonormal basis[7]

CAS wavelets $\psi_{mn}(t) = \psi(k, n, m, t)$ have four arguments

$n = 0,1,2 \ldots 2^k - 1, k$ can assume any nonnegative integer, m is any integer and t is the normalized time. They are defined on the interval [0,1] as

$$\psi_{mn}(t) = \begin{pmatrix} 2^{\frac{k}{2}} CAS_m(2^k t - n), & \text{for} \frac{n}{2^k} \leq t < \frac{n+1}{2^k} \\ 0 \;\; \text{otherwise} \end{pmatrix} \qquad (4)$$

where $CAS_m(t) = \cos(2m\pi t) + \sin(2m\pi t)$ \qquad (5)

The dilation parameters are $a = 2^{-k}$ and translation parameter is $b = n2^{-k}$.

The set of CAS wavelets are an orthonormal basis.

2.6 Function Approximtion

A function $f(t) = \sum_{n=1}^{\alpha}\sum_{m\in} c_{nm}\psi_{nm}(t)$ \qquad (6)

where $c_{nm} = \left(f(t), \psi_{nm}(t)\right).$ If the infinite series in eq. (6) is truncated, then eq. (6) can be written as

$$f(t) \approx \sum_{n=1}^{2^k}\sum_{m=-M} c_{nm}\psi_{nm}(t) = C^T\psi(t) \qquad (7)$$

where C and $\psi(t)$ are $2^k(2M + 1)*1$ matrices given by

$$C = [c_{1(-M)}, c_{1(-M+1)}, \ldots \ldots, c_{1(M)}, c_{2(-M)}, \ldots, c_{2(-M)}, \ldots \ldots c_{2^k(-M)}, \ldots \ldots c_{2^k(M)}]^T \qquad (8)$$

$$\psi(t) = [\psi_{1(-M)}(t), \psi_{1(-M+1)}(t), \ldots, \psi_{1M}(t), \psi_{2(-M)}(t), \ldots, \psi_{2M}(t), \ldots \psi_{2^k(-M)}(t), \ldots \psi_{2^k_M}(t)]^T \qquad (9)$$

2.7 The Product Operational Matrix of the CAS Wavelet

Let

$$\psi(t)\psi^T(t) \approx \ddot{C}\psi(t) \qquad (10)$$

where $\tilde{C}$ is a $2^k(2M+1) \times 2^k(2M+1)$ product operational matrix.

Let M=1 and k=1, thus we have

$$C = [c_{1(-1)}, c_{10}, c_{11}, c_{2(-1)}, c_{20}, c_{21}]^T \tag{11}$$

$$\psi(t) = [\psi_{1(-1)}(t), \psi_{10}(t), \psi_{11}(t), \psi_{2(-1)}(t), \psi_{20}(t), \psi_{21}(t)]^T \tag{12}$$

In eq. (12) we have

$$\begin{cases} \psi_{1(-1)}(t) = 2^{1/2}(\cos(4\pi t) - \sin(4\pi t)) \\ \quad\quad \psi_{10}(t) = 2^{1/2} \\ \psi_{10}(t) = 2^{1/2}(\cos(4\pi t) + \sin(4\pi t)) \end{cases} \quad 0 \le t < \frac{1}{2} \tag{13}$$

$$\begin{cases} \psi_{2(-1)}(t) = 2^{1/2}(\cos(4\pi t) - \sin(4\pi t)) \\ \quad\quad \psi_{20}(t) = 2^{1/2} \\ \psi_{20}(t) = 2^{1/2}(\cos(4\pi t) + \sin(4\pi t)) \end{cases} \quad \frac{1}{2} \le t < 1 \tag{14}$$

2.8 Method of Solving Fredholm Integral Equations

Consider the credholm integral equations, which are given eq. (1). To use CAS wavelets, we have to approximate y(x) as

$$y(x) = C^T \psi(x) \tag{15}$$

and $f(x) = d^T \psi(x)$ \hfill (16)

and $K(x,t) = \psi(x)^T K\psi(t)$ \hfill (17)

where C and $\psi(x)$ are defined as eqn. (6) and (7).

Also where K is $2^k(2M+1) \times 2^k(2M+1)$ matrices and elements of K are calculated as

$$\int_0^1 \int_0^1 \psi_{ni}(x)\,\psi_{lj}(t)K(x,t)dt\,dx$$

where $n = 1,2,\dots,2^k, \quad i = -M,\dots\dots\dots,M, \quad I == 1,2,\dots,2^k, \quad j = -M,\dots\dots\dots,M$

Then we have

$$C^T\psi(x) = d^T\psi(x) + \lambda \int_0^1 \psi(x)^T \psi(x)^T K\psi(t)\,Cdt \tag{18}$$

Thus with the orthormality of CAS Wavelets we have

$$\psi(x)^T C = \psi(x)^T d + \lambda\psi(x)^T KC \tag{19}$$

Eq.(17) is a linear systems of C and thus

$C = (I - k)^{-1}d$, where I is identity matrix.

3. Numerical Example

$$y(x) = see(x)\tan(x) - \lambda \int_0^1 y(t)dt$$

Let us approximate

$y(x) = C^T \psi(x)$ and $f(x) = d^T \psi(x)$

Take k=1 and M=1

For $x = 0$

$$\psi_{0(-1)}(x) = \sqrt{2}(\cos(4\pi x) - \sin(4\pi x)) = \sqrt{2}$$

$$\psi_{00}(x) = \sqrt{2}$$

$$\psi_{01}(x) = \sqrt{2}(\cos(4\pi x) + \sin(4\pi x)) = \sqrt{2}$$

$$\psi_{1(-1)}(x) = 0$$
$$\psi_{10}(x) = 0$$
$$\psi_{11}(x) = 0$$

So, $\psi(x) = \left[\sqrt{2},\ \sqrt{2},\ \sqrt{2},\ 0, 0, 0\right]^T$

And $f(x) = d^T\psi(x)$

$$\Rightarrow \sec(x)\tan(x) = [d_1, \quad d_2, \quad d_3, \quad d_4, \quad d_5, \quad d_6] \begin{bmatrix} \sqrt{2} \\ \sqrt{2} \\ \sqrt{2} \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$\Rightarrow \sec(x)\tan(x) = \sqrt{2}d_1 + \sqrt{2}d_2 + \sqrt{2}d_3$$
$$0 = \sqrt{2}d_1 + \sqrt{2}d_2 + \sqrt{2}d_3 \tag{20}$$

Similarly, $x = \frac{1}{4}$ then we get,

$$\psi(x) = \left[-\sqrt{2}, \sqrt{2}, -\sqrt{2}, \quad 0, 0, 0\right]^T$$

So, $f(x) = d^T\psi(x)$

$$\Rightarrow \sec(x)\tan(x) = [d_1, \quad d_2, \quad d_3, \quad d_4, \quad d_5, \quad d_6] \begin{bmatrix} -\sqrt{2} \\ \sqrt{2} \\ -\sqrt{2} \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$\Rightarrow 0.0044 = -\sqrt{2}d_1 + \sqrt{2}d_2 - \sqrt{2}d_3 \tag{21}$$

For $x = \frac{1}{8}$

So, $\psi(x) = \left[-\sqrt{2},\ \sqrt{2},\ \sqrt{2},\ 0, 0, 0\right]^T$

and $f(x) = d^T\psi(x)$

$$\Rightarrow \sec(x)\tan(x) = [d_1, \quad d_2, \quad d_3, \quad d_4, \quad d_5, \quad d_6] \begin{bmatrix} -\sqrt{2} \\ \sqrt{2} \\ \sqrt{2} \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$\Rightarrow 0.0021 = -\sqrt{2}d_1 + \sqrt{2}d_2 + \sqrt{2}d_3 \tag{22}$$

For $x = \frac{1}{2}$

So $\psi(x) = \left[0, 0, 0, \sqrt{2}, \sqrt{2}, \sqrt{2}\right]^T$

And $f(x) = d^T\psi(x)$

$$\Rightarrow \sec(x)\tan(x) = [d_1, \quad d_2, \quad d_3, \quad d_4, \quad d_5, \quad d_6] \begin{bmatrix} 0 \\ 0 \\ 0 \\ \sqrt{2} \\ \sqrt{2} \\ \sqrt{2} \end{bmatrix}$$

$$\Rightarrow 0.0087 = \sqrt{2}d_4 + \sqrt{2}d_5 + \sqrt{2}d_6 \tag{23}$$

For $x = \frac{3}{4}$

So, $\psi(x) = \left[0, 0, 0, -\sqrt{2}, \sqrt{2}, -\sqrt{2}\right]^T$

And $f(x) = d^T \psi(x)$

$$\Rightarrow \sec(x)\tan(x) = [d_1, \quad d_2, \quad d_3, \quad d_4, \quad d_5, \quad d_6] \begin{bmatrix} 0 \\ 0 \\ 0 \\ -\sqrt{2} \\ \sqrt{2} \\ -\sqrt{2} \end{bmatrix}$$

$$\Rightarrow 0.0131 = -\sqrt{2}d_4 + \sqrt{2}d_5 - \sqrt{2}d_6 \tag{24}$$

For $x = \frac{3}{8}$

So, $\psi(x) = [0,0,0,\sqrt{2},\sqrt{2},-\sqrt{2}]^T$

And $f(x) = d^T \psi(x)$

$$\Rightarrow \sec(x)\tan(x) = [d_1, \quad d_2, \quad d_3, \quad d_4, \quad d_5, \quad d_6] \begin{bmatrix} 0 \\ 0 \\ 0 \\ \sqrt{2} \\ \sqrt{2} \\ -\sqrt{2} \end{bmatrix}$$

$$\Rightarrow 0.0065 = \sqrt{2}d_4 + \sqrt{2}d_5 - \sqrt{2}d_6 \tag{25}$$

Solving equation (20),(21) and (22) we get

$$d_1 = -\frac{0.0021}{2\sqrt{2}}, d_2 = \frac{0.0044}{2\sqrt{2}}, d_3 =$$

and on solving equation (23), (24) and (25) we get

$$d_4 = -\frac{0.006}{2\sqrt{2}}, d_5 = \frac{0.0215}{2\sqrt{2}}, d_6 :$$

So, $d = [d_1, d_2, d_3, d_4, d_5, d_6]^T$

$$\Rightarrow d = [-\frac{0.0021}{2\sqrt{2}}, \frac{0.0044}{2\sqrt{2}}, -\frac{0.0023}{2\sqrt{2}}, -\frac{0.006}{2\sqrt{2}}, \frac{0.0215}{2\sqrt{2}}, \frac{0.0019}{2\sqrt{2}}]^T$$

Now, K is $2^k(2M+1) \times 2^k(2M+1)$ matrices where elements of K can be calculated as

$$\int_0^1 \int_0^1 \psi_{ni}(x)\psi_{lj}(t)k(x,t)dtdx$$

Where $n = 1,2,\ldots,2^k$, $i = -M,\ldots\ldots\ldots.,M$, $I == 1,2,\ldots,2^k$, $j = -M,\ldots\ldots\ldots.,M$

Then we have

$$C^T\psi(x) = d^T\psi(x) + \lambda \int_0^1 \psi(x)^T \psi(x)^T K\psi(t) \, Cdt$$

Thus with the orthonormality of CAS wavelets we have

$$\psi(x)^T C = \psi(x)^T d + \lambda\psi(x)^T KC$$

And where is $C = (I - k)^{-1}d$

Where I is identity matrix.

Here in this example K(x,t) is 1

Since $k = 1$ and $M = 1$

So, $n = l = 1, \ 2$ and $i = j = -1, 0, 1$

So, k will be 6×6 matrixes

And since

$$\int_0^{\frac{1}{2}} \psi_{1(-1)}(x)dx = 0, \qquad \int_0^{\frac{1}{2}} \psi_{1(-1)}(t)dt = 0$$

$$\int_0^{\frac{1}{2}} \psi_{10}(x)dx = \frac{1}{\sqrt{2}}, \qquad \int_0^{\frac{1}{2}} \psi_{10}(t)dt = \frac{1}{\sqrt{2}}$$

$$\int_0^{\frac{1}{2}} \psi_{11}(x)dx = 0, \qquad \int_0^{\frac{1}{2}} \psi_{11}(t)dt = 0$$

$$\int_{\frac{1}{2}}^{1} \psi_{2(-1)}(x)dx = 0, \qquad \int_{\frac{1}{2}}^{1} \psi_{2(-1)}(t)dt = 0$$

and $\qquad \int_{\frac{1}{2}}^{1} \psi_{20}(x)dx = \frac{1}{\sqrt{2}}, \qquad \int_{\frac{1}{2}}^{1} \psi_{20}(t)dt = \frac{1}{\sqrt{2}}$

$$\int_{\frac{1}{2}}^{1} \psi_{21}(x)dx = 0, \qquad \int_{\frac{1}{2}}^{1} \psi_{21}(t)dt = 0$$

Suppose, $\lambda = 1$, then

$$K = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -0.5 & 0 & 0 & -0.5 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -0.5 & 0 & 0 & -0.5 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

We know that $C = (I - k)^{-1}d$

Now, $(I - k)^{-1} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0.75 & 0 & 0 & -0.25 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & -.25 & 0 & 0 & .75 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}$

Then $(I-k)^{-1}d =$
$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0.75 & 0 & 0 & -0.25 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & -0.25 & 0 & 0 & 0.75 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} -\frac{0.0021}{2\sqrt{2}} \\ \frac{0.0044}{2\sqrt{2}} \\ \frac{0.0023}{2\sqrt{2}} \\ -\frac{0.006}{2\sqrt{2}} \\ \frac{0.0215}{2\sqrt{2}} \\ \frac{0.0019}{2\sqrt{2}} \end{bmatrix} = \begin{bmatrix} -\frac{0.0021}{2\sqrt{2}} \\ \frac{0.0021}{2\sqrt{2}} \\ \frac{0.0021}{2\sqrt{2}} \\ -\frac{0.006}{2\sqrt{2}} \\ \frac{0.0015}{2\sqrt{2}} \\ \frac{.0019}{2\sqrt{2}} \end{bmatrix}$$

$$\Rightarrow C^T = \left[-\frac{0.0021}{2\sqrt{2}} \quad -\frac{0.0021}{2\sqrt{2}} \quad -\frac{0.0023}{2\sqrt{2}} \quad -\frac{0.006}{2\sqrt{2}} \quad \frac{0.015}{2\sqrt{2}} \quad \frac{.0019}{2\sqrt{2}} \right]$$

Now

$$y(x) = C^T \psi(x) =$$

$$\left[-\frac{0.0021}{2\sqrt{2}} \quad -\frac{0.0021}{2\sqrt{2}} \quad -\frac{0.0023}{2\sqrt{2}} \quad -\frac{0.006}{2\sqrt{2}} \quad \frac{0.015}{2\sqrt{2}} \quad \frac{.0019}{2\sqrt{2}} \right] \begin{bmatrix} \frac{2^{1/2}(\cos(4\pi t) - \sin(4\pi t))}{2^{\frac{1}{2}}} \\ 2^{1/2}(\cos(4\pi t) + \sin(4\pi t)) \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$y(x) = -\frac{0.0044}{2}\cos(4\pi x) - \frac{0.0021}{2}$$
$$y(x) = -\frac{0.0044}{2}\cos(4\pi x) - \frac{0.0021}{2}$$

6. Conclusion

In our study we have tried to explain about wavelets, wavelet transforms and some interesting applications of wavelets. Wavelets were developed independently in the fields of mathematics, quantum physics, electrical engineering and seismic geology. The wavelet representation of a function is a new technique and it does not lose time information. Wavelet transform of a function is the improved version of Fourier transform. In this paper, we used CAS wavelet to solve Fredholm integral equations. CAS wavelet gives an efficient and accurate method to provide an exact solution.

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**Street Food Vending in Bangladesh: An Examination of Young Adults'
Preference in Dhaka City**

Nafisa Kasem

Abstract

*Street foods feed millions of people daily with a wide selection of foods that are
relatively cheap and easily accessible in Dhaka city. There are more than 100
variations of street foods available in Dhaka city for the young adults to choose.
This study reveals the preference levels of young adults regarding the street food
choices. Throughout the study it has been observed that young adults prefer it for
convenience, lower price and variety. Though some misconceptions related to
hygiene, and ingredients are there, still the consumers are satisfied with the
choices. This field of study also indicates the useful guidelines for the business
people, and fellow researcher to explore this sector more extensively.*

1 Introduction

Each day 2.5 billion people prefer to consume street food worldwide due to its
cost and convenience (FAO, 2010). Bangladesh is no exception in this situation.
According to the FAO 2007 study, about 2.5 million people eat street food every
day in Bangladesh. It signals that the proportion of business, opportunity exists in
the street food sectors in Bangladesh. Since Bangladesh is among the low income
countries, street food is still a lucrative and better options of food among the
young generations. The cost of street food is cheaper than that of larger food
establishments like restaurants, fast food outlets, which make it more popular to
the consumers. In Bangladesh the demand of street food is increasing day by day
among the young adults. This field of business has been undergone in various
studies, but the buying behavior and preference study of the street food consumer
specially the younger generation has not been focused in those researches. That is
why this research has been conducted to find out the actual scenario of the street
food consumers, the buying behavior and preferences, especially among the
young adults in Dhaka city. This research also focuses on the variety of street
foods, availability, and purchasing behavior of the consumer and the preference
level of the street food among the young adults in Dhaka city.

1.1 Objective of the Study

It has been observed that, Street food is getting popular around the world day by
day and especially in Dhaka city, its consumers are increasing too. In order to
assess the preference of the consumption of street food in Bangladesh, especially
in Dhaka City among the young adults, this study was undertaken recently to
reveal the following features:

- The current situation of Street food in Dhaka, Bangladesh.
- The preferred level of street foods among the young adults in Dhaka city.
- The critical factors associated with street food consumption.
- The buying behavior of the consumers regarding street food.

1.2 Methodology of the Research

The research is descriptive in nature based on empirical data and reports. This research is undertaken to determine the preferences of the young adults for the street foods in Dhaka city. To do so, primary data have been collected from the respondents. Data is gathered through a survey by structural questionnaire through personal interview. About 60 respondents have been selected from universities, households, of the age 18-35 in a convenient manner. They are selected from United International University (UIU), University of Development Alternative (UODA), and Bangladesh University of Business and Technology (BUBT). All the questions are close-ended and have been asked for the amount spent in street food, reasons of consuming street foods, variety, cost, hygiene factors, and above all about the respondent's satisfaction level. These data are analyzed by applying descriptive statistics and interpreted in the results using graphs. Secondary sources have been used also to describe the theoretical aspect of the study to find out the buying behavior, street food categories and about the respondents' preference level.

1.3 Limitations of the Study

As it is a descriptive research, only 60 respondents are considered for the study, which represent a very small portion of young adults who consume street food on a daily basis in Dhaka city. But this study attempts to overcome this limitation by selecting conveniently representative respondents who are about 20 years old. A large sample could provide more valid result in this regard. Study variables are selected on the basis of the limited discussion with selected studies related to this field. Moreover, to find out the buying behavior pattern and preferences, different theories have been used in this research. As there were no up to date study regarding the street food business in Bangladesh, lack of appropriate secondary data made the study quite difficult. But there were various studies of street food in different parts of the world, which has been used in the discussion section to analyze the actual scenario in Bangladesh

2 Theoretical Aspects

To analyze the preference level of the young adults regarding the street foods in Dhaka city, the study focuses on the definition of street food, street food buying behavior, street food preference criterias, which are discussed below.

2.1 Street Food

Street foods can be differentiated from the formal food sector by its definition. The Equity Policy Sector (EPOC) defines the street food which is sold from pushcarts or baskets or balance poles, or from stalls or shops having fewer than four permanent walls (Tinker, 1987).   There is a different scenario in the consumption of street food around the world, for example, in Mali a middle income or a poor family spends 19-27% of the average family budget on street food (Bendech et al, 1997).

2.2 Street Food Buying Behavior

Sometimes in different parts of the world, people tend to consume street food impulsively, that means they buy it without any plan. This sort of buying can be

categorized as impulsive buying behavior. An impulse purchase or impulse buy is an unplanned decision to buy a product or service, made just before purchase (Tausif & Gupta, 2013). In 1962 Stern has researched and found that people tend to buy cheap goods in impulse buying, and street foods are cheap. Some research suggests that people buy impulsively due to the attraction and Point of purchase stimuli (Abratt & Goodey, 1990). Consumers find street food attractive, so they consume it impulsively. Youn and Faber (2000) suggest that consumers can have either positive or negative feeling about the product that they buy impulsively; in this case street food has both the aspects. Other research suggests that consumers found enjoyment so they chose impulsive buying as their sensors stimulates that (Kaur & Singh, 2007). From these various aspects we can term the buying behavior of street food as an impulsive one as consumers find it cheaper, lucrative and enjoyable.

2.2 Factors that Affect the Preference Levels of Consumers Regarding Street Food
Consumer preferences can be termed as the individual taste which is measured by the various levels of stimulus which instigate a consumer to buy certain products and services. There may be demographic factors, social, psychographic factors related to this preference level. Various researchers identified various factors that stimulated consumer preferences.

Factors	Year	Researchers
External stimuli (smell of the products, atmosphere of the shop, product price, display, or the product, environmental stimuli, etc.)	2000	Youn and Faber
	2007	Xu, Kaur and Singh
	2008	Mattila and Wirtz
	2009	Guptaet. al, Harmanciouglu
	2010	Schiffman
Internal Stimuli (enjoyment, variety seeking behavior, mood, feelings of delight, enthusiasm, joy, etc.)	2007	Hawkings et. al
	2009	Sneath et. al
	2010	Sharma et.al
	2011	Chang et.al
	2012	Shen and Khalifa
Situational stimuli (time, product, category, word of mouth, etc.)	2007	Jeffrey and Hodge
	2009	Harmanciouglu
	2010	Yu and Bastin

Table 1: Researched Factors Influencing Consumer's Preference

From these various researches a model can be proposed regarding the preference level of street food:
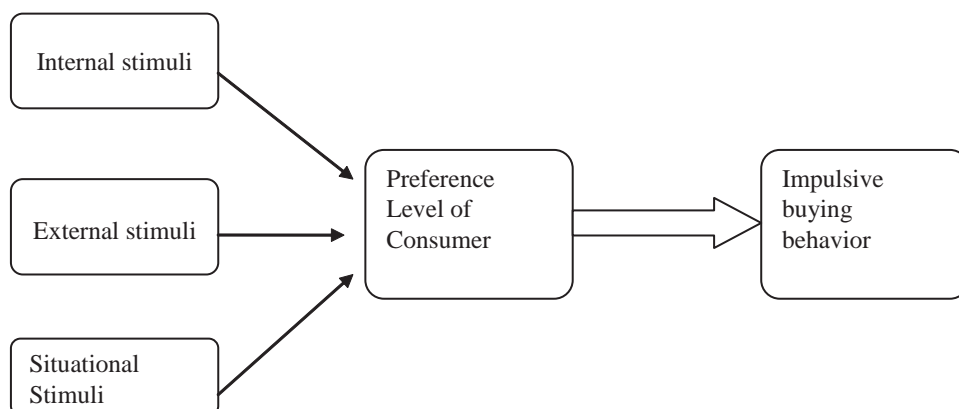
Figure 1: Criteria Affecting Consumer Preferences (proposed model)

It can be said that consumers prefer the street food for this aspect shown in this graph. But to be precise large scale research need to be conducted to analyze the street food consumers, according to their demographic situation as well as their preference criteria.

3 Findings and Discussions about Preferences of Street Food among the Young Adults in Dhaka City

3.1 Street Food in Bangladesh and around the World
To differentiate the street food from the other food categories, we need to focus on its characteristics and definitions. The central feature of street foods in this explanation is their retail location which is on the street. Street food can be classified as follows:

- Ready food - Quickly available for people on the go.
- Cheap-Important for poor consumers who may not be able to afford a nutritious meal somewhere else.
- Tasty- As opposed to eating the same fast food from food chains with outlets around the world!
- Authentic and culturally enriching- Street food is traditionally created and run in different areas of the world.
- Low Capital business- Those are low capital business. Anyone can start this type of business easily. Women are open street vendors and contribute to their f amily income.
- Popular- Street food are a very popular. Everyone likes this type of food.
- Easily available food- Street foods are available everywhere. People can purchase food easily.

In Dhaka city, street food vending is one of the most popular type of self employed businesses, which is, for many people the only source of income. These vendors sell different varieties of snack products in various locations of Dhaka city. Every day a large number of city people of various occupations like,

students, tourists, small business owners, office going men, rickshaw/cart pullers, and the like rely on these vendors for their morning breakfast, evening snacks, sometimes for a quick lunch.

	Item	Price (Taka)
1	Singara	5
2	Samucha	6
3	Dim chop	6
4	Puri	3-5
5	Jhal-muri	Starts from 5 taka.
6	Bhelpuri	3
7	Chotpoti	15-25
8	Fuska	15-25
9	Achar	Starts from 5 taka.
10	Tea	5-10
11	ChanachurVaja	Starts from 5 taka.
12	Cholabut	Starts from 5 taka.
13	Badam	Starts from 5 taka.
15	Piaju	3
16	Pop-corn	5-10
17	Alur chips	5-10
18	Hot patice	10
19	Kimapuri	6
20	Gola ice cream	10-20
21	Vapapetha	5
22	Chitoypetha	5

Table 2: List of Street Food in Bangladesh

According to a research there are more than 20,000 street food shops in Dhaka city. This number is in the increase due to the need of urban people and also for the growing rate of urbanization, which is almost 5 percent a year (Ahmed, 2000). In near future there is a possibility for this sector to play an important role in providing food services, as they can provide the food at a lower price than the traditional food shops. If we focus on the demographic situation of these vendors we see that most of these vendors are males. From the report of national food policy capacity strengthening program, we have found that, about 41% vendors could write their names, 34% vendors do not have any formal education and another 25% vendors are illiterate. Around 40% of these vendors have invested Tk. 20000 in their business and their daily sales range from Tk. 1000 to 2000. More than 90% of the vendors reported their profit to be Tk. 500 on daily basis.

It has been observed that street food are most commonly sold in low and middle income countries and the types of food that are commonly sold may vary according to the food culture of the local people. A list of popular street food around the globe is also attached here:

Name of the country	Street food Category
Ethiopia	Injera, TibsWat
Ghana	fufu, kenkey, banku, fried yams, and bushmeat
Morocco	Grilled corn on the cob, merges, and snails
Nigeria	Suya (barbecued meat), Roasted plantain, Fried Yam and Fish, Roasted corn, Akara and Moi-Moi (Beans cake)
South Africa	Gatsby, a baguette filled with meat (often bologna sausage), salad, cheese and chips
China	Lanzhou (Gansu) halal beef noodles, Chongqing (Sichuan) mala bunch , and Xi'an (Shaanxi) cold noodles
Hong Kong	skewered beef, curry fish balls, stuffed peppers and mushrooms, and dim sum
India	Chaat, LassiPaniPuriAlooTikkiChaap Poori-SubzieChai-faen Vadapav ThattuDosaPutumayamsabudanavada,Panipuri, ragdaraav, kutchidaabeli, Sevpuri,
Indonesia	mixed rice, fried rice, soups, satay, cakes, tempeh or beverages, such as *Eskacanghijau*, *Escendol*, or *Escincau*.
Japan	nikuman and Castella, taiyaki and imagawayaki
Korea (South)	Tteokbokki, sundae, oden, mandu, gimbap, boiled silkworm pupa and river snail, fried squid, fried shrimp, and chicken skewers
Philippines	fried squidballs, fishballs, kikiamTaho, Palamig Calamare
Taiwan	fried stinky tofu, oyster omelette, Zongzi (especially inTainan), fried meatball, sugarcane juice (Taiwanese sugarcane was sweet famous withCuba), fish ball soup, Baozi and water fried Baozi, rice cakes made with pork blood, and rice and noodle dishes.
Switzerland	grilled panini, pretzels, grilled chicken, hot dogs

Table 3: list of street food around the World
(**Source:** http://en.wikipedia.org/wiki/List_of_street_food

3.2 About the Respondents

A total of 60 different respondents of different ages (sample) are taken for the survey. Their average age is about 20 years, who are mostly from 18 to 35 years of age. It represents that the selected respondents are very young and spokespersons for the young generation of Dhaka city. Among the respondents, 63.3% of young adults take street food on a daily basis and 5 to 10 times in a week.
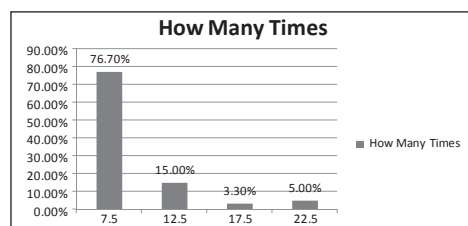
Graph 1: How Many Times They Take Street Foods
From the survey we find that 33.3% of young adults in Dhaka city spend more than taka 15 on street foods each day.

Graph 2: Amount Spending on Street Food
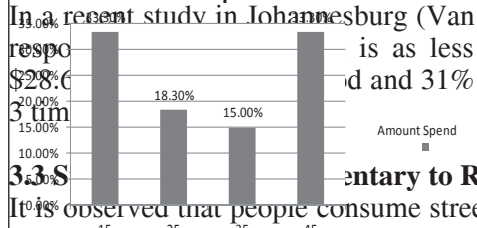
In a recent study in Johannesburg (Van et al, 2010) it is reported that 42% of the respo— is as less than $714 per month, spent more than $28.6— d and 31% was reported to have had food more than 3 tim—

Amount Spend in Taka

33.00% 18.30% 15.00%

Amount Spend

3.3 S—entary to Regular Meals

It is observed that people consume street food due to their sudden hunger. From the survey the same information is gathered. About 71% of the total respondents believe that street food is removing their hunger at several times.

Questions	Yes	No
Consumers take street food to replace lunch	35%	65%
The consumer prefers street food to remove hunger	71%	29%
Street food has many varieties to offer	60%	40%
People are willing to travel a distance to take street food	58%	42%

But only 35% of the young adults that we have surveyed believe that street food can be a substitute for lunch. About the variety 60% respondents think that street food has a lot of variety to offer. But 58% respondents are not willing to go for a distance to have street food. A study in Benin reported that more than 90% children are given pocket money by their parents for breakfast meals and less than 20% children are eating breakfast at home (Chauliac et al, 1998).

3.4 Opinions of Respondents about Street Food

Respondents have mixed feelings about street food in Bangladesh. About 70% of the total respondents believe that street foods get costly day by day.

Questions	Yes	No
Street foods are getting expensive	70%	30%
Street foods are hygienic	43%	57%
Street food has harmful ingredients	90%	10%
To entertain friends consumers prefer street food	73%	27%
Street food should be banned	25%	75%
Many street food has some good ingredients	18%	82%
Consumers are satisfied with the street food	42%	58%

The cost of street foods is usually competitive compared with that of goods purchased from larger food establishments, such as restaurants and fast food outlets. Also, due to high costs of fuel and ingredients in urban contexts, economies of scale can create a street food cheaper than the same food prepared at home (FAO 1989). More than 73% respondents take street foods to entertain their friends in public places.

About the hygiene factor, almost 57% respondents feel that street food does not maintain the proper hygiene. The safety of street foods is a major consideration, which deserves and has received considerable attention. The main health hazard associated with street foods is microbial contamination, but pesticide residues, transmission of parasites, the use of unpermitted chemical additives, and environmental contamination have also been identified as possible hazards (Abdussalam & Kaferstein, 1993).

Around 90% respondents have believed that street food might be harmful for their health. In one question it is found that only 18% respondents think that some street foods do have some good ingredients. But only 25% respondents say that street food should be banned in Bangladesh. Above all more than 41% respondents are satisfied with the local street foods.

Healthy street food is currently a new food thought in many countries. For example France is producing chocolate flavored spread for homeless people, which is enriched with micronutrients (Dermon, 2009). In rural Malawi, poor women are reported to be taking street food, which contains energy, protein, calcium, fat, Vitamin A and C (Holland et al, 2008).

In the view of some people, street food is found as an easy employment opportunity in Dhaka city. According to a report, there are as many as 200,000 street food vendors in Dhaka city who are increasing mainly due to the demand of an urban population growing at a rate of 5 percent a year (Ahmed, 2000). Finally, about 60% respondents feel that they are satisfied with street foods they consume everyday here in Dhaka city.

One of the most important factors in the study of consumer behavior is to identify the preference level of the consumers. In this study, the focul was mostly on the reasons of consumption and why the young adult prefers the street foods in Dhaka city. The young adults prefer the street food on the basis of variety, availability, to replace lunch, entertain friends and for the cost. But the hygiene factor, good ingredients factor, does not influence their preference level. Though some of the young adults feel that this type of food is not hygienic and should be banned, but most of the consumers feel that they are satisfied with the quality of street food in Dhaka city.

From the above discussion, it can be determined that the young adults prefer the street food for the following reasons and modify the model with the selected factors:
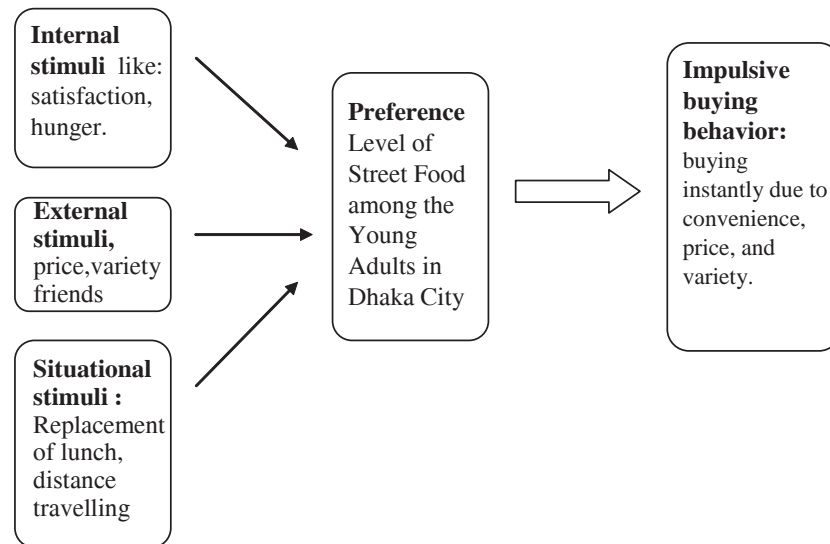
Figure 2: Criteria Affecting Consumer Preferences of Street food (proposed model)

4. Significance of the Study

In this research a model was proposed to identify the factors behind the preference of street food among the young adults with a very small number of samples. A model was proposed according to it, which addresses various factors like internal, external and situational facts to define the buying behavior. But the proposed model needs to be studied with a maximum number of samples to determine the actual facts behind this preference level. Due to the lack of accurate data this model has not been tested properly, so further research is needed to explore the potentials of these factors in the impulsive buying behavior study. As this study explores a relatively new field of study, it will help the future researcher to enhance the research scope by analyzing the proposed model. It will also help the business persons or the related authority to know more about consumer preference. Finally, this study ensures that no matter how small the study area may be it has eminent scope of research and future potentials.

5. Conclusion

Street food can be identified as a type of food that can be classified as a ready to eat food from a makeshift stall. Street food business is becoming a larger source of employment generation in various developing countries. Studies regarding this sector are largely lacking and the consumer preference pattern is still unknown due to various reasons. This paper focuses on the factors that influence young adults to consume various street foods impulsively by developing a model which needs to be studied further. It has been observed that people to prefer street food due to its convenience, lower price, and variety and tend to purchase impulsively. This study tries to enhance the possibility for further research to identify the consumer's preference levels regarding the street food sector.

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Appendixes: (source survey data)

Take Daily		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	38	63.3	63.3	63.3
	Yes	22	36.7	36.7	100.0
	Total	60	100.0	100.0	

Table 1: Do You Take Street Food Daily?

How many times		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7.5	46	76.7	76.7	76.7
	12.5	9	15.0	15.0	91.7
	17.5	2	3.3	3.3	95.0
	22.5	3	5.0	5.0	100.0
	Total	60	100.0	100.0	

Table 2: How Many Times Do You Take Street Foods In A Week?

Amount Spend		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15	20	33.3	33.3	33.3
	25	11	18.3	18.3	51.7
	35	13	21.7	15.0	66.7
	45	16	26.7	33.3	100.0
	Total	60	100.0	100.0	

Table 3: How Much Do You Spend On Street Food Every Month?

Remove Hunger					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	17	28.3	28.3	28.3
	yes	43	71.7	71.7	100.0
	Total	60	100.0	100.0	

Table 4: Do You Take Street Food To Remove Your Hunger?

Replacement Lunch					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	39	65.0	65.0	65.0
	yes	21	35.0	35.0	100.0
	Total	60	100.0	100.0	

Table 5: Do You Take Street Food As A Replacement Of Lunch?

Variety					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	40.0	40.0	40.0
	Yes	36	60.0	60.0	100.0
	Total	60	100.0	100.0	

Table 6: Are There Varieties In Street Food In Dhaka City?

Travel A Distance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	35	58.3	58.3	58.3
	Yes	25	41.7	41.7	100.0
	Total	60	100.0	100.0	

Table 7: Are You Willing To Travel A Distance For Street Foods?

Expensive

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	18	30.0	30.0	30.0
	Yes	42	70.0	70.0	100.0
	Total	60	100.0	100.0	

Table 8: Do You think Street Food Is Expensive?

Entertain Friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	16	26.7	26.7	26.7
	yes	44	73.3	73.3	100.0
	Total	60	100.0	100.0	

Table 9: Do You Entertain Your Friends With Street Foods?

Hygienic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	34	56.7	56.7	56.7
	Yes	26	43.3	43.3	100.0
	Total	60	100.0	100.0	

Table 10: Do You Think Street Food Is Hygienic?

Harmful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	6	10.0	10.0	10.0
	yes	54	90.0	90.0	100.0
	Total	60	100.0	100.0	

Table 11: Do You Think Street Food Is Harmful?

Good Ingredients					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	49	81.7	81.7	81.7
	yes	11	18.3	18.3	100.0
	Total	60	100.0	100.0	

Table 12: Do You Think Street Food Has Good Ingredients?

Banned					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	45	75.0	75.0	75.0
	Yes	15	25.0	25.0	100.0
	Total	60	100.0	100.0	

Table 13: Do You Like Street Food To Be Banned?

Satisfied					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	35	58.3	58.3	58.3
	Yes	25	41.7	41.7	100.0
	Total	60	100.0	100.0	

Table 14: Are You Satisfied With Street Foods In Dhaka City?

An Analysis of the Linguistic Contexts of Bangladesh: Colonial Legacy to the Present Globalised Mechanism

Md. Sabbir Ahmad

Md. Ziaul Haque

Abstract:
This paper aims at analyzing different components of communication (oral and written communication) in relation to the concepts of High and Low variety of a language analyzing the linguistic situations in Bangladesh. The main components included here are contexts, speaker as a greater and distinguished part of context and the choice of a particular code (a variety of language) in specified contexts (such as parliament, court, formal speeches and so on). It tries to identify the relations of society, its inhabitants at large, with language. The users do not always seem to be free to choose a specific code. We also observe how language use can be formulated for the situational contexts in which the speech event takes place. We at the same time, advocate for the creation of such contexts so that English is widely used in the life of a Bangladeshi. Our observation and analysis have been associated with traditionally defined High and Low Variety of a language. As a field of observation, we are very much concerned about the use of Standard Bangla as H shared by English and other varieties like regional dialects as L. Describing the uses of the varieties in different times, we have also noticed how language usages can be established as part to solve the socio-linguistic problems arising from the need of the current time. Language lives merely as a tool for communication depending on situation defined by social norms and behaviour and the teaching of any specific language thus is connected with sociolinguistic problems.

Introduction

Since the year 1204, the linguistic contexts (Fromkin et al 208) of Bangla region (where Bangla has been used as the first language) were very unstable (Azad 12) and still it is so. The determining factors of using a language have little been studied in relation to the status of a second language in this region. Those who engaged themselves as linguistic analysts were prompt to discuss the physical properties of Bangla language. The collections of articles compiled by Humayun Azad present the picture of linguistics so far practiced in Bangla language. Most of the articles (actually all) discussed the conflicts between Sanskrit, Sadhu and Cholita (current). The policies regarding the use of these varieties were main concerns and the other types of articles dealt with the traditional, structural, and grammatical aspects of Bangla. Regarding language planning and the linguistic problems the compiler says, "the status planning of Bangla has still not been done, though that is necessary." (Azad 342).

New dimensions have taken shape after 1990s. As language is a communication tool, a second language must also be put into contexts and the contexts of using that language should be discussed at the present global world where Bangladesh is not isolated and hence the people should not also be kept isolated. Creating these contexts is the part of the government, academics, social worker and the

like locally, regionally and internationally. The interrelation between the languages is the primary focus of the concepts like High and Low varieties of languages. The functional differences between the varieties claim one variety as high and the other as low, one of the characteristics of a typical diglossic situation as defined by Ferguson (quoted in Wardough 12). To have a brief overview of the position of H and L in Bangladesh, we need to look at two primary factors which can be explained as follows:

1. Speakers and their categories and
2. Socially-culturally defined contexts for the uses of any specific language.

Bangladesh witnessed multiple problems regarding the use of language in the past and the people still face troubles regarding the use of different varieties. Many characteristics of a typical H and L (prestige for example) are found to be absent in relation to Standard Bangla and other regional dialects. Some speakers' feeling of pride in using any variety is not a great concern whereas the defined contexts for H and L are of more importance though some illiterate speakers tend to respect other educated speakers by using the H instead of L in their linguistic functions. However speakers and their categories, contexts and the functional differences of the varieties are required to be examined to identify relationships among these components.

Historical Conflicts between Main Languages of Bangladesh

Conflict between the Varieties of Bangla: Bangla had sadhu (chaste) as high variety during the 19th and half of the 20th century. The intellectuals and educators, social workers and policy makers were engaged in the debate. Their debate was about the written form of Bangla and this debate was mainly controlled by Kolkata based Bengalis before the British divided the Indian subcontinent into two on the question of religion. "This standard variety of Bangla widely spoken in Kolkata was developed through a process of corpus planning from the vernacular of Nadia district"(Faquire 132).

No one at that time was found debating about the spoken form of different regions. So, the conflict was mainly about accepting current language, one of the spoken form of Vagirath, sharing the prestige variety. The debate was over and the role of Sadhu as a high variety declined. Influential and powerful writers started writing using the current language after a long debate on the issue. The linguistic analysis during that time followed the establishment and codification of the current Bangla. By the time, the current language started being codified and this codification has regularly been done by Bangla Academy in Bangladesh even at the very recent time. The codified current Bangla language basically represented Kolkata backed Vagirath spoken language. The east region became politically and geographically independent after 1947 from the west Bengal though as part of the then Pakistan. So it led to a newer conflict regarding the use of different languages to carry different functions keeping the colonial legacy as active as ever. Throughout history, the spoken form had always some differences with contexts set by the social conventions which we have discussed later. In case of Bangladesh, everyone's primary language is the regional dialect as s/he

uses it as the first language and Bangladesh has very diversified dialects starting from Sylhet, Chitagong, Noakhali, and many more (Azad 213-326). There are about 11 articles about dialect without any reference to standard Bangla. All the articles tried to find the physical components of the respective dialects. The types and feelings of the users of dialects have not been discussed. The standard language of the speakers of different dialects are somehow influenced by the linguistic contexts of their respective regional language except some city-born speakers who acquired the standard Bangla and some sociolects as their primary language.

Conflict between Bangla and Urdu and the Development of English as a Second Language

The socio-political history of a nation plays a very important role in formulating the character of its individuals, the social structures in relation to language and culture, the policies of the government and the like. At this section, we have looked at how historical events contributed to the formulation of the policies relating to the language and the production of language behavior in the social life of Bangladesh. We have also investigated how a strict nationalistic approach works as an obstacle to the learning and using of a second language within classroom and outside the classroom. Historically, Bangladesh has witnessed a more unstable situation when it became a part of Pakistan after 1947. Being L, Bangla stood the position of H in 1956 when it was constitutionally recognized as one of the state and official languages: "By this language policy, the Government of Pakistan ignored the other languages spoken in the provinces, including Purbo Bangla, Punjab, Sindh, North-West Frontier Province and Balochistan and relegated them to inferior statuses"(Faquire 132).

In that period, the linguistic situation was strongly tied to power relationships among the then West and East Pakistan. In terms of the number of users, Bangla was spoken by almost 56 percent of its people. Yet Urdu spoken by the elite was declared to be only state language. This created a huge political chaos in the then Pakistan. The movement of 1952 established the foundation of Bengali nationalism based on language. During this turmoil, many linguists of Bangladesh continued developing the linguistic study of Bangla forgetting its relation with English. However we saw English to have a greater impact on the then society as it was one of the most usable languages in terms of spoken, written and reading form: "It was not only the British but also the local elites who wanted English education, due to its social and economic value" (Islam 49-50).

The status of English started declining after the liberation war in 1971. The new constitution and successive governments again politicized the language. Over emphasis has critically been given to our first language without having enough vision of English as a second language though it had a greater role as the colonial language and the language of internationalism: "This implicit practice of acquisition planning also allows the people in Bangladesh to receive education through the medium of English."(Faquire 133). In the very beginning of our constitution, Bangla was declared as a state language without any reference to the use of English in the newly independent Bangladesh. Later the governments

made rules and regulations regarding the use of Bangla like Bangla Bhasa Procholon Ain 1987 which made the use of Bangla legally mandatory in every aspect of statury except the overseas communication only (www.minls.gov.bd). Still, English is being used as a high court language, language of legal proceedings, as medium of instructions in many parts of educational institutes. There was a clear mismatch between the nationalistic aspirations and the realities regarding our language policy. Consequently, English was studied and practiced (reading and writing) only by a very less number of educated people. In the later years the number of educated people started increasing and their economic dependency on the developing countries also increased. The nationalistic approach to the language policy strongly urged by the Language Movement of '52 merely proved to be a rhetoric rather than a policy. It neither developed the first language nor paved the way to the development of English as a second language. English was studied during that time though it did not focus on language teaching in terms of skills. In schools and colleges, some short stories, syntactic structure without contextualization, and some short poems were parts of the language study till the year 2000. English language teaching became an important matter in the beginning of the 21st century. A huge change was brought by the introduction of communicative language teaching approach. Many researchers have proved that the CLT could not prove to be a successful one for the long cherished aspirations for our mother tongue. The approaches and attitudes of our policy makers, teachers, educationists, social workers and their influences in the society have been viewed as hindrance to the development of English in our country. They have always talked about the '*Ekusher Chetona*'(the spirit of the 21st) without making practical recommendations regarding the linguistic behaviour of the Bengalis. In the special supplements published on the occasion of the International Mother Language Day 2014, we found about 60 percent of the writings in different daily newspapers including those of the policy makers, intellectuals, educationists and the like. Not a single piece of writing was directed to the analysis of the linguistic contexts Bengalis are witnessing. Neither there was any reference to the teaching and learning and the use of English in Bangladesh though the time demands us a rethinking of English more profoundly and logically keeping the dignity of the mother tongue in its right place. The reality is that they failed to make the people use the language in social, political and state affairs and hence had little scope to develop the language outside the classroom.

Conversely, English became a threat to the development of an educated individual. Higher education of our country has proved to be a failure in relation to the production of sustainable man power and the medium of instructions are sometimes seen as greater obstacles. After completion of 12 years of English learning in CLT, they still think the language to be a serious problem. A huge number of English educated adults are being produced in different higher educational institutes; yet we are not able to produce a good number of English users in our society. What kind of speakers or writers are we producing? As a greater part of our society, what role can they play?

Present Linguistic and Situational Context
At present, the integration of the people of different regions for industrialization and spread of education has placed Bangladesh on a typically different diglossic situation where the place of High variety is shared between Standard Bangla and English to some extent. For the lack of uniformity in education system, Bangladesh is bringing up multiple varieties of language users within the boundary. A large portion of our young population is being educated in English medium institutions and unfortunately they are reluctant to use Bangla. This linguistic situation has strongly been criticized by many but to no purpose. Again there is a group of population learning Arabic as one of the main languages ignoring either Bangla or English though they are not being users of the language they are learning. On the other hand, most of the learners are learning in the Bangla medium of different categories of schools and colleges depending on the location and teaching stuff. Language has been a much neglected part of education up to college level. This situation is keeping tertiary education at a risky situation. These types of language behaviour vary alarmingly. Many of them do not have the basic linguistic requirements to enroll themselves at tertiary level where the mode of teaching is English. So, it is difficult to categorize these language users in relation to Bangla and English. Contrastingly, the position of L is shared by many varieties including many regional and social dialects. Linguistically, the Ls (not all) share many linguistic contexts with the high variety but other contexts explicitly put the standard Bangla into the position of H and regional dialects into the L. So, we see defining one divergent and prestigious variety to be more complex in this type of linguistic situation. However, we will try to look at the things from Bangladeshi nationalistic point of view which accepts the Standard Bangla as H shared by English and other varieties as L and their uses in specified contexts.

Speakers and Their Categories
There has always been a sharp difference between the speaker and the context although context includes the users in many cases. Every country has a multiple speaker community sharing some common beliefs on language and social norms. Multiple persons and personalities compare the diverse speakers or users of a variety. The article titled "Towards a descriptive framework for the status/ function (social position) of a language within a country" provided different types of speaker categories based on the simple distinction between multilinguals and monolinguals (Ulrich Ammon 49). Based on this category, three types of speakers of Bangla will be found. Firstly, an illiterate monolingual native speaker of any of the regional dialects. Secondly, an educated (its levels are also important) native speaker of L who is multilingual by definition acquiring the standard Bangla and English having any regional dialect of his own. Thirdly, any non native speaker (an English who has skill of Bangla, for example). We must see some differences of the use of language or varieties in terms of the accent, dictions and many other linguistic items (phoneme, syntactic for example). These categories have been broadened in terms of skills. Three types are noteworthy here. A native who has only aural skill corresponds to the first one of the above and he has actually rare chances to switch from one variety to another and as a result the so called notion of High and Low variety is absent in these types. But

the second one who has aural, reading and writing skills basically has the greater opportunities to switch from one variety to another and have greater chances for the high to be influenced by the low. The third one who is a non native user of Bangla is not considered here. The communication between native monolinguals will be performed using the L only if we consider the concepts of H and L. What will happen if he is required to interact with multiliguals in formal contexts where using H is a custom performed by the second category of speakers? He might be influenced to use the H borrowing the influence from his own dialect considered as L though we can hardly find an educated Bengali using the H in its pure term. However, in conversation, people with different skills use different modes of varieties depending on the interpersonal relationship between the participants and also on the dialect he acquired. Among the users of different Ls in the same speech event, they usually employ the H or intelligible sociolect which is normally found among social groups or classes in urban settings. This sociolect has again different forms depending on different groups of people. For example, the working class of people who mostly live in the slums is found using a language of their own identity. Anyway, the use of codified language in speech is rarely found. Still we tend to borrow some linguistic contexts from our respective mother tongue and make the H a modified one and this is what many claim the H to be consciously or not. Besides, there has emerged a new category of speakers (users) who are being educated in English and prefer adopting the culture alien to the native culture especially after 1990s. The question is about the position of standard Bangla in the linguistic behaviuor of these groups of Bangladeshis. Many of these types of speakers are found incapable of using Bangla properly in different contexts. Their use of Bangla seems to be influenced by the linguistic context of English like the first speaker category's H is influenced by their L. There have been many researches on speaker communities and their linguistic behavior. Ulrich Ammon (53) identified the following socio-cultural attributes of the speakers:

Social class (based on economic and cultural factors which also include the region)
      Profession (higher classes of profession to the lower classes)
      Sex (male/female)
      Age (child, teenage, young and so on)
      Religion (Hindu and Muslim especially)
      Structure of community (urban/rural) and so on.

The inception of CLT after 1990s in the educational institution of Bangladesh has made the status of English more subtle because of its emphasis on the use of English. So, it is very confusing to figure out different categories of speakers from Bangladeshi nationals. We are seen to play the roles set by our society to the best of our knowledge and spontaneously use and adopt that language as defined by our contexts.

H and L and Their Functional Differences According to Contexts
Now, we will see how speakers are bonded with social and cultural attributes which make them bound to choose different varieties in different contexts. These

contexts will be understood better in relation to the concept of H and L and their mutual uses in those contexts. We will see that one variety is high or low because of its related contexts including linguistic contexts. The H is a linguistically codified or standardized system for formal written and spoken communication. That is why the H is very structured and rule oriented. This has made it more complex but expressive. Contrastingly, the L is the 'spontaneous overflow of powerful feelings' and that's why it is simple and natural. The H might be considered as a national possession whereas the L is a communal possession in Bangladesh. The H is employed in national affairs like in the Jatiya Sangsad in educational institutions in formal lectures and political speeches, addressing mass people and in some informal situations. On the other hand, users employ the L in more private and natural settings like talking to familiar ones, ordering subordinates for the spontaneity and readiness. The contexts of the H represent power and prestige. The issue of power and prestige is the imposition on the H by its users who are educated citizens of a country. Many people of Bangladesh do not consider the use of H as prestigious and a matter of pride. It is simply seen as a national property codified from the existing varieties though the spread of education and urbanization has contributed to the extension of the H in the functions of the L. For example it is really a crucial question whether a Bangladeshi born in Chittagong looks at his local language to be inferior to Standard Bangla.

English Language Teaching and its Use in Bangladesh in this Linguistic Situation
It has been more than one decade since the inception of teaching languages for communication purposes. There have been many arguments for teaching English for communication purposes. One of the arguments placed for teaching English in Bangladesh and also in many other countries is the value of English as an international language. Secondly, the existing practice of using English as a medium of higher education, the rise of private sectors (national, international). Thirdly, as an important subject of getting so called good job and the like. The above description of the speakers and their categories, the socio-cultural attributes and the national attitude towards English and Bangla reflect a very low profile of speakers most of whom fail to learn English as it was supposed to be in communicative language teaching approach. In this regard, Bangladesh government as policy maker should be made responsible. They have initiated syllabus and curriculum consisting of structural, interactional and functional aspects of a language (Richards 146-148) without specifying contexts for using the language nationally, locally and internationally. The governments of south Asia and south-east Asia talk much about the people to people connectivity as important means to gain mutual interests. Yet the hope of a free south and south-east Asia is almost a nightmare. There must be free access of people to increase connectivity with others to make the speakers international. If a speaker of Bangladesh never needs to be international, why should he be compelled to learn an international language? Mass people with socio-economic and cultural obstacles should be focused so that they can build a strong linguistic context for their own practical needs. Otherwise whatever methodology is applied, language learning for communication will rarely be successful. In many cases it will put the learners into a huge load and demotivation will be its ultimate gain.

Bangladesh will have a large number of higher educated people with no or little knowledge of their respective field and hence create problems for the overall development of the country.

Recently, many English language teaching practitioners have been trained and certified with good and practical knowledge of teaching a second or foreign language under different institutions. They should be appointed replacing the unworthy ones due to their theoretical knowledge in the field. So, the government is required to remove socio-political hindrances and specify contexts of using English locally and institutionally to create the practical needs. In this case, the proceedings and regulations are required to be amended allowing the scope of English to be used. The required actions of the government will initiate social changes in relation to the use of English as a second language. That is why, Bamgbose (420) rightly points out: "Language policy discourse in relation to English has implications for language planning, particularly with regard to extending its scope beyond language, and ensuring that it is inclusive, equitable, and ultimately designed to promote the overall cultural and economic development of a country. The hegemony of English is a reality that language policy and planning should take account of ". So, we are required to define *Ekusher Chetona* (the spirit of the 21st) keeping the linguistic behaviour of the Bengalis and the speaker categories in our mind. Otherwise there was no need to introduce communicative language teaching approach in our country. In this regard, the use of English for communication purposes must be initiated by the government authorities at first. Later there are chances for English to be flourished in its full swing. There have been some actions from British NGOs like the British Council, to spread English in the social aspects of life. But the actions of the foreigners must be guided by the government policies lest their efforts should become futile. We have already known how India became successful in introducing English at almost every level of their life. There would be little or no troubles regarding teaching and learning English if we could contextualize English for Bangladeshi purposes in the existing social contexts. For the last few years we have not been able to produce good number of English language users though we have been producing a very a good number of English graduates. Unfortunately, we are exibitinging a very negative attitude towards the use of English in our social life in the name of the spirit of the 21st. We are witnessing people using Bangla in the English alphabet and some software transcribing English into Bangla. At the end the question arises whether people will learn the whole of a language before using it or the process of learning will be enhanced through the use. The failure of Communicative Teaching Approach tells us that the learning must copntinue with the use of the language. We are recommending the government to create contexts so that people become motivated to learn English realizing the practical needs. The government agencies in this case can do the best by using English for communicating with the mass people at large. The parliament (Jatiya Sangsad) is required to amend the laws for removing the obstacles for the use of English as a mode of communication at national level. It is not the question whether Bangla is sufficient or not, the question is whether English can be used or not.

Conclusion

We can conclude by saying that the linguistic context of Bangladesh has always been in a very unstable situation for different social, political, global and cultural issues. The linguistic situations especially sociolinguistic concerns must be taken seriously due to the current global needs and markets. The development of education in line with the rise of technologicaladvancement in Bangladesh has already provided a basis for enhancing second language use in troubles regarding the use of English within and outside the territory of the country. The examples of different English Varieties originating as a result of acculturation and contextualization prove the validity of the claim.

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Development of ICT Based Products and Services in the Banking Industry of Bangladesh: Current Status, Prospects and Challenges

Md. Shihab Uddin Khan

Abstract

Information and communication technology (ICT) has become the heart of the banking sector, while banking industry is the heart of every robust economy. ICT helps the banking sector improve the efficiency and effectiveness of services offered to customers, and enhances business processes, managerial decision making, and workgroup collaborations, which strengthens their competitive positions in rapidly changing and emerging economies. An effort has been made in this paper to analyze the trends of ICT adoption in developing   e-banking products and to identify challenges with regard to ensuring reliable services in our banking industry in recent times.

1 Introduction

Today's business environment is very dynamic and it experiences rapid changes as a result of creativity, innovation, technological changes, increased awareness and demands from customers. Business organizations, especially the banking industry of the 21st century operates in a complex and competitive environment characterized by these changing conditions and a highly unpredictable economic climate with ICT is at the centre of this global change curve. Now-a-days, Information Technology (IT) has been a boon to banking industry. Banking sector, being the bloodline of the economy of any country, has to achieve efficiency and competitiveness to the highest order to promote and accelerate growth of the economy. To be able to survive and grow in the changing and competitive market environment, banks are going for adopting the latest technologies. It is also viewed as an instrument of cost reduction and effective communication with people and institutions associated with banking business.

Initiation of ICT networking system is set to change the operating environment of banks drastically. Technology has already enabled most of the banks in Bangladesh to introduce innovative products to their customers in the form of Mobile/SMS banking, Internet banking, POS Terminal and ATM Banking, Any branch banking, Call Center, BACH etc. Customers of banks have felt the positive impact of technological solutions implemented by banks. Technology can also be harnessed in automating and networking the branches that will ensure timely flow of information and aid quick decision making process. Prompt adoption of information technology resources allows banks to maintain a competitive advantage over their rivals.

Collective efforts of the Central bank and the bank management have allowed the scheduled banks of Bangladesh to be connected to each other for conducting inter-bank online transactions to smoothen the operation of full-fledged online banking in Bangladesh. In the way of ICT development in our banking sector, some banks are yet to upgrade the IT infrastructure. The progress has been slow

for some banks due to lack of available software, skilled manpower and infrastructures. For the improvement and progress of the e-banking activities of our banking industry, it is important to understand the current scenario of the ICT based products development, innovation of e-banking services and to recognize the current challenges and possible solutions.

2 Objectives of the Study

The study has following objectives:
- To observe the present status of e-banking products and services in the banking sector of Bangladesh.
- To analyze the trends of ICT applications for the development of banking products and services.
- To identify the challenges and to suggest future courses of actions in ensuring
  reliable and smooth IT operations of banks

3 Methodology

Based on the objectives of the study, both primary and secondary data have been collected. Secondary information has been collected from various publications of Bangladesh Bank and BIBM, research articles, and websites of Bangladeshi banks. Primary data have mainly been collected from the IT department of banks on the basis of a structured questionnaire. A total of 22 banks have been selected as sample banks. The selection of banks has been determined purposively based on the consideration that the sample banks should represent all categories of banks in terms of ownership, number of branches and state of computerization.

In categorizing the sample banks, we considered the automation level defined by Bangladesh Bank ICT security guidelines: **Tier-I** [Centralized ICT Operation through Data Center (DC) including Disaster Recovery Site (DRS) to which all other offices, branches and booths are connected through WAN with 24x7 hours attended operation]; **Tier-2** [Head Office, Zonal Office, Branch or booth having Server to which all or a part of the computers of that locations are connected through LAN]; **Tier-3** [Head Office, Zonal Office, Branch or booth having stand- alone computers]. The distribution of 22 sample banks is given in Table-1.

Sample Distribution of Banks

		Automation Level			Total
		Tier-1	Tier-2	Tier-3	
Bank Category	State-Owned Commercial Banks	1	1	1	3
	Specialized Commercial Banks	1	1	2	4
	Private Commercial Banks	9	3	0	12
	Foreign Commercial Banks	3	0	0	3
	Total	**14**	**5**	**3**	**22**

Focused group discussion (FGD), Personal face-to-face interview, telephonic discussion and e-mail chatting have been employed with a view to ensure data validity and collect some specific suggestions or opinions regarding current challenges of developing e-banking products and services.

4 Literature Review

Jalan (2002) pointed out that information and communication technology (ICT) has bought the fundamental revolution in banking sector. Due to the enormous benefits of IT application, now banks seem to perceive internet banking as a substitute for the existing branching structure (Corrocher 2002).Janice et al., (2002) observed that banks view internet as a good supplementary distribution channel for their products and services. Poatoglu and Ekin (2001) have found that modern banking with internet techniques leads to better results regarding customer's satisfaction and is a good tool for attaining their retention. In some countries banks have also applied wireless application protocol telephony technique which allows the building of a single platform for competing network technologies such as GSM and IS-95 networks. Further it is an effective tool for downsizing the cost of operations through cheaper transaction costs, lesser paper work, less requirement of man-power and physical branches (Cheng et al., 2006). Hasan (2002) has found that internet banking is highly preferred by larger banks and banks having higher branching networks. The study also noted that online home banking could be used as a strong incentive to have customer's penetration. Huda, Momen and Ahmed (2004) have commented that the banking sector in Bangladesh is clearly recognizing the importance of information technology to their continued success. Ahmed and Islam (2008) have observed that adopting e-banking services, banks in developing countries are faced with strategic options between the choice of delivery channels and the level of sophistication of services provided by these delivery channels. Rahman(2010) who is the Governor of Bangladesh Bank has argued that Bangladesh Bank has achieved a historic milestone in the trade and business arena departing from conventional banking with the introduction of e-commerce recently; a giant stride towards digital Bangladesh. By combining traditional physical facilities with modern telecommunications, businesses in developing countries are building unique ways to market products and services (Prahalad 2006). Technology is to create new markets or penetrate existing markets (Chipp, Hoenig & Nel 2006).

5 ICT Based Products and Services in the Banking Sector of Bangladesh

All the banks have made substantial investments in technology platform and systems, built multiple distribution channels, including an electronically linked branch network, automated telephone banking, internet banking and banking through mobile phones to offer its customers convenient access to various products. By and large, the banks have been successful in driving the development of innovative product features, reducing operating costs, enhancing customer service delivery and minimizing inherent risks. IT facilitates all our core business processes and components, and serves to support, sustain and grow transformation and the realization of our strategic objectives at group and business unit levels.

POST Network and ATM Banking
In Bangladesh, Dutch-Bangla Bank, BRAC Bank and Information Technology Consultants Limited (ITCL) have established their large ATM and POST network all over Bangladesh for providing ATM access for 24 hours to their customers. Besides offering access to their own ATM network across the country, they are also providing the same access to their customers worldwide through the network of VISA/MasterCard. Other banks are also establishing and expanding their own ATM/POST network and they are sharing the ATM networks of the above three companies. Besides expanding the ATM networks, the banks are also giving emphasis on increasing their POST network covering the major outlets for the ease of purchase for the customers. Many banks have installed POS terminals in major shops, hotels, sale centre etc. all over the country.

Internet Banking
Some of the technology driven banks are providing Internet Banking channel with the inclusion of a number of customer friendly features. The systems software are providing the customers access to their accounts from mobile devices like smart phones and tablets. The customers are now able to do banking from any place of Bangladesh at any time.

Mobile Banking
Mobile banking refers to the access of account, transfer funds, summary sheet and other banking services through dialing one telephone number. In case of mobile banking, the banking services are provided to the customers having the credit card accounts with bank. In mobile banking, the services are provided by the association of banks and cellular service providers through SMS or WAP enabled mobile instruments.

Contact/Call Centre
Giving importance to customer satisfaction and easy access to banking services, some banks have launched their high tech contact Centre. IVR, integrated with CBS and Card system that enables customers to do banking by any phone system as well as consultations with contact Centre agents (Phone Banker).

Automated Clearing House System (ACHS)
As members of Bangladesh Automated Clearing House (BACH), all the banks have responded proactively by expanding their BACH operation facility to all regions where Bangladesh Bank has its branch and all areas where the clearing operation was done by Sonali Bank on behalf of Bangladesh Bank. As such, ACHS has ensured quick clearing of customers' financial instruments. The banks have also increased the number of cheque scanning points to alleviate the task of scanning at one point. It is helping the banks clear the financial instruments efficiently within a very short time. Gradually the banks are expanding this facility under the guidance of Bangladesh Bank to all the regions of Bangladesh so that all the branches of all banks in our country can come under a single clearing house being operated in Dhaka.

Electronic Fund Transfer (EFT)
As active members of Bangladesh Electronic Fund Transfer Network commonly known as BEFTN, all banks have initiated EFT transactions mostly for the remittance payments. It is highly efficient and less costly for debiting some accounts in one bank and crediting multiple accounts in multiple banks. For example, cash dividend transfer of companies to its shareholders scattered all over Bangladesh having accounts with various banks, salary transfer of large companies having offices at various places of Bangladesh, transfer of insurance premium from customers account to the account of Insurance companies etc. are being done very quickly through this facility. It is good to learn that even though it was started mostly with remittance payment transactions, many organizations including banks, insurance companies, multi-national companies and other public limited companies are now paying their cash dividends through BEFTN.

Online CIB
In response to Bangladesh Bank CIB Online Project, banks have been amongst the proactive members providing required borrower information in time during 2011. Many banks have automated the process to obtain the borrower information centrally waiving the legacy system for fetching CIB information from branches and accumulating. It has increased the information processing speed and has reduced the time substantially to obtain CIB information of a customer.

The Core Banking Solution (CBS)
Using the CBS Systems, banks are providing real-time online banking services to their customers through all the branches across the country. The software have the capability to meet all the services being provided through various electronic delivery channels like ATM, POS, Internet, mobile banking etc. They have also the capability to provide centralized MIS and adhoc reports. Business Process Reengineering (BPR) that has been adopted by a few banks in our country has enhanced information processing capacity enormously and efficiently leading the higher productivity of the bankers. Moreover, it is also helping to ensure seamless flow of information in a secured manner at all levels of the management. In today's highly volatile and competitive business environment, a centralized robust CBS that can accommodate all the electronic delivery channels is a must for survival in the race of competition.

Corporate Intranet System
Some of the banks have their in-house developed system having a revolutionary impact in implementing the paper-free communication inside the bank. An internal web portal that holds features like circulars, messaging, news, instant notices, employee profiles, on-line leave processing, on-line requisition, on-line cheque requisition, MIS reports from CBS data and many more. Besides many banks have a number of software being developed by its own resources or external vendors such as Reconciliation System, Payroll System, Employees Tax Management System, Foreign Exchange Return Software, Cash Transaction Reporting System etc.

Business Intelligence System
Many banks of our country have crossed the first phase of automation. They have established a modern Data Center and a Disaster Recovery Site. They have connected all the branches and offices with DC and DRS through redundant telecommunication links. They have expanded their service delivery outlets through incorporating various electronic delivery channels. As the usages of various electronic and computer systems are increasing in the banks, there is an information explosion in such banks due to capturing more information electronically. In order to extract the right information, banks are planning to implement various Business Intelligence Software. After implementation of such systems, comprehensive MIS will be at the fingertips of the top management. Data warehouse and Data mining tools are already available in our market to establish the above system in our banks.

Document Management System
Banks are using paper based filing system and storing the files in the file cabinets in the office. As a result, it is occupying costly office space. Moreover, this manual filing system and storing system is not at all efficient if we consider the time of storing the file, retrieving information from various files and compiling them to make a report. Under such circumstances, banks are implementing the Document Management System. Under this system, whenever a document enters into bank premises, it will be captured into the system and linked with the application where it is required. The documents generated internally in the banks will also follow the same procedure. There will be a searching system to retrieve the right document. The documents in the system can be grouped in various ways for monitoring purposes. The physical document will move to a document library located to a less costly place. The central bank may encourage this by changing its audit procedure by removing the necessity of keeping the documents as hard copy, allowing the scope of keeping it in electronic format which the present procedure does not permit.

Cross Border Operations
Systems have been developed for providing support for remittance transactions by the Overseas Exchange Houses of banks. The web based system provides real time remittance transfer facility from overseas and instant transfer of the fund to the customers' accounts or to other bank customers using BEFTN network or some other mechanism taking help of some non-banking institutions/telephone companies etc.

6 To Analyze the Trends of ICT Applications for the Development of Banking Products and Services

ICT Infrastructure Development of Banks
According to the "Bangladesh Bank Information and Communication Technology (ICT) Guideline for the Scheduled Banks and Financial Institutions", commercial banks are classified into three technical groups: Tier-1, Tier-2 and Tier-3. At the end of 2013, around 67 per cent banks have introduced real time online banking, meeting the Tier-1 architecture of the ICT guideline. The rest of

the banks have introduced either Tier-2 (16%) or Tier-3 (17%) architecture. It is seen that banks are slowly moving from Tier-2 to Tier-1 in the last three years. But number of banks belonging to Tier-3 category is still in that category over the years (Figure-1). But few banks of that category partially implemented Tier-1 architecture and gradually transferring the branches to meet the Tier-1 category. SCBs and SBs mainly fall in this group.

Figure-1: ICT Infrastructure of Banks
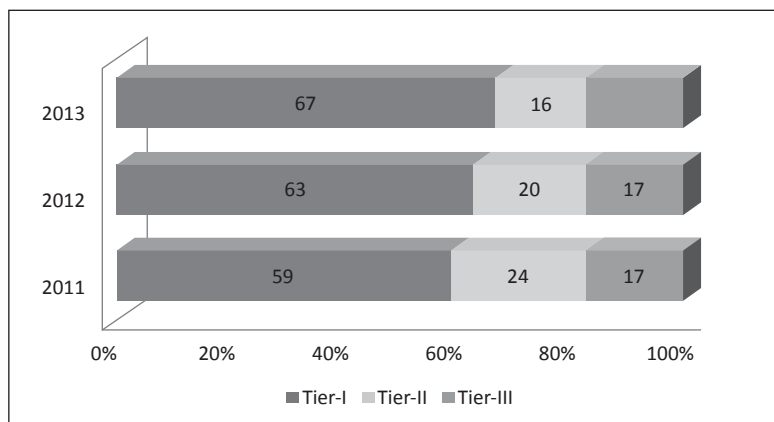
Sourece: Author's Survey Information, 2014

Growth of Branch Automation

Despite the fact that the SCBs are large in terms of shares in assets and number of branches, they could cover only around 71.16 per cent of their branches under computerization by 2012 while the PCBs and FCBs brought 100 per cent of their branches respectively under computerization. But at the end of 2013, 96.49 per cent branches of SCBs are computerized, showing a tremendous growth. Though computerized branches of SBs stood at 27.03 per cent at the end of 2013, the growth of SBs in computerization is slower than SCBs. The following table (Table-2) shows computerization status of bank branches during 1998-2013 in Bangladesh. We see that, total computerization of bank branches for all banks in 2013 increased slightly due to computerization of govt. banks compared to 2012

Table-1: Computerization of Bank Branches by Categories, 1998-2013 (In%)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
SCB	2.65	4.14	7.02	8.35	10.09	11.89	14.43	35.42	16.38	19.4	21.7	23.59	40.15	64.92	71.16	96.49
SB	1.96	2.04	2.18	2.06	4.20	4.20	4.39	100	4.38	8.51	12.57	15.22	15.93	16.23	19.21	27.03
PCB	38.4	46.32	67.67	85.86	95.67	97.76	98.45	98.90	98.92	98.97	99.0	99.01	99.11	99.15	100	100
FCB	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total	9.20	11.74	18.95	23.91	28.61	31.10	33.50	35.42	36.95	37.2	37.5	47.49	55.22	69.17	76.21	88.32

Source: Rahman, M. (1998-2007) and BIBM Survey information (2008-2013)

Penetration of Computer (PC) and E-mail ID

Number of computers and official E-mail account per hundred employees are two important parameters to understand the automation status of a bank. In this regard, the following table gives us an idea and comparison between 2012 and 2013. The penetration of PC and official   E-mail ID are now at a good situation and gradually increasing. This will enhance the productivity and efficiency of the bank employees.

Table-2: Penetration of Computer (PC) and E-mail ID, 2012 - 2013

	2012			2013		
	Minimum	Maximum	Average	Minimum	Maximum	Average
No. of Computers per hundred employees	25	100	78	30	100	83
No. of Official E-mail ID per hundred employees	12	100	65	15	100	72

Source: BIBM Survey Information, 2014

Core Banking Software (CBS)

Online banking operation is mainly run by Core Banking Software. Efficient CBS plays the key role for the smooth operation of an online bank. In 2011, 45% banks were using foreign CBS and 32% local CBS. Only 20% banks developed their CBS by their own experts and 3% banks used joint-venture CBS (Figure-4). In 2012, we see that 49% and 28% banks used foreign and local CBS, respectively. But in 2013, the use of foreign software also increased slightly and stood at 53% of total CBS. Clearly, the use of foreign software has been increasing over the period 2011-2013 defeating the local software market. This figure shows that banks have been losing their confidence on local CBS. As compared to foreign CBS, quality and reliability of local CBS is not increasing. Local vendors should give more emphasis on it to take competitive advantages.

Figure-2: Trends of CBS adoption in our banking sector (In %)

Source: BIBM Survey Information, 2014

Table-3: List of CBS Used in Our Banking Sector

Types of Software	Name of the Software	No. Banks Using CBS	
		2011	2012
Foreign	Bank Smart, Kastle Core Banking Solution, C-Bank, eBBS, Finacle, Flexcube, Hub, one HSBC System, ICPS, Micro Banker, Equation, Silver lake, Temenos T24, Winfos, i-Stelar Online Banking Solution	46	49
Local	Kranti, Ababil, A-To-Z, Bexi Bank, Daffodil Bank, Desktop easy banking, Flora Bank, IBS, PC Bank 2000, Bank Ultimus	32	29
Inhouse	Agrani Solution, eIBS, Janata Bank, Online PIBS, Sonali Banking Solution, UIBS	19	19
Joint Venture	Sonali Polaris Core Banking	1	1

Source: Author's Survey Information, 2013

Development and Use of Application Software

Other than CBS, banks use a large number of application software for their day to day operations. An effective use of sufficient application software in banks enhances the efficiency of office automation services. With the increasing proportion of knowledge workers in business enterprises, there is an increasing concern for improving the work environment. The productivity of knowledge workers can be improved by providing secretarial help and better communication facilities. This can be achieved with the help of the automation of office systems. It is seen that, on an average 23, minimum 6 and maximum 80 application softwares are being used in the banks. Among the software, 55% are developed by the banks themselves, 22% are local and rest of the 23% are foreign software (Figure-3). It is a good sign that most of the softwares have been developed by the banks in-house personnel.

Figure-3: Types of Application Software Used by Banks, 2013
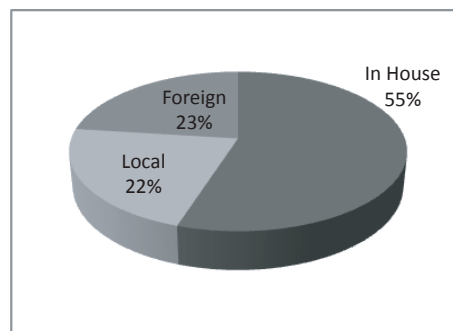
Author's Survey Information, 2014

Progress in Implementing Corporate Intranet System

Some of the banks have their in-house developed system having a revolutionary impact in implementing the paper-free communication inside the bank. An internal web portal that holds features like circulars, messaging, news, instant

notices, employee profiles, on-line leave processing, on-line requisition, on-line cheque requisition, MIS reports from CBS data and many more. Business' efficiency of a bank can be improved by using one's intranet for publishing, document management, training, workflow, front-end to corporate systems and email. Bank can integrate intranet content with email services so that information can be distributed effectively. The main benefits of an intranet are better internal communications, the sharing of resources and best practice, an improved customer service, and the reduction in paperwork. Currently, only 27% banks have this facility. The following table describes the facilities being used by the banks having Intranet system. Still our banking sector is far behind in respect of intranet facility.

Table-4: Intranet Facilities used by Banks in 2013

Facilities	% of Banks
Bulletin board service where a message is displayed instantly to be seen by all employees who logs into the system.	20
To view employee information (name, designation, phone, email, etc.)	27
Bank's circular with a search engine	20
Group collaboration service where a group of employees working in a task force can collaborate to execute their activities. Audio / video chatting with IP phone.	20
Attendance of employee through user login	13

Source: Author's Survey Information, 2014

Development of DC, DRS and DRP

It is observed that in 2013, 67% banks have centralized database operations through data center, increased slightly as compared to 2011 (59%). Most of the data centers are located in Bangladesh except for foreign banks. There is a moderate change in the location of DC in 2013. In this year, 28% data centers have been set up at Gulshan (28% in 2011), 58% at Motijheel (54% in 2011), 7% at Uttara (9% in 2011) and 7% at Mohakhali (9% in 2011). Most of the foreign banks have regional data center outside Bangladesh. It has been found that, the risk of establishing DC in high rise buildings has created alertness in banking sector. In 2011, about 80% data centers were established in high rise buildings, whereas in 2013, it came down to 70%.

Banks having data center also have disaster recovery site. Table-5 illustrates the status of DRS from 2011 to 2013

Table-5: Status of DRS (In %)

Types of DRS	2011	2012	2013
Hot	69	72	72
Warm	16	16	18
Cold	15	12	10

Source: BIBM Survey Information, 2014

Banks which mentioned their disaster recovery sites as hot, expected that they would be able to recover data within 1 to 5 hours; this duration is not acceptable for a site which is hot, indicating risks regarding low availability of data in business hours. On the other hand, banks having worm disaster recovery sites mentioned 2 to 24 hours is required for data recovery which is in the acceptable range. Banks having cold sites have no idea regarding this issue.

Still no bank has achieved any certificate from international organization, like ISO, for their DC and DR operations. Moreover, only 12% banks have Certified Data Centre Design Professional (CDCDP) for effective maintenance of DC and DRS.

Disaster Recovery Plan (DRP)
In case of any disaster, disaster recovery plan plays an important role. About 30% banks have approved guidelines of BCP/DRP. Among the banks all are following the BB ICT Security Guidelines and 20% follow ISO standard in addition. Only 12% banks have separate BCP and DRP department. Minimum, maximum and average number of employees working in these departments are 3, 7 and 5, respectively.

Phone Banking/Call Center
Giving importance to customer satisfaction and easy access to banking services, some banks have launched its high tech Call Centre. IVR, integrated with CBS and Card system enables customers to do banking by any phone system as well as consultation with Call Centre agents (Phone banker). At the end of 2013, only 21% banks were able to have a call center.

Progress of Internet Banking
Since Internet is the cheapest and global delivery channel, banks should give more emphasis on providing online banking services through internet. To classify the interactivity, we have adopted a model, as seen on the Table-6. According to the survey observation, banks could not make any progress in providing advanced services such as a discussion group or a video conference in between 2011 and 2012, though there is a remarkable change in providing basic customer relationship service.

Table-6: Status of Banks' Website Providing Different Categories of Services (In %)

Type	Basic		Intermediary		Advanced	
	2011	2012	2011	2012	2011	2012
Informational	97.2	98.2	35.13	40.12	25	25
Transactional	30.5	32.5	30.5	33.5	2.12	2.12
Customer Relationship	60.	72.2	4.25	4.25	0	0

Source: BIBM Survey information, 2013.

Development of I-banking facilities - At the end of 2013, only 63% banks were able to provide some sort of Internet banking services in Bangladesh, which was 38% at the end of 2010. In December 2012, it was 57%, showing a 6% growth

compared to 2011 (51%). Percentage of banks providing Internet Banking facilities at the end of 2013 is given below (Table-7).

Table-7: Banks Providing Internet Banking Facilities, In 2013 (In %)

Sl. No.	Internet Banking Facilities	% ofBanks
1	Fund Transfer (Customer's A/C to A/C transfer)	29
2	3rdParty Fund Transfer (One customer's A/C to another customer's A/C)	21
3	Credit card bill payment	14
4	Utility bill payment (Gas, Electricity etc.)	7
5	Transfer fund from credit card to his own A/C	0
6	Transfer fund from Bank A/C to his mobile banking A/C	0
7	Transaction history of all accounts of the same customer	36
8	Transaction history of all loan accounts of the same customer	21
9	To view the Credit card information of the same customer	7
10	To view the Mobile banking information of the same customer	0
11	iRecharge (Mobile Airtime Top Up)	21
12	Wimax Recharge	14

Source: Author's Survey Information, 2014

Amount of money transferred by this channel is shown in the following graph. The growth from 2010 to 2012 was notable

Figure-4: Transaction volume of Internet Banking, 2010-2012

	2010	2011	2012
Internet	7210	27160	30776
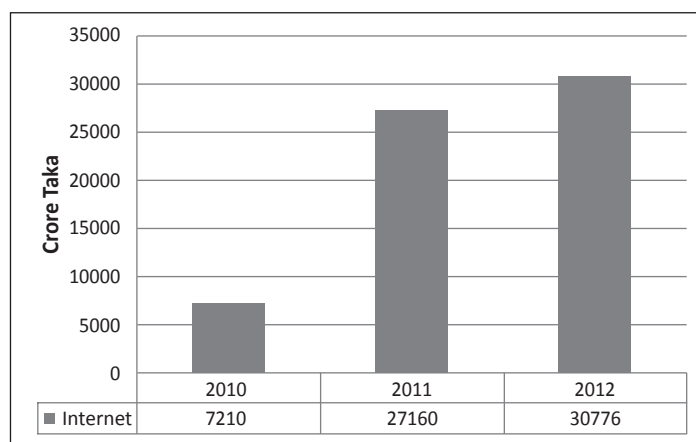
Source: Financial Stability Report (2011, 2012, 2013), BB

Plastic Money
Both Debit and Credit Card are being used in Bangladesh. Up to December, 2011, the total number of plastic cards were 37,30,136 (Debit card: 31,52,458, Credit Card (local): 5,03,128, Credit Card (International): 74,550). But, in 2012, the total number of plastic cards did not increase as expected. At the end of 2012, total plastic cards were recorded as 39,12,104 (Debit card: 33,16,714, Credit Card (local): 5,19,220, Credit Card (International): 76,170) as shown in Figure-5.

Figure-5: Number of Debit and Credit Card Holders, 1998-2012
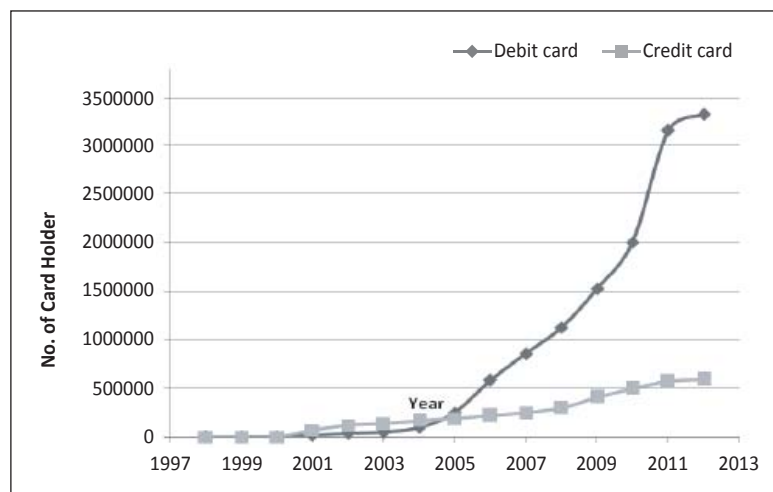
Status of Payment Services Used by POST
An electronic device having features to identify the special plastic card encoded with information on a magnetic strip is POST. Actually, the device functions as a receiving desk of cash counter of a bank branch. POST allows all types of debit card and credit cards for making transactions. In 2011 and 2012, the total number of POST in Bangladesh was 11,852 and 12,121 respectively. At the end of 2013, it stood at 13,981. Most of the POSTs are being operated in divisional towns. Dhaka is the city where 85% POST are in operation. One of the major problems in POST is the PIN less transaction that leads to frauds. Any person bearing any debit/credit card can do any transaction through POST without authentication.

ATM
There were 4,889 ATMs in Bangladesh at the end of 2012. That shows a moderate increase from the previous year (3,530). Most of the ATMs are installed in the divisional cities and district towns. Around 41% ATMs are installed in Dhaka. A very few ATMs are being operated in rural areas, less than 2%. It is mentionable that 56% ATMs are set up by the DBBL. At the end of 2012 the total volume of ATM transactions was recorded as Tk. 965.14 billion (Figure-6).

Figure-6: Volume of Transactions through ATM, 2010-2012

	2010	2011	2012
ATM	50367	67488	96514
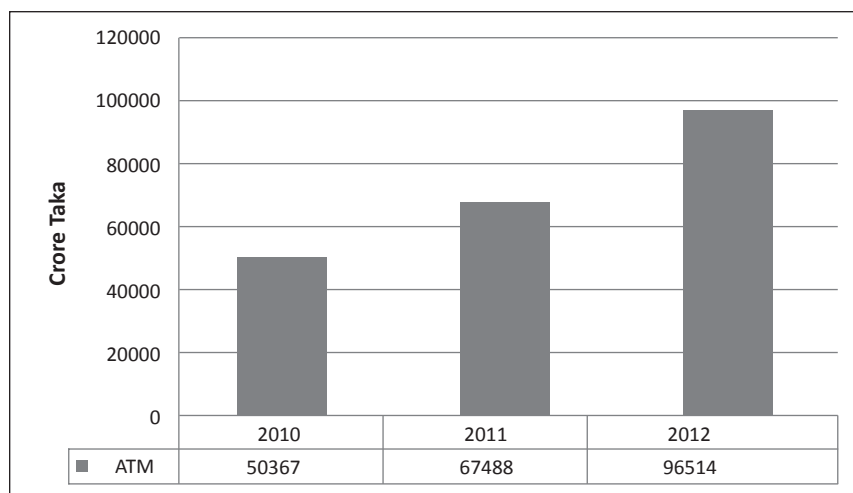
Source: Financial Stability Report (2011, 2012, 2013), BB

According to the author's findings, failure of network link is one of the major challenges regarding ATM banking. About 85% banks believe that failure of network communication system is a major issue in this regard whereas 75% banks think that authentication method and power disruptions are other big challenges.

Growth of Mobile Banking

Mobile banking is a term used for performing banking activities via a mobile device such as a mobile phone. Mobile banking is most often performed via SMS or the Mobile Internet but can also use special programs called clients downloaded to the mobile device. Up to March 2014, though, a total of 28 banks got permission from BB for MFS, only 20 banks started the services. Among them only three banks brought truly mobile banking in Bangladesh during the last years through which inward remittance transfer, cash in transaction, cash out transaction, P2P transaction, salary disbursement (B2P) and utility bill payment (P2B) are possible.

Table-8: Mobile Banking Growth, 2012-2014

	March 2012	April 2013	July 2013	Nov 2013	Jan 2014	March 2014
No. of Banks Permitted	10	27	27	27	28	28
Live Deployment	5	18	18	19	19	20
No. of Agents	9093	82638	107760	172265	200000	240000
No. of Customers (Crore	0.04	0.53	0.72	1.15	1.32	1.5
No. of Transaction Per Month (Crore)	0.12	1.51	2.12	2.34	3.01	3.33
Volume of Transaction Per Month (Crore Tk.)	17.2	3634	5350	5533	6630	7849

Source: Bangladesh Bank Report and Daily Newspaper, 2012-2014

According to Bangladesh Bank, up to March 2014, the total number of mobile accounts reached to 1,50,23,604 and the total number of agents was 2,40,000. In March 2014, Tk. 7,849.12 crore was transacted through 3,33,62,135 transactions, showing a high growth per month in this sector.sh Bank Report and Daily Newspapers, 2012 - 2014
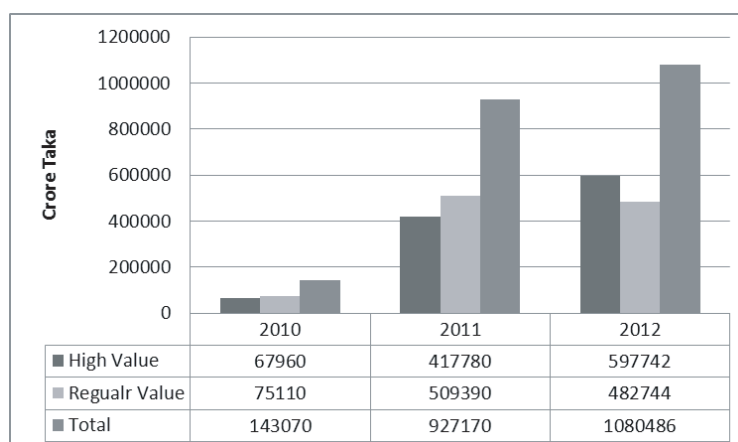
Table-9: Recent status of Mobile Banking Growth

	Dec 2014	Jan 2015
No. of Customers/Accounts (Crore Tk.)	2.51	2.52
No. of Active Accounts (Crore)	1.12	1.21
No. of Agents	5,10,00	5,36,000
Average Transaction Volume per day (Crore Tk.)	349	378

Source: The Daily Jugantor, March 12, 2015

Bangladesh Automated Clearing House (BACH)

The Bangladesh Automated Clearing House (BACH) started automated cheque clearing from 07 October 2010 by replacing the ancient manual clearing system with automation, which allows inter-bank cheques and similar type instruments to be settled instantly. All the 7 clearing regions in major cities (Chittagong, Rajshahi, Khulna, Bogra, Rangpur, Barisal and Sylhet) have been connected with the Dhaka Clearing House from 25 October 2011. Almost 90 percent of all the clearing instruments are now being processed through the automated clearing house. Under the automated cheque processing system, two types of clearing are processed-high value (HV) and regular value (RV). Instruments of Tk. 0.5 million and above are processed under HV clearing. Year 2010 shows a low volume of transaction as it was started only from October 2010. However, about 0.7 million HV items of Tk. 417780 crore and 17.9 million RV items of Tk. 509390 crore were processed through the automated clearing house in 2011. And at the end of 2012 the volume of transaction was recorded at Tk. 1080486 crore.

Figure-7: Clearing through BACH, 2011-2013

	2010	2011	2012
High Value	67960	417780	597742
Regualr Value	75110	509390	482744
Total	143070	927170	1080486

**Source:** Financial Stability Report (2010, 2011, 2012), BB

Main problems that banks have been facing regarding BACH can be seen from the following graph. About 82% banks believe that failure of network communication system and bandwidth is a major issue in this regard, whereas 78% banks think that to meet Bangladesh Bank timeline is a big challenge. Also 55% banks feel that infrastructure is not well developed till today.

Electronic Fund Transfer (EFT)
Electronic Fund Transfer (EFT) has been introduced to facilitate the banks in making high value payments instantly using less materials and manpower. The Bangladesh Electronic Fund Transfer Network (BEFTN) started its operation on 28 February 2011. On average, approximately 20,950 EFT transactions were processed in a day in 2012. The total monetary amount of EFT transactions under BEFTN in 2012 and 2011 was Tk. 284.3 and 18.7 billion, respectively (Financial Stability Report 2012, BB).

From the recent annual report of Bangladesh bank we have got approximately 500,000 EFT credit transactions and 7,000 EFT debit transactions processed per month with an increasing trend. The amount of EFT credit transactions is approximately tk 26.8 billion per month while the amount of EFT debit transactions is approximately tk 1.44 billion. The following figure is showing the recent trend of BEFTN.

Figure-8: Transaction volume of BEFTN
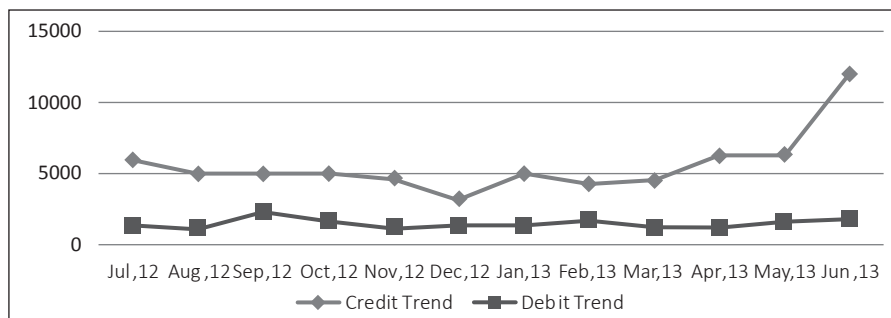
Source: Annual report of Bangladesh Bank, 2012-13.

Trends of ICT Adoption in Banking System
The trend in technology adoption in the country's banking sector over the period 1998 to 2012 is shown graphically in the following figure. Here, we will see that in all aspects technological adoption in banking sector is growing fast.

Figure-9 shows the trend in technology adoption in the country's banking sector over the period 1998 to 2013. It is evident from the graph that out of different innovative technology driven products and services, significant response among the banks is observed in adopting ATM, online, and SWIFT during the period 1998-2013.

Figure-9: Trends in Technology Adoption, 1998-2013
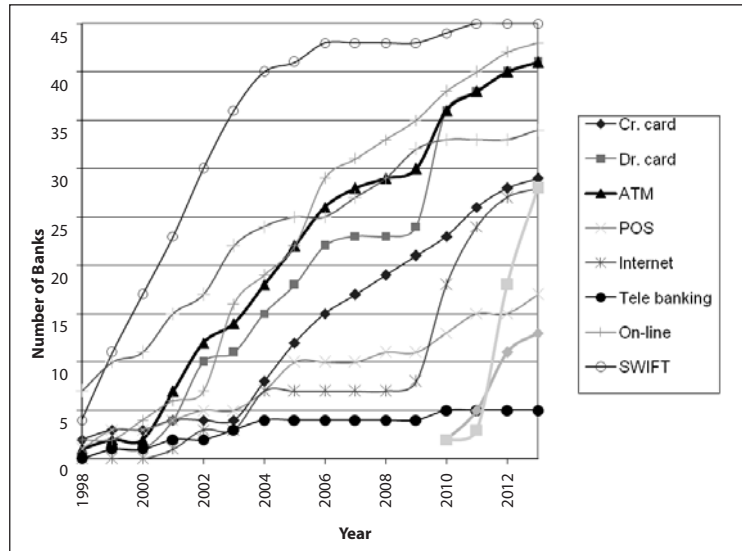
Source: Bangladesh Bank Report and BIBM Survey Information, 2013.

7. Major Challenges Related to Development of E-Banking Products and Services Reliability:

In the context of competitive edge in the area of online and global banking, our banking sector has achieved reasonable growth and advancement in providing ICT based online products and services. Recent achievements of banking automation includes Mobile Banking, E-commerce, Utility bill payments through online delivery channels, Huge application of BACH and BEFTN, Online CIB and NPS, and Increased transactions through ADCs. However as per discussion with chief technology officers and IT executives of sampled banks, we observe that banks are facing several problems and challenges to develop innovative e-banking products and also to ensure smooth and advance e-banking services in banks. The challenges are stated below:

Challenges Related to Development of E-Banking :
- Proper budget allocation to develop ICT infrastructure
- Lack of skilled IT personnel and IT auditors
- Proper manpower training
- Implementation of business continuity plan (BCP)
- Morality of employees
- Ensuring IT Security and IT Risk Management
- Power management and Network connectivity and security
- Weakness in quick decision making related to e-banking
- Availability of system vulnerability accessing tool and operating guidelines
- Standardization of DC and DRS
- Increasing awareness of all employees and Customer regarding IT security and risk
- Gap between Top level management and IT Mangement

Challenges Regarding ATM Banking:
- Electricity failure & load shedding create large downtime
- Quality of notes is not good
- Security of cash carrying to load at ATM
- Dispute settlement of ATM transaction
- Network link down problem and System malfunction
- Customer awareness regarding ATM frauds
- High setup and maintenance cost
- Poor support from vendor

Challenges Regarding Internet Banking
- Awareness of customers related to i-banking operations
- Weak authentication system and security threats/risk
- Poor Internet infrastructure in Bangladesh
- Absence of help desk
- Poor number of i-banking users
- Increased fraud
- Legal framework

Challenges Regarding Mobile Banking
- Awareness/Illiteracy of Customers
- Marketing Strategy
- Help Desk support
- Increased Fraud and Risk Mitigation
- Cash Management
- Model Selection
- Ensuring KYC information
- Application Specific Handset
- Non Cooperation of Telco
- Revenue Sharing
- Selection, Management, Training of Agents

Challenges Regarding BACH and BEFTN
- Reliable Connectivity of all branches of all banks under the BACH and BEFTN
- Some banks have centralized on-line core banking solution and some do not. As such cheque clearing and BEFTN transactions in particular are taking much longer time than anticipated
- Integration of Positive payment instruction with core Banking System is very difficult for payment clearing instruments
- To protect fraud and forgery, the present features of readable MICR cheque are not sufficient
- As it is component of center clearing system of BACH, if any member of center clearing house falls in troubles, rest of member banks also suffer
- Integration with CBS
- Delay in clearing in BB

8. Conclusion and Recommendations:
According to study, we observe that our banking sector has reached a satisfactory level in respect of development of e-banking products and services. At present,

alongside FCBs, a reasonable number of FCBs are capable enough to provide up-to-date online products and services through state-of-art technology. Rest of the PCBs and SCBs are lagging behind , but they are also gradually trying to adopt these services within a short period of time. The bank's ability to prepare tomorrow's workforce and nurture innovative talent will be vital in ensuring Bangladesh's competitive advantage in an increasingly global, connected and fast paced environment. In respect of infrastructure development, innovative e-banking products, improved & reliable customer services, secured online financial transactions; still the banking sector is required to take more ICT based initiatives. The study observes that banks are facing several problems and challenges to develop innovative e-banking products and to ensure smooth e-banking services. In respect of above drawbacks and challenges, some important suggestions are stated below:

According to study it is found that, still 33% banks did not meet the Tier-I status. Lack of a long term vision, planning and initiatives; shortages of manpower, late response of vendors, the delay in procurement process and the lack of advanced training are the main problems for them. To overcome these problems, every bank should have an ICT budget of certain portion of their annual profit. This budget may be spent for ICT infrastructure development and manpower training. IT Professionals can be recruited to fill up the gap between the actual demand and the existing manpower.

It is found that, within a very short time private banks have become IT savvy bank. Still the SOCBs and SBs are not in a very good position to provide latest technological services for most of the customers. Govt. and BB should give special attention to improve the IT system of this category.

Datacenters of all banks are built in Dhaka. Among them 80% are in high rise buildings with high risk of earthquakes and fire. On the other hand DRSs of maximum banks are also established in Dhaka within an air distance of 10 kilometers from the datacenter, showing very high risk of natural disasters like earthquakes. Distance of 30 miles is a minimum, scientifically. Special decision can be taken by all banks including Bangladesh Bank in this regard. Moreover, it is found that testing of DRS is not satisfactory. Regular testing should be increased by reducing the duration. By increasing the frequency of audit and inspection by the central bank, proper testing can be ensured. BCP/DRP plays an important role to ensure that essential business functions continue to operate during and after a disaster. Only 30% banks have approved guidelines of BCP/DRP. About 12% banks have separate BCP department but team size of this department is very small and team members are not properly trained. Special decision can be taken by all banks including Bangladesh Bank in this regard. Regular DR testing should be ensured by banks. The central bank and banks themselves can increase the frequency of audit and inspection to ensure the disaster recovery.

A skilled workforce is mandatory in order to ensure proper development and maintenance of e-banking products and services. Effective training programs can

be arranged by national, international and institution (bank) level according to current needs. Required budgetary allocation should be there for this purpose.

The IT executives of banks opined that support of the vendors is a major problem of all banks. In most of the cases vendors fail to provide better and quick service in due time according to the SLA. Communication link-down problem is the most common problem in this industry as it is totally guided by the third parties. Business of all banks is being hampered regularly and frequently due to this network link-down instance. To overcome this difficulty banks are now using dual/redundant links for each online branch and ATM which increases the administrative cost. Both the Govt. and Bangladesh Bank may take proper initiatives to ensure the reliability of data communication link.

Security awareness of both bank customers and employees' is a great concern for banking sector to overcome the challenges related to information security and risk of e-banking . It is seen over the years that online banking frauds have been increasing due to the lack of proper knowledge regarding banking information security.

In case of mobile banking, the lack of awareness of customers and agents is the main reason for such kind of frauds. Mobile banking agents are not properly trained and few banks are not following the MFS guidelines of BB accurately. Frauds in ATM banking are increasing due to the weaknesses of monitoring ATM activities, unsafe location of ATMs, the lack of ethics/honesty of personnel (both internal and external) engaged in ATM operations, the absence of two-factor/multi-factor authentication methods and shortage of ATM guards having proper knowledge about security issues of ATM operations. Internet banking frauds are also increasing due to the lack of awareness of customers, social engineering, and data leakage by hackers and bank employees. Bypassing OTP is also a great challenge.

Customers' awareness can be increased by counseling, advertising and distributing leaflets/brochures. Specialized training on IT security and fraud prevention can be provided to the employees of banks. Awareness of customers can be increased and proper mobile banking training, highlighting security issues, can be provided by banks for agents. Banks should ensure that KYC forms are filled up and verified appropriately. Auditors of BB should ensure that banks are properly following the MFS guidelines of BB. Multi-factor/adaptive authentication method can be introduced by banks quickly. Data theft and bypassing OTP can be stopped by increasing morality/ethics of bank employees and increasing internal data security.

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Impact of Perspiration on Finished Woven Fabrics Used by Various Professional Personnels

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Abstract

Colorfastness to perspiration is often a problem for using various kinds of finished garments according to work place temperature. Perspiration influences different finished fabrics made of cotton. Many occupational personnels such as Production floor workers, Building construction workers, Soldiers, Day Labors & Rickshaw pullers (Specially in Bangladesh) work in high temperature so they perspired a lot due to that working atmosphere. As a result a reaction between human perspiration and finished garment dyes takes place which will make the finished garments more fader than usual. Apparels cannot be used for a long time due to perspiration. Moreover, garments buying cost also goes higher. In this work efforts have been given to find out fabric samples of different structures which can provide better resistance against perspiration. Better perspiration resistance means increasing color fastness of garments. As a result, serviceability of the garments will be longer and people of various professional personnel like Rickshaw pullers, Production workers will not need to buy garments frequently. It will help save their hard earned money.

Key Words: Perspiration, Color fading, Acid & Alkali Media, Grey Scale, Working Environment

Introduction

Human body perspires in two forms: insensible (in vapour form) and sensible perspiration (in liquid form) and to be in a comfortable state, the clothing which will be worn should allow both the type of perspirations to transmit from the skin to the outer surface (Das 20). The thermal comfort of clothing is associated with the thermal balance of the human body and its thermal responses to the dynamic interactions with the clothing and environment systems (Li 31). For controlling thermo physiological comfort, heat and perspiration transmission produced by body movement of a woven fabric plays a vital role. The fabrics should allow moisture in the form of sensible and insensible perspiration (Parsons 44) to be transmitted from the body to the environment in order to cool the body and reduce the degradation of the thermal insulation of the fabric caused by moisture build-up (Zhang 372). It is essential to transfer the heat from body to the environment for increasing the comfort-ability of apparels. Woven fabrics should be designed with required moisture transmission properties for a particular end-use of apparels for various professional personnels. Two conditions suitable to measure moisture and heat transfers through a woven fabric are the steady state and the transient state. The steady state experiments provide reliable heat and mass transfer data for the non-active case, but they cannot explain the heat and moisture transfer mechanisms in actual wearing condition. The human body is rarely in a thermal steady state, but is being continuously exposed to transients in

physical activity and environmental conditions (Das 28). Perspiration permeability indicates breathability of garments. The mechanism involved in water vapour transmission through fabric from the skin to the outer surface by diffusion and absorption desorption method (Brojeswari 100).

Standard Test Method
This test is designed for the use in testing the fastness of dyed, printed fabrics of all kinds to the effects of human skin waste. The following method can be used for this test.

- ISO 105- E04 1994 (Acid & Alkali perspiration)

Equipments Required for the Test:

    a. Perspiration tester
    b. Dried Box (Model: DHG-9030), Maintained at 37 2°C
    c. Adjacent test fabric
    d. Grey scale
    e. Color matching chamber
    f. Acidic and alkaline solution
    g. Glass or Acrylic plate
    h. Weight.
    i. Glass rod.

Table -01: Alkali & Acid solution should be made separately and according to the above recipe (Texanlab 1-3)

Reagent Used for Perspiration Test:

Chemical Composition	ISO 105-E04	
	Alkaline Solution	**Acid solution**
L-histidinemonohydrochloride monohydrate ($C_6H_9O_2N_5.HCl.H_2O$)	0.5 g/l	0.5 g/l
Sodium Chloride (NaCl)	5 g/l	5 g/l
Disodium hydrogen orthophosphate dodecahydrate ($Na_2HPO_4. 2H_2O$)	2.5 g/l	2.2 g/l
Total volume	1 liter	liter
pH	8.0	5.5
Specimen size	100 x 40 mm	
Test condition	37 ± 2 °C for 4 hours under a pressure of 5 kg.	

Time and Place of the Test:
All the samples are tested in Quality Control Laboratory of Bangladesh University of Business and Technology from January 1, 2014 to April 1, 2014.

Test Specimen Preparation:
Six sets of various woven fabrics such as Chambry, Oxford, Zig-zag twill and Plain weave have been used using cotton yarn with different construction. A perspirometer, which consists of a stainless steel frame constructed to hold a number of glass or acrylic plates each measuring 60mm X 115mm is used. The samples of size 40mm X 100 mm are each placed separately between a pair of these plates in order to keep them moist. Tested and the adjacent test fabric is stitched together by Plain sewing machine. The samples within 50 mm of the selvedge is avoided. A mass of 5 kg is then placed on top of the apparatus so as to apply a pressure of 12.5 kPa to each specimen (Savile 252)

Procedure
In two separate beakers we have to prepare two different solutions (acid & alkali) by using the recipe of table 01. One pair of colored fabric and adjacent test fabric is transferred to acid solution and another pair is placed in alkali solution. With the help of glass rod we will stir both samples immersed in acid and alkali solutions separately for 30 minutes. After completions of stirring samples are taken out from the beaker and extra chemicals are squeezed out by using finger. Now two pairs of samples are placed between the four acrylic glass plates. Two pairs of samples along with the two acrylic glass plates are placed in steel frame of perspiration tester. Here 5 kg mass is used to give pressure on the two pairs of samples. Initially the screws of steel frame are in relaxed position but after giving pressure, screws are tighten and mass is removed so that samples have the same pressure as produced by the mass previously. We have to keep the steel frame with the samples in drier box at 37 2 °C for 4 hours. After 4 hours drier box is stopped and steel frame is taken out from the drier box. Now samples are collected from the acrylic glass plates and placed in Color matching chamber. With the help of grey scale and D65 illuminant of Color matching chamber perspiration rating of both samples from acid and alkali solution is measured (Savile 253).

Result

Sl no.	Sample	Color Staining in	
		Alkali medium	Acid medium
1.	Chambry (Pink)	5	5
2.	Oxford (Blue)	5	5
3.	Zig-zag twill (Red)	5	5

Table-02: Result of perspiration test of various woven fabric samples

Sl no.	Sample	Color Staining in	
		Alkali medium	Acid medium
1.	Plain weave (Yellow)	2/3	2/3
2.	Plain weave (Orange)	1/2	1/2
3.	Plain weave (Pink)	3	3

Table-03: Result of perspiration test of various woven fabric samples.
*All the tests are done on cotton fabric by using Reactive dye.
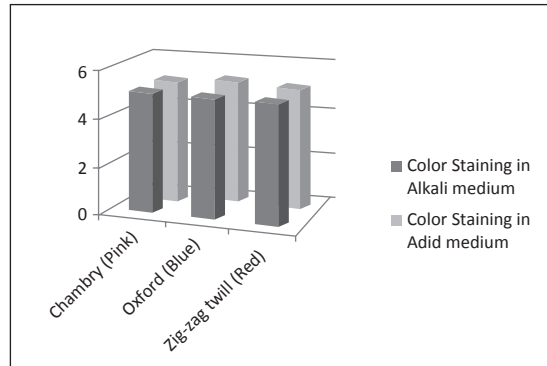
Graph-01: For sample Chambry (Pink), Oxford (Blue) and Zig-zag (Red) twill fabric.
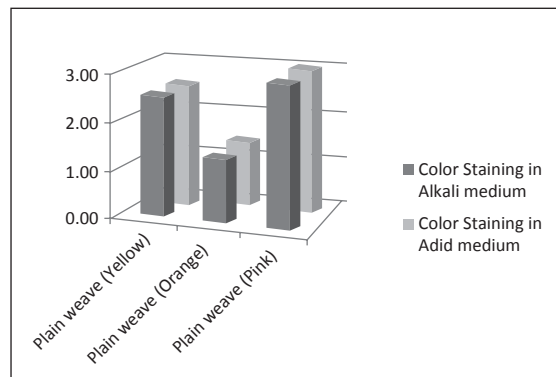
Graph-02: Samples Plain weave (Yellow), Plain weave (Orange) and Plain weave (Pink) fabric.

Discussion

From the above data we can see that sample number 1, 2 and 3 of Table-02 (Chambry, Oxford and Zig-zag twill weave of heavy constructed fabric) have the best resistance against perspiration whereas sample number 1 of Table-03 (Plain weave) have the least resistance against perspiration. We can use sample 1, 2 and 3 more effectively for various occupational personnel to perform their duties in comparatively high temperature with more sweat. As these fabrics (Chambry, Oxford and Zig-zag twill weave) have heavy construction, these will absorb more sweat or perspiration and after a certain time total sweat will be absorbed; so perspiration does not get the opportunity to react with the fabric's color for a long time. Finally we find the higher color fastness to perspiration rating of the above mentioned samples (1, 2 and 3 of Table-02). Thus garments made from these fabrics (Sample number 1, 2 and 3 of Table-02) will also give better colorfastness to perspiration. Again if we look carefully the sample number 1, 2 and 3 of Table-03 (Plain weave of light fabrics) we can come to a decision that the same sample having similar structure (Plain weave) may have different perspiration resistance, such as a sample fabric with pink color will have most resistance against perspiration than the orange and yellow colored fabric. We may use pink colored garments for the production workers instead of using orange and yellow

colored garments. As the pink colored garments have more resistance against perspiration it will not fade so rapidly even in the industrial environment. It can survive the tough situation of industries. As the color fastness to perspiration will increase there will be no need of making more garments for the industry workers. So cost of making garments will also be reduced. Moreover, we can use sample number 1, 2 and 3 (Heavy construct weave fabrics) for other occupational personnels such as rickshaw pullers, building construction workers, day labors, soldiers etc.

Conclusion

Color fastness to perspiration is a major property of finished garments. So it can surely affect the quality and the appearance of the garments. If we can use properly structured and colored garments in definite working environment it can bring us some benefits e.g. reduction of cost and durability of garments color against perspiration. If the produced garments have high color fastness to perspiration then they (garments) can retain their color for a long time. As a result a worker or rickshaw puller can reuse the same garments. They will not need to buy a new garment more frequently than usual. So their cost of buying garment will also be reduced. We feel that further study should be done in this topic in future for more improving results. We also think that serviceability test should be done regarding this work. Due to financial and socio economic problems we could not introduce the service ability test for this work.

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Factors Responsible for Job Turnover: Bangladesh Perspective

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Abstract

What causes job turnover? Why do some people frequently change their jobs? The answer is, 'obviously some factors are responsible for this'. This article aims at identifying the factors which lead to job turnover in Bangladesh. In order to collect data for this study a comprehensive questionnaire was distributed to 105 employees of different private and public organizations in Bangladesh. Of them 103 usable responses were received (drop-out rate: 1.9 percent). The most striking results show that the main factors for which people quit their jobs or have the intention to quit it are Compensation structure, Management & organizational structure, Nature of work and supervision and Income and Career path. A final conclusion of this study is that, the organizations which experience excessive rate of job turnover, should consider the cited factors to retain their employees.

Keywords: Job turnover, Commitment, Intention to quit, Job dissatisfaction, Organization

I. Introduction

Employee turnover technically projects the rate of employees leaving a company and new employees filling up their positions. Employee turnover is not a good thing for any company as it directly hits the cost aspect. And employee turnover is expensive too (Jose). Simply job turnover refers to the situation when an employee quits his or her job. It is basically resulting from dissatisfaction about the job or the lack of commitment. The process of job turnover described as job dissatisfaction is the first step, followed by the intention to leave, which finally, in some cases, can result in actual turnover (Mobley et al. 412; Bannister & Griffith 437). This process is, of course, of varying duration in time and does not necessarily have to follow a straight line. A person may move back and forth between job dissatisfaction and intention to leave or remain in this 'borderland' for longer periods (Tham 27). Even though the process does not always reach its final stage resulting in actual turnover, it is important to capture the factors related to work tasks or to the organization that seems to be associated with this process (Tham 27). The main focus of the present study was, therefore, not upon the question of a person leaving his or her place of work or how close the connection was between the job dissatisfaction and the turnover, but rather on the factors responsible for the situation of employees quitting their jobs or having the intention to leave.

II. Prior Empirical Works

The causes behind job turnover vary from country to country, organization to organization and even person to person. As Powell outlined that the main causes of employee turnover were lack of opportunities for professional development, inadequate compensation, boredom/lack of challenge, poor work/life balance, job

stress and unfair treatment. Similarly Bullock indicated the main reasons of voluntary employee turnover as, lack of opportunities for career advancement, pay/benefits, lack of Person-Job Fit, issues with management/work environment. Lack of vision, low salary, poor working environment, growth policies and low employee engagement are also the causes stated by Jose. Another study of Leahy revealed that the major causes of high employee turnover were the intention of high pay, less challenging job and poor management. A recurrent theme in the turnover literature is that the availability of alternative jobs influences turnover intentions and behavior. For example, March and Simon (237) stated that "Under nearly all conditions the most accurate single predictor of labor turnover is the state of the economy when jobs are plentiful, voluntary movement is high; when jobs are scarce, voluntary turnover is small" (237). However, the authors further argued that general labor market conditions influenced voluntary turnover through perceived ease of movement, which interacted with perceived desirability of movement to influence turnover. Their model suggests that certain factors (e.g. dissatisfaction) may "push" the employee to look for alternative employment, while other factors (e.g. the perception of attractive alternative job opportunities) may "pull" the employee to consider alternative employment.

A subsequent model by Mobley et al. (497) similarly hypothesizes that "economic-labor market" factors (e.g. unemployment, vacancy rates) influence turnover indirectly. Similarly, Mowday (240) and Michaels, Spector and Charles (55) have argued that an intention to quit is more likely to result in voluntary turnover when labor market conditions are such that alternative jobs are more generally available. As Michaels, Spector and Charles (55), suggest: "If a person intends to quit a job, he or she most likely would qu it when another job became available". On the other hand, most of the people do not quit one job without first lining up another (Mattila 237). Despite an intention to quit (based partly on perceived ease of movement), an employee may stay with the organization because general labor market conditions result in a generally low level of alternative job openings (Gerhart 60).

Studies of working conditions in human service organizations have emphasized the importance of specific aspects of the organizational context as supervision, support and feedback. In more recent years, the importance of organizational culture and climate has also been stressed (Tham 28). A meta-analysis of antecedents to retention and turnover among social workers and other human service employees (Mor Barak et al. 630) concluded that employees are likely to leave the organization, who lack organizational and professional commitment, who are unhappy with their jobs and who experience excessive stress and even burnout. Oxenstierna (203) stated that employees who are unhappy with management practices also leave the organization.

Other studies have emphasized the importance a poor relationship with one's immediate superior has been found to be decisive for the decision to leave (Samantrai 456). An interview study found that new graduates who decided to leave their jobs shortly after employment were often dissatisfied with the extent and quality of the supervision (Rycraft 38). Perceived lack of support,

insufficient relationship with one's immediate supervisor and an insufficiently supportive or cohesive climate in the organization are more often mentioned as decisive for job dissatisfaction and/or intention to leave than is overwhelming job demands and a difficult work situation (Tham 29).

Employee turnover is one such element of change that directly affects the bottom line of the organization (Leahy). High employee turnover has grave implications for the quality, consistency, and stability of services (Mor Barak et al. 631). Turnover can have detrimental effects on clients and remaining staff members who struggle to give and receive quality services when positions are vacated and then filled by inexperienced personnel (Powell & York 117). High turnover rates can reinforce clients' mistrust of the system and can discourage workers from remaining in or even entering the field (Todd & Deery?Schmitt 357; Geurts et al. 347). High turnover has been recognized as a major problem in public welfare agencies for several decades because it impedes effective and efficient delivery of services (Powell & York 118). Employee turnover in human service organizations may also disrupt the continuity and quality of care to those needing services (Braddock & Mitchell 246).

The direct costs of employee turnover are typically grouped into three main categories: separation costs (exit interviews, administration, functions related to terminations, separation pay, and unemployment tax), replacement costs (communicating job vacancies, pre-employment administrative functions, interviews, and exams), and training costs (formal classroom training and on?the?job instruction) (Braddock & Mitchell 246; Blankertz & Robinson 519). The indirect costs associated with employee turnover are more complicated to assess and include the loss of efficiency of employees before they actually leave the organization, the impact on their co-workers' productivity, and the loss of productivity while a new employee achieves full mastery of the job (Mor Barak et al. 633). Turnover can cause a deterioration of rapport and trust, leading to increased client dissatisfaction (Powell & York 119). Turnover thus can reduce organizational effectiveness and employee productivity (Tham 30).

III. Objectives of the Study
The main objective of this paper is to identify the major factors which are responsible for employees' leaving their jobs or have the intention to leave Bangladesh. However, the most concrete directions covered in this study are:

1. To provide a demographic information about the rate of leaving jobs;
2. To identify the rate of leaving job on the basis of public and private jobs;
3. To provide further research directions based in the causes of turnover.

IV. Materials and Methods
This research is based on a field work conducted in two largest cities of Bangladesh: Dhaka and Chittagong. For the convenience of the study, the researchers purposively selected 105 employees who have the experience of leaving one or more jobs or have an intention to leave current jobs. The study

conducted a questionnaire survey from August, 2013 to March, 2014. The questionnaire includes 23 variables as the causes of job turnover (Appendix 1). Both the primary and secondary data were used in the present study. Secondary data and information were collected from the existing literature in the said field.

The survey covered 105 employees of different organizations who leave their previous jobs or have the intention to leave. Among the questionnaire 2 unusable responses were found. Eliminating those, 103 respondents were used for this study. Since the total number of people varies to leave the job in different situations and in different organizations, the researchers selected the sample size using convenient sampling method. A structured questionnaire with both closed and open ended questions was used for collecting primary data. For the closed ended questions five point Likert scale was used, where 1= strongly agree, 2 =agree, 3= neutral (neither agree nor disagree), 4= disagree, and 5= strongly disagree. Finally, Statistical Package for Social Science (SPSS), Microsoft Excel is used to analyze and interpret the data.

V. Results and Discussion
Demographic figure of turnover
Analyzing the questionnaire after survey the following rate of turnover are found for the male and female and for private and public jobs:

Table 1: Rate of job turnover in different situations:

Particulars	Percentages
Quit rate for the male	86.67%
Quit rate for the females	13.33%
Quit rate for the govt. job holders	3.8%
Quit rate for the private job holders	96.2%

From the above table we find that the rate of job turnover among the male (86.67%) is more than that of for female (13.33%) and similarly the rate is high (96.2%) in case of private jobs comparing to the public jobs (3.8%).

Descriptive Statistics
The following table (table 2) shows typically, the mean, standard deviation and number of respondents (N) who participated in the survey. Looking at the mean, we can conclude that low salary, the absence of pension facilities, inappropriate performance appraisal and recognition, less scope of growth and development, low increment etc. are the most important variables that influence employees to quit their jobs (since the scale is 1 for strongly agree, 2 for agree, 3 for neutral, 4 for disagree and 5 for strongly disagree). The mean values of these variables are 1.91, 2.09, 2.17, 2.24 and 2.31 respectively.

Table 2: Descriptive Statistic			
Causes of job turnover	**Mean**	**Std. Deviation**	**Analysis N**
Low salary	1.9126	1.06740	103
Unspecified salary structure	2.8641	1.38655	103
Low increment	2.3107	1.17180	103
Less job security	2.5340	1.37067	103
Excessive work pressure	2.4660	1.23523	103
Excessive supervision	2.7864	1.27303	103
Poor working environment	2.8350	1.40794	103
Unhelpful colleagues	3.3689	1.21260	103
Poor administration	2.6408	1.37808	103
Poor management	2.5049	1.28241	103
Less renowned institution	3.0485	1.15791	103
Less facilities	2.3883	1.15668	103
Less scope of growth and development	2.2427	1.13298	103
More working hours	2.3592	1.21957	103
Rough and tough supervisors and bosses	2.7379	1.36455	103
Absence of pension facility	2.0971	1.20061	103
Absence of gratuity	2.3107	1.26823	103
Absence of provident fund facilities	2.7767	1.37150	103
Traditional job (not challenging)	3.1262	1.18553	103
Very much challenging job	3.0680	1.17375	103
Availability of job in the market	2.9417	0.63901	103
High degree of job dissatisfaction	2.7864	0.76248	103
Inappropriate performance appraisal and recognition	2.6699	0.80912	103

Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

The KMO measures the sampling adequacy which should be greater than 0.5 for a satisfactory factor analysis is to proceed. If any pair of variables has a value less than this, consider dropping one of them from the analysis. The off-diagonal elements should all be very small (close to zero) in a good model. Looking at the table (table 3) below, the KMO measure is 0.746. The value 0.5 for KMO test is minimum and barely accepted, values between 0.7-0.8 are acceptable, and values above 0.9 are superb. **Bartlett's test** is another indication of the strength of the relationship among variables. It tests the null hypothesis that the correlation matrix is an identity matrix. An identity matrix is matrix in which all of the diagonal elements are 1 and all off diagonal elements are 0. From the same table, we can see that **Bartlett's test** of sphericity is significant That is, its associated probability is less than 0.05. In fact, it is actually 0.000, i.e. the significance level is small enough to reject the null hypothesis. This means that correlation matrix is not an identity matrix.

Table 3: KMO and Bartletts Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.746
Bartletts Test of Sphericity	Approx. Chi-Square	1.018E3
	df	253
	Sig	.000

Communalities

The next item from the output is a table of communalities which shows how much of the variance in the variables has been accounted for by the extracted factors. For instance in the following table, over 83% of the variance in poor management, over 77% of the variance in traditional job is accounted for while 45% of the variance in less renowned institution is accounted for.

Table 4: Communalities		
	Initial	Extraction
Low salary	1.000	.493
Unspecified salary structure	1.000	.602
Low increment	1.000	.459
Less job security	1.000	.492
Excessive work pressure	1.000	.718
Excessive supervision	1.000	.667
Poor working environment	1.000	.627
Unhelpful colleagues	1.000	.628
Poor administration	1.000	.744
Poor management	1.000	.832
Less renowned institution	1.000	.455
Less facilities (financial and non financial benefits)	1.000	.560
Less scope of growth and development	1.000	.546
More working hours	1.000	.651
Rough and tough supervisors and bosses	1.000	.676
Absence of pension facility	1.000	.709
Absence of gratuity	1.000	.658
Absence of provident fund facilities	1.000	.742
Traditional job	1.000	.779
Very much challenging job	1.000	.779
Availability of job in the market	1.000	.670
High degree of job dissatisfaction	1.000	.776
Inappropriate performance appraisal and recognition	1.000	.606

Extraction Method: Principal Component Analysis.

Total Variance Explained

The next item shows all the factors extractable from the analysis along with their eigenvalues, the percent of variance attributable to each factor, and the cumulative variance of the factor and the previous factors. It may be noted that (table 5, which has given in the appendix II) the first factor accounts for 25.996% of the variance, the second 12.495%, the third 9.003%, the fourth 6.269%, the fifth 6.061% and the sixth 4.820%. All the remaining factors are not significant.

Scree Plot

The scree plot is a graph of the eigenvalues against all the factors whereas the eigenvalue refers to the standardized variance associated with a particular factor. The graph is useful for determining how many factors to be retained. The point of interest is where the curve starts to flatten. It can be seen that the curve begins to flatten between factors 4 and 5. On the following graph we can see that factors 1 to 6 possess the eigenvalues more than 1 and the remaining factors (factor 7 to 23) have the eigenvalues of less than 1, so only six factors have been retained.
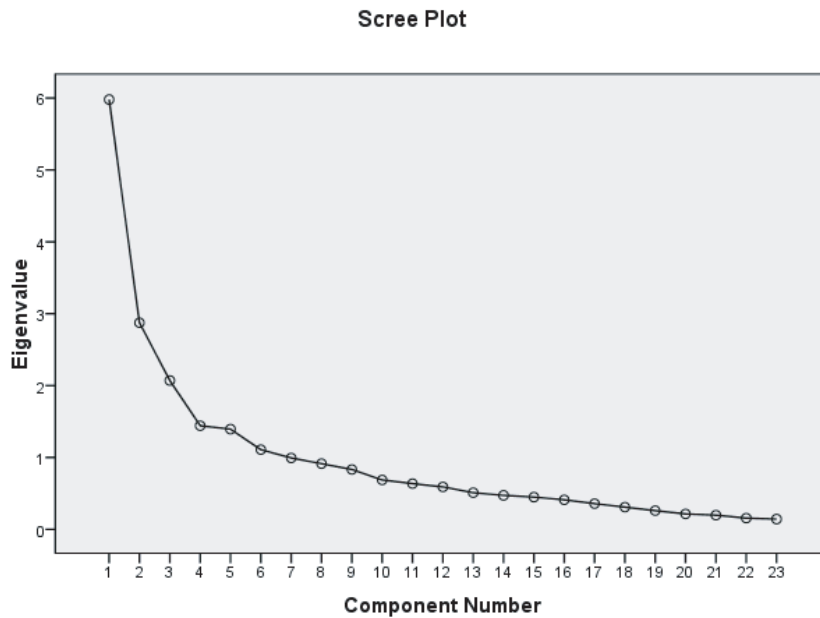
Scree Plot

Graph 1: the scree plot

Component (Factor) Matrix

The table (table 6) below shows the loadings of the 23 variables on the 6 factors extracted. The higher the absolute value of the loading, the more the factor contributes to the variable. The gap on the table represents loadings that are less than 0.5, this makes reading the table easier. We suppressed all loadings less than 0.5.

Table 6: Component Matrix [a]						
	Component					
	1	2	3	4	5	6
Low salary	.575					
Unspecified salary structure	.612					
Low increment	.575					
Less job security	.531					
Excessive work pressure		.742				
Excessive supervision		.706				
Poor working environment	.674					
Unhelpful colleagues					-.581	
Poor administration	.647			.513		
Poor management	.662			-.566		
Less renowned institution						
Less facilities (financial and non financial benefits)	.660					
Less scope of growth and development	.520					
More working hours		.758				
Rough and tough supervisors and bosses		.586				
Absence of pension facility	.632					
Absence of gratuity	.595					
Absence of provident fund facilities	.583		-.576			
Traditional job		.511				
Very much challenging job						
Availability of job in the market						.588
High degree of job dissatisfaction			.609			
Inappropriate performance appraisal and recognition			.551			

Extraction Method: Principal Component Analysis.
a. 6 components extracted.

Rotated Component (Factor) Matrix

The idea of rotation is to reduce the number factors on which the variables under investigation have high loadings. Rotation does not actually change anything but makes the interpretation of the analysis easier. Looking at the table (table 7) below, we can see that availability of jobs in the market is substantially loaded on Factor (Component) 6, traditional job and very much challenging job are substantially loaded on the factor 5, low salary, less benefits, less scope of growth and development and inappropriate performance appraisal and recognition are substantially loaded on Factor 4, excessive work pressure, excessive supervision, more working hours and rough and tough supervisors and bosses are substantially loaded on Factor 3, poor working environment, poor administration, poor management and less renowned institution are substantially loaded on Factor 2. All the remaining variables are substantially loaded on Factor 1.

Table 7: Rotated Component Matrix[a]						
	Component					
	1	2	3	4	5	6
Low salary				.554		
Unspecified salary structure	.611					
Low increment						
Less job security	.530					
Excessive work pressure			.792			
Excessive supervision			.800			
Poor working environment		.623				
Unhelpful colleagues						
Poor administration		.811				
Poor management		.882				
Less renowned institution		.571				
Less facilities (financial and non financial benefits)				.530		
Less scope of growth and development				.580		
More working hours			.775			
Rough and tough supervisors and bosses			.685			
Absence of pension facility	.803					
Absence of gratuity	.778					
Absence of provident fund facilities	.777					
Traditional job					.804	
Very much challenging job					-.845	
Availability of job in the market						.811
High degree of job dissatisfaction				.678		.504
Inappropriate performance appraisal and recognition				.710		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Composition of Factors

Following table (table 8) shows the factors composed with the variables used in this study as the causes of job turnover. Factor 1 is named as compensation structure which is composed with the variables unspecified salary structure, less job security, absence of pension facility, absence of gratuity and absence of provident fund facilities; similarly factor 2, named as management and organizational structure is composed with poor working environment, poor administration, poor management and less renowned institution and other factors are shown in the following table.

Table 8: Composition of factors

Factors	Factor name	Loaded variables
Factor 1	Compensation structure	Unspecified salary structure Less job security Absence of pension facility Absence of gratuity Absence of provident fund facilities
Factor 2	Management and organizational structure	Poor working environment Poor administration Poor management Less renowned institution
Factor 3	Nature of work and supervision	Excessive work pressure Excessive supervision More working hours Rough and tough supervisors and bosses
Factor 4	Income and career path	Low salary Less benefits (monetary and non-monetary) Less scope of growth and development Inappropriate performance appraisal and recognition
Factor 5	Job Challenges	Traditional job Very much challenging job
Factor 6	Availability of job	Availability of jobs in the market

VI. Conclusion

When measuring the impact of different aspects of the work (causes) on the intention to leave the workplace or finally leave the job, it becomes clear that most of the organizations are very much reluctant to offer the basic facilities to their employees and thus it results the turnover. These causes are loaded into the different factors in the major findings of the study. Knowledge shows that, Compensation structure, Management & organizational structure, Nature of work and supervision and Income & career path etc. seem to be the greatest importance for the employees' intention to leave; give employers an opportunity to counteract job dissatisfaction and consequently staff turnover. By adopting sound staff policies under which people feel rewarded, valued and well taken care of, it should, after all, be easier to prevent staff from leaving for reasons of poor management than for reasons of demanding, difficult and complicated tasks. So the organizations' experience of excessive rate of job turnover should be concentrated to consider the major factors to retain their employees.

VII. Future Research Direction

The main focus of this study was to find out the factors for which employees quit their jobs, in future there may be research on how to reduce the propensity of job turnover among the employees based on the factors identified in this study. In this study it is found that the rate of job turnover among the female employees is low than that of the male, future research may be conducted to explore the reasons of it i.e. why it is low for the female and why high for the male. Another finding was the rate of turnover is higher in case of private jobs and lower in

public jobs, so in future the research may be conducted to find out the reasons. Yet, there are few empirical studies examining causes and antecedents of turnover. May be the understanding of the causes and antecedents of turnover is a first step for taking action to reduce turnover rates but in order to retain employees effectively, employers must know what factors motivate their employees to stay in the field and what factors cause them to leave. So, further research may be done on how to retain the employees in the organization.

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Appendix I
Survey Questionnaire

Dear Sir/ Madam,
This is to inform you that Md. Jahangir Alam, Assistant Professor of Bangladesh University of Business & Technology (BUBT) and Md. Arafater Rahman Bhuiyan, Assistant Professor of Bangladesh University of Business & Technology (BUBT) are requesting you to fill-up this questionnaire related to "The causes (factors) for which people have the intention to quit or leave their jobs: An empirical study in private and public organizations of Bangladesh". We are declaring that all information will be kept confidential and used only for academic purpose only.

Part I: Necessary Information
Name:
Position:
Institution:
Mobile:
Your previous job was: Govt. Job / Private Job

Part II: Factors (causes) Responsible for Quitting the Job
Please check the suitable option for each of the following factors (causes) is responsible for your quitting the previous job.

Factors	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
1. Low salary					
2. No salary structure					
3. Increment is too low					
4. Less job security					
5. Excessive work pressure					
6. Excessive supervision					
7. Poor working environment					
8. Unhelpful colleagues					
9. Poor administration					
10. Poor management					
11. Less renowned institution					
12. Less facilities					
13. Less scope of growth and development					
14. More working hours					
15. Rough and tough supervisors or bosses					
16. There was no pension					
17. There was no gratuity					
18. There was no provident fund					
19. That was not a challenging job					
20. That was a challenging job					

You may mention more causes other than the above:
-
-
-

Existences of Conjugate Fuzzy Subgroups with t-norm Algebraic Product

Mohammad Khairul Alam
Mohammad Kamrul Hasan

Abstract
Some properties of product of two fuzzy subsets have been studied. Fuzzy subgroups and fuzzy normal subgroups, properties of α-cut of product of two fuzzy subgroups using the t-norm algebraic product and condition of the product of two fuzzy subgroups have also been discussed in this paper. Finally it is identified that, the product of two fuzzy subgroups is a subgroup obviously and both are not necessarily fuzzy subgroups but they are certainly conjugate fuzzy subgroup to each other.

Key Words: Fuzzy subset, α-cut, fuzzy group, fuzzy normal subgroup, product of two fuzzy groups, Conjugate fuzzy subgroup.

1. Introduction

Zadeh, a great mathematician, introduced the concept of fuzzy set in 1965 and since then there has been a tremendous interest in the subject due to its diverse applications, ranging from engineering and computer sciences to social behavior studies. He defined fuzzy subset of a non-empty set as a collection of objects with grade of membership in a continuum, with each object being assigned a value between 0 and 1 by a membership function. Fuzzy set theory was guided by the assumption that classical sets were not natural, appropriate or useful notions in describing the real life problems, because every object encountered in this real physical world carries some degree of fuzziness. Further, the concept of the grade of membership is not a probabilistic concept.

The concept of the fuzzy group theory was developed by Rosenfeld in 1971. He showed many group theories results can be extended in an elementary manner to develop the theory of the fuzzy group. The underlying logic of the theory of fuzzy group is to provide a strict fuzzy algebraic structure where level subset of a fuzzy group of a group G is a subgroup of the group. In fact, many basic properties in group theory are found to be carried over to fuzzy groups. Anthony and Sherwood (1971) redefined fuzzy subgroups in terms of a t-norm which replaced the minimum operation and they characterized basic properties of t-fuzzy subgroups in 1982. Fuzzy subgroups are further investigated by Das (1989) who mainly studied the level subgroups of a fuzzy subgroup. Kumar R. (1998) analyzed this level subgroups of a fuzzy subgroup in details and investigated whether the family of level subgroups of a fuzzy subgroup, determine the fuzzy subgroup uniquely or not. The concept of fuzzy normal subgroup was introduced by Mukherjee (1984).

In this work, firstly the results of the product of two fuzzy subsets and fuzzy subgroups have been generalized. We have defined a t-level subset and t-level subgroups and then studied some of their properties. For two fuzzy subgroups their product is also fuzzy subgroup with t-norm algebraic product but the converse is not true. i.e. fuzzy product of two classical groups with t-norm algebraic product is fuzzy subgroup although they are not bothsubgroups.It is recognized that, they are both conjugate subgroups to each other.

2. Preliminaries

We are recording here some basic concepts and clarifying notions used in the sequel.

Definition 2.1 (Zadeh, 1965: 339) Let X be a non-empty universal set. The fuzzy set μ of X is a membership function $\mu: X \to [0, 1]$

Definition 2.2 (Lowen, 1996: 55) In a *t- norm, T is a binary operator in [0,1]* that is non *decreasing, associative, commutative* and such that $*(x, y) = xy; \forall x, y \in [0,1]$,

A t-norm named ***algebraic product*** is denoted by such that $T(x, 1) = x$, for each $x \in [0, 1]$.

Definition 2.3 (Mordeson, Bhutani, Rosenfeld, 2005: 6) Let G be a group and μ be a fuzzy subset of G. Then μ is said to be ***fuzzy subgroup*** of G if $\forall x, y \in G$;

   i. $\mu(xy) \geq min(\mu(x), \mu(y))$
   ii. $\mu(x^{-1}) \geq \mu(x)$.

Lemma 2.4 (Alam, 2012: 57) Let G be a group and μ be a fuzzy subset of G. Then μ is ***fuzzy subgroup*** of G if $\forall x, y \in G$;
$$\mu(xy^{-1}) \geq min(\mu(x), \mu(y))$$

Definition 2.5 (Dudek, 2000: 57) Let μ and ϑ be two fuzzy subsets of the sets G and H, respectively. The ***product of μ and ϑ***, denoted by $\mu \times \vartheta$ is a function defined by setting $\forall x \in G, \forall y \in H$;
$$(\mu \times \vartheta)(x, y) = min(\mu(x), \vartheta(y))$$

Remark: Throughout this paper we shall consider t-norm algebraic product as a fixed t-norm and we shall denote it by $*$.

Now we are redefining the Definition 2.5 using t-norm algebraic product $*$.

Definition 2.6 (Alam, 2012: 57) Let μ and ϑ be two fuzzy subsets of the sets G and H, respectively. ***The product of μ and ϑ***, denoted by $\mu \times \vartheta$ is a function for $G \times H$ to $I = [0, 1]$, with respect to t-norm algebraic product $*$ defined by setting $\forall x \in G, \forall y \in H$;

$$(\mu \times \vartheta)(x, y) = *(\mu(x), \vartheta(y)) = (\mu(x))(\vartheta(y))$$

where $(g_1, h_1)(g_2, h_2) = (g_1 g_2, h_1 h_2); \forall g_1, g_2 \in G, \forall h_1, h_2 \in H$

Definition 2.7 (Alam, 2012: 57) Let G be a group and μ be a fuzzy subset of G. Then μ is said to be *fuzzy subgroup* of G with respect to t-norm $*$ if $\forall x, y \in G$;

   i. $\mu(xy) \geq * \big(\mu(x), \mu(y) \big)$
  ii. $\mu(x^{-1}) \geq \mu(x)$

Where xy is the composition of x and y and x^{-1} is inverse of x.

Definition 2.8: (Shukla, 2013: 1422) A fuzzy subgroup μ of a group G is said to be *conjugate* to a fuzzy subgroup ϑ of G if $\exists x \in G, \forall g \in G$ such that
$$\mu(g) = \vartheta(x^{-1}gx)$$

3.   t-level subgroups

In this section, we are giving the definition of a t-level subset of a fuzzy subset and then we are giving some of its important algebraic results related to the product of two fuzzy subgroups.

Definition 3.1 (Klir and Yuan, 1997: 19) Suppose μ is a fuzzy set. Then for any $\alpha \in I$, the *level set (or α cut)* of μ is denoted by μ^{α} and defined by $\mu^{\alpha} = \{x \in G : \mu(x) \geq \alpha\}$.

Definition 3.2 (Alam, 2012: 57) Let μ and ϑ be two fuzzy subsets of the sets G and H, respectively and let $\alpha \in I$. Then the *level set (or α cut) of $\mu \times \vartheta$* is denoted by $(\mu \times \vartheta)^{\alpha}$ and defined by

$$(\mu \times \vartheta)^{\alpha} = \{(x, y) \in G \times H : * \big(\mu(x), \vartheta(y) \big) \geq \alpha\}$$

Definition 3.3 (Liu, 2004: 71-72) Suppose μ is a fuzzy subgroup of a group G. Then μ is called *fuzzy normal subgroup* of G if $\forall x, y \in G$;
$$\mu(xy) = \mu(yx).$$

Lemma 3.4 Let G be a group and μ be a fuzzy subset of G. Then μ^{α} is a subgroup of G.

Theorem 3.5 (Alam, 2012: 58) Let μ and ϑ be two fuzzy subsets of the sets G and H respectively, and let $\alpha \in I$, then $(\mu \times \vartheta)^{\alpha} = \mu^{\alpha} \times \vartheta^{\alpha}$.

Proof. Let $x \in (\mu \times \vartheta)^{\alpha}$; where $x = (g, h)$ and $g \in G, h \in H$.

Since $x \in (\mu \times \vartheta)^{\alpha}$, so $(\mu \times \vartheta)(x) \geq \alpha$
$$\Rightarrow (\mu \times \vartheta)(g, h) \geq \alpha$$
$$\Rightarrow * \big(\mu(g), \vartheta(h) \big) \geq \alpha$$
$$\Rightarrow \mu(g) \geq \alpha \text{ and } \vartheta(h) \geq \alpha$$
$$\Rightarrow g \in \mu^{\alpha} \text{ and } h \in \vartheta^{\alpha}$$
$$\Rightarrow (g, h) \in \mu^{\alpha} \times \vartheta^{\alpha}$$

$$\Rightarrow x \in \mu^\alpha \times \vartheta^\alpha$$

$$\therefore (\mu \times \vartheta)^\alpha \subset \mu^\alpha \times \vartheta^\alpha$$

Conversely, we can show $\mu^\alpha \times \vartheta^\alpha \subset (\mu \times \vartheta)^\alpha$.

Hence, $(\mu \times \vartheta)^\alpha = \mu^\alpha \times \vartheta^\alpha$.

Theorem 3.6 (Alam, 2012: 58) Let μ and ϑ be two fuzzy subgroups of the groups G and H respectively, then $\mu \times \vartheta$ is a fuzzy subgroup of $G \times H$.

Proof: Let $x, y \in G \times H$; where $x = (g_1, h_1), y = (g_2, h_2)$ and $g_1, g_2 \in G$, $h_1, h_2 \in H$.

Now,

$$
\begin{aligned}
(\mu \times \vartheta)(xy^{-1}) &= (\mu \times \vartheta)\big((g_1, h_1)(g_2, h_2)^{-1}\big) \\
&= (\mu \times \vartheta)\big((g_1, h_1)(g_2^{-1}, h_2^{-1})\big) \\
&= (\mu \times \vartheta)(g_1 g_2^{-1}, h_1 h_2^{-1}) \\
&= *\big(\mu(g_1 g_2^{-1}), \vartheta(h_1 h_2^{-1})\big) \\
&= \big(\mu(g_1 g_2^{-1})\big)\big(\vartheta(h_1 h_2^{-1})\big) \\
&\geq *\big(*\big(\mu(g_1), \mu(g_2)\big), *\big(\vartheta(h_1), \vartheta(h_2)\big)\big) \\
&= \big((\mu(g_1))(\mu(g_2))\big)\big((\vartheta(h_1))(\vartheta(h_2))\big) \\
&= \big((\mu(g_1))(\vartheta(h_1))\big)\big((\mu(g_2))(\vartheta(h_2))\big) \\
&= *\big(*\big(\mu(g_1), \vartheta(h_1)\big), *\big(\mu(g_2), \vartheta(h_2)\big)\big) \\
&= *\big((\mu \times \vartheta)(g_1, h_1), (\mu \times \vartheta)(g_2, h_2)\big) \\
&= *\big((\mu \times \vartheta)(x), (\mu \times \vartheta)(y)\big)
\end{aligned}
$$

Hence, $\mu \times \vartheta$ is a fuzzy subgroup of $G \times H$.

Theorem 3.7 (Alam, 2012: 59) Let μ and ϑ be two fuzzy subgroups of the groups G and H respectively and let $\alpha \in I$. Then $(\mu \times \vartheta)^\alpha$ is a subgroup of $G \times H$ provided that e_1 and e_2 are identities of G and H respectively.

Proof. $(e_1, e_2) \in G \times H$ implies that

$$* \big(\mu(e_1), \vartheta(e_2)\big) = *(1,1) = (1)(1) = 1 \geq \alpha$$

Thus $(\mu \times \vartheta)^\alpha$ is nonempty.

Since $\mu \times \vartheta$ is a fuzzy group of $G \times H$ with t-norm $*$, so we have

$$(\mu \times \vartheta)\big((x_1,y_1)(x_2,y_2)\big) = (\mu \times \vartheta)(x_1x_2,y_1y_2)$$
$$= *(\mu(x_1x_2),\vartheta(y_1y_2))$$

Let $(x_1,y_1),(x_2,y_2) \in (\mu \times \vartheta)^\alpha$
Then

$$(\mu \times \vartheta)(x_1,y_1) \geq \alpha, \ (\mu \times \vartheta)(x_2,y_2) \geq \alpha$$
$$\Rightarrow *\big(\mu(x_1),\vartheta(y_1)\big) \geq \alpha, \ *\big(\mu(x_2),\vartheta(y_2)\big) \geq \alpha$$
$$\Rightarrow \big(\mu(x_1)\big)\big(\vartheta(y_1)\big) \geq \alpha, \ \big(\mu(x_2)\big(\vartheta(y_2)\big)\big) \geq \alpha$$
$$\Rightarrow \mu(x_1) \geq \alpha, \vartheta(y_1) \geq \alpha, \mu(x_2) \geq \alpha, \vartheta(y_2) \geq \alpha$$
$$\Rightarrow *\big(\mu(x_1),\mu(x_2)\big) \geq \alpha, \ *\big(\vartheta(y_1),\vartheta(y_2)\big) \geq \alpha$$

Since μ and ϑ are two fuzzy subgroups of G and H respectively, so $\forall x_1,x_2 \in G$ and $\forall y_1,y_2 \in H$

$$\mu(x_1x_2) \geq *\big(\mu(x_1),\mu(x_2)\big), \quad \vartheta(y_1y_2) \geq *\big(\vartheta(y_1),\vartheta(y_2)\big)$$
$$\Rightarrow \mu(x_1x_2) \geq \big(\mu(x_1)\big)\big(\mu(x_2)\big), \quad \vartheta(y_1y_2) \geq *\big(\vartheta(y_1)\big)\big(\vartheta(y_2)\big)$$
$$\Rightarrow \mu(x_1x_2) \geq \alpha, \quad \vartheta(y_1y_2) \geq \alpha$$
$$\Rightarrow *\big(\mu(x_1x_2), \vartheta(y_1y_2)\big) \geq \alpha$$
$$\Rightarrow (\mu \times \vartheta)(x_1x_2,y_1y_2) \geq \alpha$$
$$\therefore (x_1,y_1)(x_2,y_2) \in (\mu \times \vartheta)^\alpha$$

Again $(x,y) \in (\mu \times \vartheta)^\alpha$ implies

$$(\mu \times \vartheta)(x,y) = *(\mu(x),\vartheta(y)) \geq \alpha$$

Now,
$$(\mu \times \vartheta)(x,y)^{-1} = (\mu \times \vartheta)(x^{-1},y^{-1})$$
$$= *\big(\mu(x^{-1}),\vartheta(y^{-1})\big) \geq *\big(\mu(x),\vartheta(y)\big) \geq \alpha$$
Thus $(x,y)^{-1} \in (\mu \times \vartheta)^\alpha$.
Hence $(\mu \times \vartheta)^\alpha$ is a subgroup of $G \times H$.

Theorem 3.8 (Ray, 1999: 182) Let G be a group and μ be a fuzzy subset of G. If μ is a normal fuzzy subgroup of G then μ^α is also normal.

Proof. By Lemma 3.4 μ^α is a subgroup of G. Now let us show that μ^α is normal.

For all $a \in G$ and $x \in \mu^\alpha$,

$$\mu(axa^{-1}) = \mu(aa^{-1}x)$$
$$= \mu(x) \geq \alpha$$

Thus $axa^{-1} \in \mu^{\alpha}$. Hence μ^{α} is normal.

4. Product of Fuzzy Subgroups

Here we are stating and proving some results of the product of two fuzzy subgroups using a t-norm algebraic product.

Definition 4.1 (Nagarajan and Solairaju, 2010: 35) A fuzzy subgroup μ of a group G is said to be *conjugate to a fuzzy subgroup* ϑ of G if $\exists x \in G, \forall g \in G$ such that
$$\mu(g) = \vartheta(x^{-1}gx).$$

Lemma 4.2 (Jun, 2001: 84) Let T be a t-norm. Then
$$T\big(T(a,b),T(c,d)\big) = T\big(T(a,c),T(b,d)\big); \forall a,b,c,d \in [0,1]$$

Theorem 4.3 (Alam, 2012: 60) Let μ and ϑ be two fuzzy subgroups of groups G and H respectively. If μ and ϑ are fuzzy normal subgroups, then $\mu \times \vartheta$ is also fuzzy normal subgroup of $G \times H$.

Proof. In Theorem 3.6 we have proved $\mu \times \vartheta$ is fuzzy subgroup.

Let $x, y \in \mu \times \vartheta$, where $x = (g_1, h_1)$, $y = (g_2, h_2)$ and $g_1, g_2 \in G$, $h_1, h_2 \in H$

Now,
$$\begin{aligned}
(\mu \times \vartheta)(xy) &= (\mu \times \vartheta)\big((g_1,h_1)(g_2,h_2)\big) \\
&= (\mu \times \vartheta)\big((g_1g_2),(h_1h_2)\big) \\
&= *\big(\mu(g_1g_2),\vartheta(h_1h_2)\big) \\
&= *\big(\mu(g_2g_1),\vartheta(h_2h_1)\big) \\
&= (\mu \times \vartheta)\big((g_2g_1),(h_2h_1)\big) \\
&= (\mu \times \vartheta)\big((g_2,h_2)(g_1,h_1)\big) \\
&= (\mu \times \vartheta)(yx).
\end{aligned}$$

Hence $\mu \times \vartheta$ is fuzzy normal subgroup of $G \times H$.

Theorem 4.4 (Alam, 2012: 61) Let a fuzzy subgroup μ of a group G be conjugate to a fuzzy subgroup φ of G and fuzzy subgroup ϑ of a group H be conjugate to a fuzzy subgroup ψ of H. Then the fuzzy subgroup $\mu \times \vartheta$ of the group $G \times H$ is conjugate to the fuzzy subgroup $\varphi \times \psi$ of $G \times H$.

Proof. Let $\forall (x, y) \in G \times H$, $\exists (g, h) \in G \times H$, we are showing that

$$(\mu \times \vartheta)(x,y) = (\varphi \times \psi)\big((g,h)^{-1}(x,y)(g,h)\big)$$

Now,

$$\begin{aligned}
(\mu \times \vartheta)(x,y) &= *\big(\mu(x),\vartheta(y)\big) \\
&= *\big(\varphi(g^{-1}xg),\psi(h^{-1}yh)\big) \\
&= (\varphi \times \psi)(g^{-1}xg, h^{-1}yh) \\
&= (\varphi \times \psi)\big((g^{-1},h^{-1})(xg,yh)\big) \\
&= (\varphi \times \psi)\big((g,h)^{-1}(x,y)(g,h)\big)
\end{aligned}$$

Hence the fuzzy subgroup $\mu \times \vartheta$ of the group $G \times H$ is conjugate to the fuzzy subgroup $\varphi \times \psi$ of $G \times H$.

Example 4.5 Let $G = \{e,a\}$ be a group, where $aa = e$ and $H = \{e_1,x,y,xy\}$ be Klein four-group, where $xx = e_1 = yy$ and $xy = yx$.
Then $G \times H = \{(e,e_1),(e,x),(e,y),(e,xy),(a,e_1),(a,x),(a,y),(a,xy)\}$.

Let $\mu(e) = 0.7, \mu(a) = 0.6$,
$\vartheta(e_1) = 0.9, \vartheta(x) = 1, \vartheta(y) = 0.8, \vartheta(xy) = 0.7$.

Then $\mu \times \vartheta(e,e_1) = 0.63$, $\mu \times \vartheta(e,x) = 0.7, \mu \times \vartheta(e,y) = 0.56, \mu \times \vartheta(e,xy) = 0.49$,
$\mu \times \vartheta(a,e_1) = 0.54, \mu \times \vartheta(a,x) = 0.6, \mu \times \vartheta(a,y) = 0.48, \mu \times \vartheta(a,y) = 0.42$.
Here $\mu \times \vartheta$ is a fuzzy subgroup of $G \times H$, whereas μ is a fuzzy subgroup of G but ϑ is not a fuzzy subgroup of H because $\vartheta^{0.8}$ is not a subgroup of H.

Theorem 4.6: Let μ and ϑ be two fuzzysubsets of the groups G and H respectively. Suppose e_1 and e_2 are the identity element of G and H respectively. If, then at least one of the following two statements must hold:
  i. $\vartheta(e_2) \geq \mu(x); \quad \forall x \in G$
  ii. $\mu(e_1) \geq \vartheta(y); \quad \forall y \in H$

Proof: Let $\mu \times \vartheta$ be a fuzzy subgroup of the group $G \times H$.
Suppose none of the statement (*i*) and (*ii*) holds. Then we can find $g \in G$ and $h \in H$ such that
$$\vartheta(e_2) < \mu(g) \text{ and } \mu(e_1) < \vartheta(h)$$
We have, $(\mu \times \vartheta)(g,h) = *\big(\mu(g),\vartheta(h)\big) > *\big(\mu(e_1),\vartheta(e_2)\big) = (\mu \times \vartheta)(e_1,e_2)$
Thus, $\mu \times \vartheta$ is not fuzzy subgroup of $G \times H$.
Hence, either $\vartheta(e_2) \geq \mu(x); \forall x \in G$ or $\mu(e_1) \geq \vartheta(y); \forall y \in H$ must hold.

Theorem 4.7: Let μ and ϑ be two fuzzysubsets of the groups G and H respectively, such that $\mu(x) \geq \vartheta(e_2); \forall x \in G, e_2$ being the identity of H. If $\mu \times \vartheta$ is a fuzzy subgroup of $G \times H$ then μ is a fuzzy subgroup of G.

Proof: Let $\mu \times \vartheta$ be a fuzzy subgroup of $G \times H$ and $x, y \in G$, e_2 be the identity of H.

Then, $(x, e_2), (y, e_2) \in G \times H$

Now, $\mu(xy^{-1}) = \mu(xy^{-1}e_2e_2^{-1}) = *\left(\mu(xy^{-1}), \vartheta(e_2e_2^{-1})\right)$

$$= (\mu \times \vartheta)\left((x, e_2)(y^{-1}, e_2^{-1})\right) = (\mu \times \vartheta)\left((x, e_2)(y, e_2)^{-1}\right)$$

$$\geq *\left((\mu \times \vartheta)(x, e_2), (\mu \times \vartheta)(y, e_2)\right)$$

$$= \left((\mu \times \vartheta)(x, e_2)\right)\left((\mu \times \vartheta)(y, e_2)\right)$$

$$= \left(*\left(\mu(x), \vartheta(e_2)\right)\right)\left(*\left(\mu(y), \vartheta(e_2)\right)\right)$$

$$= \left(\mu(x)\right)\left(\vartheta(e_2)\right)\left(\mu(y)\right)\left(\vartheta(e_2)\right)$$

$$= *\left(*\left(\mu(x), \vartheta(e_2)\right), *\left(\mu(y), \vartheta(e_2)\right)\right)$$

$$\geq *\left(\mu(x), \mu(y)\right).$$

Hence μ is a fuzzy subgroup of G.

Theorem 4.8: Let μ and ϑ be two fuzzysubsets of the groups G and H respectively, such that $\vartheta(x) \geq \mu(e_1)$; $\forall x \in H$, e_1 being the identity of G. If $\mu \times \vartheta$ is a fuzzy subgroup of $G \times H$ then ϑ is a fuzzy subgroup of H.

[Symmetric proof of Theorem 4.7]

Conclusion

If μ and ϑ are two fuzzy subgroups of groups G and H respectively, then $\mu \times \vartheta$ is a fuzzy subgroup (Theorem 3.6) as well as a fuzzy normal subgroup (Theorem 4.3) of $G \times H$ with respect to t-norm algebraic product. But if $\mu \times \vartheta$ is a fuzzy subgroup of $G \times H$, then it is not necessary that both μ and ϑ separately should be fuzzy subgroups (Example 4.5) of G and H respectively. In that case either μ is a fuzzy subgroup of G and ϑ is conjugate fuzzy subgroup of μ or ϑ is a fuzzy subgroup of H and μ is a conjugate fuzzy subgroup of ϑ i.e.μ and ϑ must be conjugate fuzzy subgroups to each other. Finally we can say that if $\mu \times \vartheta$ is a fuzzy subgroup of $G \times H$, then μ or ϑ are conjugate fuzzy subgroup of G and H to each other.

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Marketing Activities of Small and Medium Businesses in Bangladesh

Mahamudul Hasan

Abstract

SME businesses are playing a significant role in the economy of Bangladesh. The aim of this paper is to provide a starting point to understand and evaluate SME marketing activities in Bangladesh. Marketing plays a significant role in every business organization but most of the conventional marketing theories have been developed on the basis of large organizations. The presence and implementation of SME marketing is distinct from conventional marketing but the basic principles are the same. There are some important findings of this study. The study shows that there is a significant presence of marketing activities in SME businesses of Bangladesh. Owners and managers play a significant role to plan and implement marketing activities. SME businesses give less emphasis in analysis of external environment and outsourcing marketing activities. The study also demonstrates that implementation of marketing activities in SMEs has a significant association with customer orientation, competitor orientation and financial strength.

Keywords: SME, SME Marketing, Bangladesh

Introduction

Sound marketing is a prime requisite for the progress of any business. For both small and large businesses, marketing is relevant albeit small firm marketing has unique characteristics that differentiate it from that of large organizations (Hogarth-Scott et al 13 ; Gilmore et al 9). High failure rates of small businesses are largely attributed to weakness in financial management and marketing (Marjanova and Stojanovski 1). Most of the theories of Marketing have been developed on the basis of studies on large organizations; and for that reason these theories cannot be directly applied to SME businesses although marketing is an indispensable part for the survival and growth of SME organizations. Academicians have given emphasis on this subject for the last twenty years; nevertheless it has been recognized that still now there is no generally accepted theory of SME marketing.

SMEs play a significant role in the economy of Bangladesh. They account for about 45 per cent of manufacturing value added, 80 per cent of industrial employment, 90 per cent of total industrial units, and employ about 25 per cent of the total labour force. Their total contribution to export earnings varies between 75 per cent and 80 per cent. (Metropolitan Chamber of Commerce and Industry 7). Recognizing the importance of SMEs, Industrial Policy 2010 has declared SME as a thrust sector, considering the planned and balanced development of these labor-intensive industries as the engine of growth.

Previous studies have analyzed various issues of SMEs from the context of Bangladesh including: problems and prospects of SME in Bangladesh (Zaman and Islam 145); SME financing (Bahar and Uddin 21; Chowdhury and Ahmed 126), underlying success factors of SME in Bangladesh (Uddin and Bose 85),

constraints of SME development (Abdullah and Quader 334), challenges that SMEs face (Ahmed and Chowdhury 131; Mintoo 17) and the like. Several of these studies note that SME entrepreneurs and managers do not make adequate investments in marketing and also lack necessary marketing skills. Even many of them are ignorant of the role of marketing to create customer satisfaction and retention   (Zaman and Islam 159; Chowdhury and Tanvir 141).

However, there is a lack of conceptual and empirical studies on the implementation and role of marketing activities among SMEs in Bangladesh although it has been regarded as a major problem for this sector. This may affect policy formulation and implementation because SME practitioners and academicians may undervalue the essentiality of marketing where it has been regarded inevitable for the profitability, success and growth for SME business (Hemila et al 12). This research attempts to fill this gap by focusing on the following research questions: Which marketing activities are present and implemented in SME businesses of Bangladesh? Is there any association between marketing orientation elements and implementation of marketing activities? Is there any association between financial strength of SME and the implementation of marketing activities? Do customer orientation, competitor orientation and financial strength have any influence on regular implementation of marketing activities? How can marketing activities be implemented more effectively in SME businesses?

Objectives of the Study
1. To determine the presence and implementation of marketing activities in SME businesses of Bangladesh.
2. To ascertain the association between marketing orientation elements (Customer and competitor orientation) and implementation of marketing activities in SME businesses of Bangladesh.
3. To ascertain the association between financial strength and implementation of marketing activities in SME businesses of Bangladesh.
4. To find out whether there is any influence of market orientation elements (Customer and Competitor orientation) and financial strength on the regular implementation of marketing activities.
5. To provide some guidelines for the better implementation of marketing activities in SME businesses.

Literature Review

Marketing Activities
There are numerous studies that analyze specific marketing activities and their relationship with certain aspects of other functions within a company. Many of them discuss relationship between marketing and finance functions, or model financial outcomes of marketing activities (Sheth and Sharma 348; Uzelac 147). Slater and Olson (1067) conduct a thorough study of journal articles and marketing management texts to identify the marketing activities that marketing strategy subsumes. They have categorized these activities according to Kotler's STP (segmentation, targeting, and positioning) framework and McCarthy's) 4Ps

(product, price, place, promotion). Hoefler and Keller (445-449) discuss marketing activities and the marketing advantages of strong brands. They categorize marketing activities into product, extensions, price, communications and channels related marketing activities. Their study delves into more detail about how differences in consumer brand knowledge affect the response of consumers to marketing activity.

SME Marketing
It is generally accepted that the basic principles of marketing are universally and equally valuable and applicable to both large and small businesses (Blankson and Cheng 572; Siu and Kirby 48). However, small and medium entities cannot do conventional marketing as large ones do (Blankson and Stokes 584; Gilmore et al. 7; Carson 189), as they are influenced significantly by both the external and the internal environment (Avlonitis and Gounaris 1022). Due to the characteristics and limitations of their owner-manager, resources, market impact and organizational structure, marketing in small and medium businesses is likely to be haphazard, informal, loose, unstructured, spontaneous and more reactive than proactive (Gilmore et al. 9). Their marketing activities tend to be pragmatic, practical and adopted to suit their unique situation (Carson and Gilmore 272) and informal and unplanned, relying on the intuition and energy of an individual, i.e. owner-manager. Consequently, complex marketing theories, formal marketing approach and normative models of marketing practices may not be appropriate and applicable for them (McCartan-Quinn and Carson 2003; Carson and Gilmore 273; Brooksbank et al., 582). Traditionally, the marketing theory has been developed mainly based on studies on large organizations and, thus, it is argued that it cannot be applied directly to SMEs, where the practices and activities may differ considerably from those of their larger counterparts (Hill, 217). In addition, it has been recognized that there is no clear definition or grand unifying theory of marketing in SMEs (Simpson et al. 365).

Most of the SMEs are regarded as opportunistic in their information seeking behaviour (Fuelhart & Glasmeier 253) and the main sources of market intelligence appear to be informal (Renko et al. 261). Marketing activity within the small firm is related to the owner/manager's attitude, experience and expertise in marketing (Brown 47).

The power and marketing decision making in SME firms is concentrated solely in the manager and decisions made are sometimes based on instinct and personal preferences, as opposed to a strategic and logical assessment of the environment (Chaston 822).

Planning, implementation and control of marketing activities is also problematic in SME firms. Most of the firms do not make any formal marketing plan and at the end of year they seldom analyze if the objectives of the SME firms are achieved (Banterle et al 4-7).

Market Orientation
Market orientation is an organization culture that consists of three behavioural components: customer orientation, competitor orientation and interfunctional coordination, and of two decision criteria: long-term focus and profitability. According to them, customer and competitor orientation include the activities of acquiring information about customers and competitors and disseminating this information throughout an organisation, and interfunctional coordination means the coordinated creation of customer value based on the gathered information. (Navar and Slater 23).

Dragnic (47) analyzed eight key marketing activities which are present and implemented in SME. These are: product development, product range planning and control,   price planning and control, research and analysis of customers and competitors, distribution, promotion and analysis of the external (macro) environment. He also   includes a basic assessment of two market orientation starting points, i.e. customer and competitor orientation in that study because behavioral (managerial and operational) aspects of market orientation has a close relationship with the implementation of marketing activities. Jensen (3-6) shows important marketing activities for SME organizations. These are Market Research: Researching the marketplace and the customer; Market Strategy: The overall direction of the marketing for the company and its objectives; Market Planning and Management: The planning and managing necessary to reach the company's objectives; Pricing Management: The assessment of the right pricing structure for the product or services; Channel Management: Developing a cost effective way of reaching the final customer. This might include physical distribution, retailers and wholesalers; Communications Management: Developing advertising and promotional vehicles to communicate to selected audiences; Sales Management: Directing and organizing the sales force; Service Management: Developing both the service and the quality side of the company's output; Product Management: Developing new products and managing the existing products. Chiliya et al (74) notes crucial marketing activities for the small grocery shops in South African townships which are price variation and price promotion, research, advertising, product differentiation, quality, packaging and place.
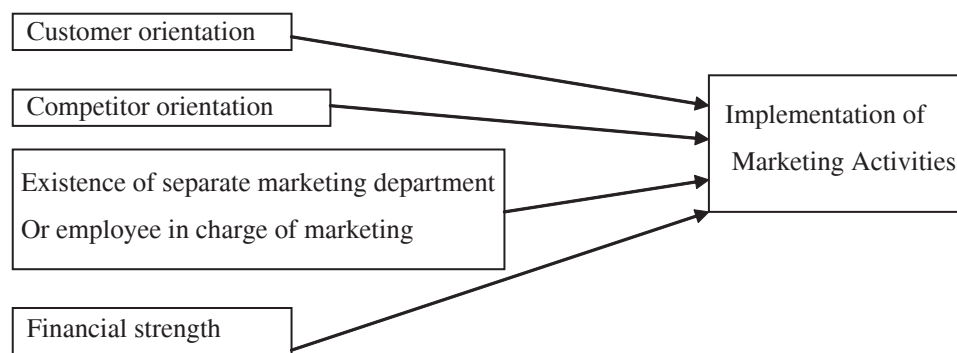
Theoretical Framework:

Figure 1

The motive of this research is to examine the association of customer orientation, competitor orientation, existence of separate marketing department or employee in charge of marketing and   financial strength with the implementation and regularity of marketing activities in SMEs. Based on the objectives and literature review of the study the researcher has developed the above theoretical framework which also shows the hypothesized relationship of the research.

Hypotheses

Based on the objectives and theoretical framework of the study the following hypotheses have been formed:

H1: There is a positive association between customer orientation and implementation of marketing activities in SMEs.

H2: There is a positive association between competitor orientation and implementation of marketing activities in SMEs

H3: There is a positive association between existence of separate marketing department or employee in charge of marketing and implementation of marketing activities in SMEs.

H4: There is a positive association between financial strength and implementation of marketing activities in SMEs.

H5: Customer orientation, competitor orientation, financial strength and separate department or employee in charge of marketing positively influences regular implementation of marketing activities in SMEs.

Methodology of the Study

i) Research Method, Study Period and Data Collection
The research is exploratory in nature with a combination of both qualitative and quantitative approach. To achieve the objectives of the study both the primary and secondary information have been collected. Secondary information has been collected from journals, newspapers, websites and reports on managerial practice of small and medium enterprises. Survey method of Simple random sampling method has been applied in this study. The researcher has collected three lists of small and medium business from cooperative societies in Mirpur area and chooses 120 SME businesses randomly. Then the researcher has sent 120 questionnaires to these SME business owners through the 3rd year BBA students of BUBT. The students were given instructions and advice on data collection and they collected the data through face to face interview.   The data collection has been conducted among SME businesses in Mirpur from 15th January, 2014 to 2nd February, 2014. Out of 120 questionnaires 104 questionnaires have been sent back but 9 questionnaires have been rejected due to insufficient information. Thus the duly filled returned questionnaires are 95 and the response rate is 79.17%. The data has been entered and analyzed by statistical package for social science software (SPSS) version 18.

ii) Questionnaire

The variables of the study were selected on the basis of objectives and extensive literature review.   Questionnaire which was used by Dragnic (48) to analyze the marketing activities of Splitsko-Dalmatinsca (Croatia) have been adapted in this study with some variation. The questionnaire was divided into three parts. The first part of the questionnaire examines the basic features of the SME businesses and demographic characteristics of the respondents through offered answer categories. The second part of the questionnaire collects information on customer orientation, competitor orientation, existence of marketing department and market intelligence activities through closed and open ended questions. The last and extensive section of the questionnaire collects information on presence and implementation of marketing activities in SME businesses through closed and open ended questions.

iii) Data Analysis:

The researcher has employed several statistical tools to analyze the data and test the hypothesized relationships. The researcher has used content analysis and frequency distribution to illustrate the customer orientation, competitor orientation and implementation of marketing activities of SME businesses. Then the researcher has used Pearson's Chi Square and Logistic regression techniques to test the hypotheses since Malhotra and Dash (453 and 572) has recommended these tools to analyze Categorical and Nominal data. The categorical data were analyzed by transforming into dummy variable. SPSS 16 has been used to conduct the statistical test.

Analysis of Data and Findings

Table 1
Demographic Profile of the respondents

Variable	Frequency	Percent
Educational qualification		
Below SSC	23	24.21
S.S.C	27	28.42
H.S.C	24	25.26
Graduate	14	14.73
Masters or More	07	7.36
Total	95	100.0
Age		
15 to 25	23	24.21
26 to 35	29	30.52
36 to 45	19	20
46 to 55	12	12.63
Above 55	12	12.63
Total	95	100.0
Gender		
Male	74	77.89
Female	21	19.3
Total	95	100.0
Income		
Below 50,000	38	40
50,000 to 100,000	27	28.42
Above 100,000	30	31.57
Total	95	

This research includes a basic assessment of two important elements of market orientation which are customer orientation and competitor orientation. The questionnaires include both closed and open ended questions to know different means that SME businesses use to collect information about customer needs, complaints, suggestions and competition.

Customer Orientation in SME Businesses

Out of the total number of respondents 7% answered that their businesses do not take into consideration customer needs while 93% of the respondents give a positive answer to the question. This indicates most of the SME businesses give much attention to the needs of the customer. The research result also shows about 10.5% of the total respondents do not take any action on the basis of customer complaints and suggestions while 89.5% of the respondents give positive answers to the question which indicates most of the SME businesses take action on the basis of customer complaints.

Competitor Orientation in SME Business

The research result shows out of the total 78 (82.1%) respondents give positive answer regarding the issue of collecting information about competitors while 17 (17.9%) of the total respondents have said that they do not collect any information about competitors.

This leads to the conclusion that there is a strong presence of customer and competitor orientation in the SME businesses.

Market Intelligence Activities in SME

The research result shows that the most frequent way of gathering information about customers is "direct contact/communication with customers (61.05%) but the respondents also mentioned market survey, market visit and observation (26.31%). Twelve respondents (12.64%) of the total respondents have mentioned Internet/database marketing as a way of data collection about customers.

The most of frequent way of gathering information about the competitors is market visit/observation (41.02%) followed by direct contact with customers (21.05%), promotion of the competitors (0.16%), Analysis of product/service (12.82%) , Internet (0.05%), Annual report (0.05%).

Presence and Implementation Marketing Activities in SME Businesses

The questionnaire includes questions related to the implementation of marketing activities in Small and medium businesses which were formulated to know about the action sme businesses take to particular marketing elements and in response to the macro environment. It is proven from former studies that most of the SME businesses perform marketing activities related to 4p's which are product, price, place and promotion. In case of promotion they do not make any type of formal promotional policy but they try to convince the customers in a numerous way to attract and retain in a continuous way.

Research results show that most frequently conducted marketing activities with 90.5% response rate (86 respondents) is development of products and services. About 86.3% (82 respondents) give positive answers regarding the

issue of pricing. About 62 respondents (58.9%) give positive answers regarding the issue of promotion and 67 respondents (70.1%) give positive answer about distribution. It implies that there is a lack of understanding about the significance of promotion and distribution than product and pricing among SME businesses of Bangladesh.

Activity with the lowest presence is research and analysis of macro-environment or external environment which is performed by about 34.68% of the total respondents. It indicates the lack of understanding of the importance or incapacity of the SME businesses to follow macro trends and incorporate them into the business.

Existence of Marketing Department or Employee in Charge of Marketing
On the other hand twenty-four respondents (25.2%) acknowledged the existence of marketing department or an employee in charge of marketing while 75.8% answered that there is no marketing department or employee in charge of marketing in their organization. It indicates that the marketing activities of the SME businesses are not formal and completed without any marketing expert. The marketing activities are also not systematic in SME businesses and there is an absence of formal organizational structure in SME businesses regarding marketing.

Regularity of Implementation and Planning of Marketing Activities
The above table shows that 57.9% of the total respondents give positive answer about the regular implementation and planning of marketing activities in their SME organization. This is inconsistent with some earlier research work. This reflects that a significant number of SME businesses make regular and continuous implementation and planning of marketing activities in their organization.

Who Implement Marketing Activities in SME Business?
The above table shows the owner implement the marketing activities in 50.5% SME businesses. Managers (21.1%) and employee (23%) also make significant contribution in the implementation of marketing activities but outsourcing rate of marketing activities is very insignificant in SME businesses.

Tests of Hypotheses

Table 2
SPSS output of Chi-square tests for Hypotheses 1

Implementation of Marketing Activities	Pearson Chi Square	Significance level	Implementing Marketing Activities	Pearson Chi Square	Significance Level
1.Research and analysis of Macro-environment	1.254	0.263	7.Planning and control of distribution	4.523	0.027
2.Development of products and services	5.735	0.017	8.Planning and control of promotion	0.051	0.821
3.Planning and control of product range	5.735	0.017	9.Packaging	2.345	0.852
4.Planning and control of price	5.178	0.016	10.Discount	4.478	0.025
5.Labeling	2.12	0.814	11.Market targeting	1.533	0.221
6.Branding	1.411	0.652	12.Salesmanship	5.254	0.03

Hypotheses 1 states that "There is a significant association between customer orientation and Implementation of Marketing Activities in SMEs". From Table 2 it has been seen that customer orientation has positive association with 6 marketing activities: Development of products and services, Planning and control of product range, Planning and control of price, Distribution, Discount and Salesmanship. The relationship of customer orientation with other 6 marketing activities is not statistically significant; so it is not possible to accept Hypotheses 1 completely, rather the hypotheses can be accepted partially.

Table 3
SPSS output of Chi-square tests for Hypotheses 2

Implementation of Marketing Activities	Pearson Chi Square	Significance level	Implementing Marketing Activities	Pearson Chi Square	Significance Level
1. Research and analysis of Macro-environment	12.332	0.000	7. Planning and control of distribution	21.438	0.000
2. Development of products and services	16.096	0.000	8.Planning and control of promotion	13.519	0.000
3. Planning and control of product range	24.246	0.000	9. Packaging	12.345	0.000
4. Planning and control of price	35.717	0.000	10. Discount	10.478	0.003
5. Labeling	3.12	0.514	11. Market targeting	11.333	0.001
6. Branding	11.311	0.000	12. Salesmanship	4.254	0.04

Hypotheses 2 states that "There is a significant association between Competitor orientation and Implementation of Marketing Activities in SMEs". From Table 3 it has been seen that Competitor orientation has positive association with 11 out of 12 marketing activities (P<0.05). The relationship of competitor orientation with Labeling is not statistically significant. So hypotheses 2 is accepted here.

Table 4
SPSS output of Chi-square tests for Hypotheses 3

Implementation of Marketing Activities	Pearson Chi Square	Significance level	Implementing Marketing Activities	Pearson Chi Square	Significance Level
1. Research and analysis of Macro-environment	38.702	0.000	7. Planning and control of distribution	6.319	0.000
2. Development of products and services	5.799	0.016	8. Planning and control of promotion	13.519	0.000
3. Planning and control of product range	2.829	0.093	9. Packaging	6.345	0.002
4. Planning and control of price	8.786	0.003	10.Discount	10.348	0.003
5. Labeling	9.12	0.014	11. Market targeting	11.839	0.001
6. Branding	5.311	0.007	12. Salesmanship	4.254	0.04

Hypotheses 3 states that there is a "There is a significant association between existence of separate marketing department and Implementation of Marketing Activities in SMEs". Table 4 reveals that existence of separate marketing department or employee in charge of marketing has significant positive association with the implementation of all marketing activities ($P<0.05$).So Hypotheses 3 is accepted here.

Table 5
SPSS output of Chi-square tests for Hypotheses 4

Implementation of Marketing Activities	Pearson Chi Square	Significance level	Implementing Marketing Activities	Pearson Chi Square	Significance Level
1. Research and analysis of Macro-environment	15.702	0.001	7. Planning and control of distribution	9.819	0.001
2. Development of products and services	5.859	0.016	8. Planning and control of promotion	15.519	0.000
3. Planning and control of product range	3.329	0.095	9.Packaging	16.345	0.000
4. Planning and control of price	9.596	0.002	10. Discount	18.348	0.000
5. Labeling	11.19	0.015	11. Market targeting	18.759	0.000
6. Branding	8.311	0.004	12. Salesmanship	10.254	0.004

Hypotheses 4 states that "There is a positive association between financial strength and implementation of marketing activities in SMEs." Table 4 reveals that financial strength has a significant positive association with the implementation 11 out of 12 of all marketing activities ($P<0.05$). Planning and control of product range has been found statistically insignificant in this chi Square test. So Hypotheses 4 is accepted here.

Table 6
Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	126.423[a]	0.33	0.47

Table 7

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Customer orientation	0.407	1.039	0.153	1	.520	1.502
Competitor orientation	1.614	.224	4.882	1	.008	.541
Separate Marketing department Or employee	1.110	.444	3.322	1	.04	.600
Financial strength	.080	.341	.056	1	.814	1.084

Hypotheses 5 states that "Customer orientation, competitor orientation, financial strength and separate department or employee in charge of marketing positively influences regular implementation of marketing activities in SMEs". To test hypotheses 5 the researcher has conducted logistic regression analysis. In Logistic regression commonly used measures of model fit are "Cox and snell R Sqaure" and "Nagelkerke R Square". Moreover, both of these measures are similar to R Square of Multiple Regression. Table 6 shows that the value of these two measures are 0.33 and 0.47 respectively which indicates a reasonable fit of the model and positive influence of these 4 variables on the continuity of Marketing activities in SMEs. Thus, Hypotheses 5 is accepted. Table 7 demonstrates the complete result of 4 variables where 2 shows significant influence on the continuity of marketing activities : Competitor orientation (Wald= 4.882 and P = 0.008), Existence of Marketing Department or employee in charge of Marketing (Wald= 1.110 and P=0.04).

Managerial Implications and Conclusions:
The purpose of the study was to examine the influence of customer orientation, competitor orientation, and existence of separate marketing department or employee in charge of marketing and financial strength with the implementation of marketing activities in SMEs of Bangladesh. The study also aims to demonstrate the existence of marketing activities in SMEs of Bangladesh.

The research results indicate that most of the SME businesses in Bangladesh are market oriented to some extent because they are concerned about the needs of the customer and action of the competitor to a great extent. The results of hypotheses (1 and 2) provide strong evidence that customer and competitor orientation has a significant impact on the implementation of marketing activities. Top management emphasis is essential to ensure customer and competitor orientation in SMEs; hence they should provide necessary resources and strategic direction (Mahmoud 246) for SMEs to operate on market oriented principles.

The association of competitor orientation with the implementation of marketing activities is more intense which indicates that many SMEs provide a strong focus on their customers although they are not serious about marketing activities. Results also show that there is a strong presence of marketing activities in SME firms. Planning and control of the key elements (4p's) of marketing are present in SME businesses but these are implemented in a distinct manner than large organizations. A significant number of SME businesses implement and plan marketing activities continuously in their organization. In most of the SMEs Owners / managers play the central role to implement the marketing activities. But outsourcing or appointing external marketing expert is very rare in SME businesses. But the interview with SME owners and managers reveals that they have a very narrow understanding regarding the significance and domain of marketing which is a serious limitation of their business; therefore owners/managers need to be trained and educated in the significance of marketing activities. So formal training should be arranged for SME owners/ managers so that they can implement Marketing activities more effectively. Higher educational institutions (e.g. Universities or specialized institutions such as SME foundation) can play an important role here by designing and providing necessary training courses.

The acceptance of Hypotheses 3 and 4 signifies that existence of separate marketing department or employee in charge of marketing and financial strength of SMEs has strong association with the implementation of marketing activities. But the response of the SME owners toward open ended questions reveals that most of the SME owners do not allocate proper amount of budget for marketing activities. So they should allocate funding for the better implementation of marketing activities.

The SME businesses depend on live information about market than second hand information. Analysis of macro or external environment is less present in SME businesses which makes it difficult for the SME businesses to adapt with the changing environment. However, the owners/managers reveal that SMEs have a dearth of information regarding the market and customers; henceforth SME research centers should be established by the collaborative effort of the SMEs or by the Government where SMEs can conduct consolidate research effort and utilize the research outcome for providing better market offering, segmenting, targeting, etc.

Limitations and Directions for Further Research
There are some limitations of the study. The study is exploratory in nature and the sample size is small. The sample has been drawn randomly from Mirpur area of Dhaka city; so the result may not be representative for all the areas of Bangladesh. To generalize and validate the result of the study more research effort should be conducted in other districts of Bangladesh. Future studies should concentrate on the factors affecting the success of SME marketing activities such as motivation of the owner-manager, capital, size of the SME, growth orientation etc. Future studies should be carried out on a larger scale with a combination of both qualitative and quantitative method.

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The Postmodern "I": A Never-Ending Project

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Abstract: *Postmodernism refers to a heightened degree of self-consciousness which suggests fragmentation, collage, hybridity, and the presence of diverse voices in any narrative concerning identity. Identity, thus, emerging from a postmodern society, has become a patchwork of diversified perspectives and role-playing selves. This article concentrates on identity construction within the context of postmodern societies. The eventual product (self) of this highly mediated postmodern culture is constantly restless and highly unstable. It seems that the postmodern promise of unlimited freedom for the postmodern "I" leads to a path of unlimited frustration and dissatisfaction where no subject position is satisfying enough to be retained.*

Before postmodernism, identity was thought of as being formed through direct and indirect interaction with others inside and outside the family but restricted to a certain locale and culture. Ralph Waldo Emerson comments on the social aspect of identity construction in the manuscript fragments of "Private Life" (January 1840) when he mentions the 'being' as linked by "the manifold cord - the thousand or the million stranded cord which my being and every man's being is." Expounding this metaphor, he framed himself as "an aggregate of infinitesimal parts" and conceded that "[e]very minutest streamlet that has flowed to me is represented in that man which I am, so that if everyone should claim his part in me I should be instantaneously diffused through the creation and individually decease..." (Emerson 251). What this means is that there is already a fixed sense of self upon which social influences play their part.

This fixed sense of self has its root in the various social and political structures that govern a certain society. Overarching social customs and mindsets create meaning for the individuals participating in communal life in any given society. There is a certain rigidity in determining one's position in society according to status and acceptable behaviour. This rigidity finds force in the metanarratives of religion, morality, social custom, tradition etc. These metanarratives, working at the background of total societies give meaning to all actions, and by extension to all identities.

In the wake of postmodernism, the perception of the fluidity of social structures led to a total revision of concepts related to identity construction. The "manifold cord" that Emerson refers to as part of the social bond within individuals has permutated into a "thousand or the million" fragile wavelengths and there is no one to "claim his part" because all value systems have become images. Thus, identity is now seen to evolve out of influence from the abstract realm of television, cinema and computer screen.

The radical indeterminacy and conceptual deconstruction of essentialism due to the new virtuosity of identity has led to a desire towards psychological and emotional fulfillment through the creation of mini-narratives. Mini-narratives are,

therefore, used to impose meaning on the fragments from which a self is constructed, as opposed to the metanarratives that once determined identity. Thus the use of mini-narratives to construct a sense of identity reintroduces time, space, and analytical relationality to the understanding of identity.

The prospects for identity construction in America, possibly the strongest example of postmodern society, have been interestingly stated by the novelist Bharati Mukerjee. In an interview with Bill Moyers in 1990 she euphorically states, "You see for me, America is an idea. It is a stage for transformation . . . suddenly I could be a new person . . . where I could choose to discard that part of my history that I want, and invent a whole new history for myself. It's that capacity to dream and then try to pull it off, if you can" (Moyers 1990). This is what postmodern America offers: a possibility to create and recreate identities; to discard that part of personal history which is unwanted and invent 'a whole new history.' In "Narrative, Moral Identity and Historical Consciousness: a Social Constructionist Account," Kenneth Gergen is surely right in observing that the remolding of identity in postmodern societies is a continuous process of "construction and reconstruction; it is a world where anything goes that can be negotiated" (Gergen 7).

Authors and philosophers now look outward for an answer to the oldest question in human history - "Who am I ?" The search to understanding the self is no longer an introspective search for a soul; rather it is a journey outward, away from nature, towards man made cultures and societal distinctions; towards politics and economy; towards the hyperreal and simulacra; and towards technology and the internet. The process of entry into and formation of identity is, in fact, more complex and varied than can be explained by any single concept.

In postmodern societies cultural blending allows for or rather creates a chameleonic personality. Postmodern concepts emphasize the instability of the language, culture and society in which identity is constructed. Postmodernism shows that the meaning expressed through language is unstable and varied according to context and interpretation; that culture is no longer untainted by other cultures; rather, cultural life is seen as a series of texts interacting with other texts, producing variations in meaning, perception and thought streams. Society, subject to intense commodification in nearly all spheres, prefers impermanence over permanence, fluidity over stability, and inconstancy over constancy. All this leads to a new type of schizoid subjectivity. The postmodern "I" is not a monolithic construct; rather, it represents a multitude of "I" positions in contradiction to each other in relation to time and place. The narrative rendering of these subject positions allows for much conflict and controversy within a single entity.

The postmodern self is referred to as a 'subject' as if it were an entity involved in a social and psychological experiment. The outcome of which would result in the acceptance or rejection of the end product. In the postmodern world the process of becoming someone and achieving an identity as opposed to being someone naturally became the crux of existence. But along with the all-encompassing urge to be someone comes the frustration of not knowing what is

real about oneself. Therefore, there exists a constant doubt and questioning about the identity of a person.

Postmodern theory owes its questioning of identity to its roots in poststructuralism where it is taken as given that "identities must be dissolved, unbound, or at least thoroughly spliced and diced wherever they appear" (Wicke 12). In such an atmosphere of fragmentation and uncertainty, postmodern identity verges on schizophrenia where spatial distinctions are in disarray and psychic and emotional life have gone haywire.

Fragmentation of the subject emphasizes a heightened intensity of 'jouissance' to be experienced from free-floating fragments of meaning which can be arranged in any combination or permutation thinkable 'as a series of pure and unrelated presents.' (Jameson Postmodernism 27). This appeal of momentarily experienced excesses of emotion gradually turns life into a superficial façade in which the postmodern subject is forever seeking satisfaction through the sensationalism of spectacle. And, therefore, as David Harvey comments in The *Condition of Postmodernity*: "The immediacy of events, the sensationalism of the spectacle (political scientific, military as well as those of entertainment), become the stuff of which consciousness is forged." (Harvey 54). In a fully postmodern social milieu the American consciousness has become a devout lover of sensationalism and spectacle.

Consequently, as the child exposed to postmodern American society is, maybe, immature, certainly it is no longer a purely innocent entity. This child grows up with a sense that *happiness* and *joy* are an all time must at the expense of everything else. As a result, disregard of the consequences of actions and speech, the child derives not from being innocently unaware but, from being irresponsibly callous. This is the dire drawback of being brought up in a society where all moral and social standards are relational. In "Out of History: French Readings of Postmodern America," Jean-Philippe Mathy succinctly emphasizes the superficiality of such an existence in the following words - "No referentiality, no moral depth, no representation, no critique, not the shadow of a thought, everything is there, immediately given . . ." (280). The postmodern American subject lives in and for the moment devoid of all concern of consequences.

In the postmodern world, one reason why personality does not develop and progress into a definite identity is because in it time loses its linear dimension. The postmodern American identity is carefree, whimsical, risk prone, hyperactive, creating a world of one's own, in a state much like that of Julia Kristeva's 'semiotic' state - a state where there are no regrets, no consequences, no guilt because the postmodern world it thrives in has no pre-judgmental criteria. Nothing matters except the moment.

According to Kristeva's theory the semiotic, is a pre-linguistic, pre-symbolic space. Contrary to this state exists the symbolic. This is the realm of social order constructed through language. Kristeva sees the relationship between semiotic and symbolic as a dialectical relation. That is to say, the semiotic still remains, though too repressed in order for the symbolic to take precedence and the child to

be oriented in a system of meanings. This indicates that the semiotic is never fully repressed and may, therefore, appear from time to time, enabling the subject to adapt and transform to the needs of the crises of the moment. This means that the subject is always in the process of renewing his/her identity and is, therefore, constantly a "subject-in-process".

In contemporary American society where any and all repression is seen as oppressive, the self appears to be in a childlike semiotic state equal to that of Kristeva's subject-in-process. It is as if the postmodern American resists growing up, attaining stability and assuming responsibility. In an attempt to hold on to the unique experience-gathering of the immature consciousness the postmodern "I" resists attaining maturity. But the backlash to such immature experience gathering is that it is deprived of any and all sense of responsibility.

Henderson's internal voice, in Saul Bellow's *Henderson the Rain King* that shouts, "I want, I want, I want" seems to resonate even more intensely in every American. In contemporary American society, the words - *I need, I need, I need* - seem to close in from all sides. The need of the consumer supersedes all other needs. The human body itself becomes a commodity as consumerism seeps into every aspect of postmodern living. From the TV screen to the written word, from the vocalized speech to the American consumer consciousness, each and every object seems to be amenable for consumerism.

As Jean Baudrillard observes in "The System of Objects", American consumerism encourages the subject "to regress and be irrational" (Baudrillard 410). He quotes a certain Dr. Dighter to show how the consciousness of the postmodern American works. According to Dr Dighter the concern of marketing and advertising is to make the average American, "to feel moral even as he flirts, even when he spends, or when he buys a second or third car" (Baudrillard 410). In other words, consumerism creates a narrative through which average Americans can justify the need to spend in excess of their earnings.

The most overt narrative illustration of the postmodern search for identity is through consumer goods. Advertisements in the media have become so natural to the viewer that their actual intention of creating a void within the subject goes totally unnoticed and uncriticized in mainstream culture. The insecurity caused by fleeting images take on a quality of need which constitute a drive or craving for consumer goods. Baudrillard further develops his discussion with reference to Piérre Martineau author of Motivation in Advertising (1957) in expressing the view that "people define themselves in relation to objects." He cites the following extract from Martineau :

> The conservative, in choosing and using a car, wishes to convey such ideas as dignity, reserve, maturity, seriousness... Another definite series of automotive personalities is selected by the people wanting to make known their middle-of-the-road moderation, their being fashionable... Further along the range of personalities are the innovators and the ultramoderns. (qtd. Baudrillard 413, 1998).

Consumer objects, therefore, become extensions of the self which happens to be active at that moment in time and space. The postmodern self that appears fluctuates because it derives its identity from the superficial significance of designer outfits, cosmetics, prosthetics, apartments, cars and even eating habits, replacing the centralized power of the grand-narratives of philosophy and religion; these elements compose the psyche of the postmodern subject.

In the postmodern world where it is nearly impossible to differentiate between the real and the unreal, the necessity changes its form and, "advertising takes over the moral responsibility for all of society and replaces a puritan morality with a hedonistic morality of pure satisfaction" (Baudrillard 410). It is a type of need for satisfaction which cannot be met. As Alfred Gell observes in "Technology and magic": "Advertising does not only serve to entice consumers to buy particular items; in effect, it guides the whole process of design and manufacture from start to finish, since it provides the idealized image to which the finished product must conform." (Gell 1988: 9) As the "idealized image" is constantly in a flux, in and out of vogue, there is no way of conforming to that particular image. This constant shift in taste and aspiration and 'ideal' leads to incomplete development of consciousness.

American consumers, therefore, become obsessed with images that flicker on the screen. They change their looks and their aspirations are modified in accordance with the images manipulating their consciousness, though each time they are duped into thinking each decision as personal. This social setting is especially destabilizing for American women. They change their identity according to the messages they take in from the consumer culture they are engulfed in. Uncertain about who s/he is and who s/he wants to be, the postmodern subject puts on and discards personalities. The situation echoes the one Trinh Minh-ha contemplates in *Woman, Native, Other*:

> I" is itself infinite layers . . . . Of all the layers that form the open (never infinite) totality of "I", which is to be filtered out as superfluous, fake, corrupt, and which is to be called pure, true, real, genuine, original, authentic? (Trinh T. Minh-ha 649)

The postmodern "I", therefore, is in hyperdrive. It is constantly changing positions, in a media world which perfectly accommodates for its flux. Through these layers of identity it becomes quite difficult to know which is constant and which just a phase is. So, every aspect of identity becomes as uncertain as any other.

Postmodern identity is obsessed with the image that is to be put on display for others. Everything is on show. Nothing is private anymore. Nothing is not worth showing. Susan Bordo in her essay "Material Girl" writes about. "the normalizing power of cultural images and the sadly continuing social realities of domination and subordination" (1114). The female body is targeted through emphasis on skin, hair, body contour; nothing is left out of the list of targeted products except perhaps intelligence.

Anyhow, the truth is that self-identification through consumption cannot

bring about a sense of satisfaction because there is no end to consumerism. The psychological response to the temporariness and instability of value systems in both private and public spheres is manifested in a certain psychological and emotional distancing as noticed in postmodern subjects. For the postmodern subject, nothing is long-lasting or seriously worth worrying about. The longevity of concern about, for example, a devastating accident is about the same or even less important than what to wear at a party.

David Harvey comments on such a change in human priorities in the following way: "the blocking out of sensory stimuli, denial, and cultivation of the blasé attitude, myopic specialization, reversion to the images of a lost past (hence the importance of mementos, museums, ruins), and excessive simplification (either in the presentation of self or in the interpretation of events)" (286). The past is only relevent and accessible through its artifacts. All news is told in a matter-of-fact sort of manner, making human death tolls a matter of spectacle and sensationalism instead of grave human tragedy. This emphasizes the superficiality of postmodern existence where all meaning is established in and through the media.

In *The Cultural Logic of Late Capitalism* Jameson describes a similar 'waning of effect' which signifies a draining of emotional depth. In this postmodern culture of television, advertising and media manipulation, the self loses depth and becomes a "shallow artifact of cultural production." Messages of advertisements lure the average American into a simulated contradictory world of intense pleasure, self-gratification and absolute narcissism. Richard Kearney observes in *On Stories*, TV talk shows and commercials have infiltrated private spaces in such a way that "the most secret realms of experience" for the masses has been reduced to "voyeuristic immediacy and transparency" (10).

Signs, images and new sign systems dominate the consciousness of the consumer. The image becomes all-consuming. Searching for reality is fruitless in a world where there is nearly no differentiation between the image and what is solid, for "All that's solid melts into air." David Harvey mentions in The *Condition of Postmodernity: An Inquiry into the Origins of Cultural Change*: "the image serves to establish an identity in the marketplace." The acquisition of a significant sign system created by a particular image, as Harvey states: "by extension, becomes integral to the quest for individual identity, self-realization and meaning" (288). This explains the popularity in America, of image consultants who train people to 'Fake it, till you make it.'

The image of the self is to be built in a way as to totally eclipse the unacceptable. People willingly accept the change desired in them. They learn to walk, talk, dress, and even eat differently. And, of course, it is with comparative ease that Americans in the mainstream do that. This is possible because no one is troubled by the loss of something they have not experienced in the first place i.e. a stable sense of self. As Bill Brown notes in his essay "Identity Culture", published in *American Literary History*: "America is an identity culture definable not by an identity but by the fixation on identity" (165).

Nevertheless, postmodern instability and the constant creation of identities does have its benefits. According to Todd Pittinsky, Margaret Shih, and Nalini Ambady, the writers of "Identity Adaptiveness : Affect across Multiple Identities," multiple self-representations allow for better adaptation to adverse situations. They state that less stable identities easily adapt to adverse situations. In the case of such subjects there is less debilitating internal conflict noticeable when faced with disagreeable circumstances. According to their observations, "Individuals who are less complex, having fewer identities and roles, are more likely to be debilitated by a negative event. In contrast, individuals who have more complex self-representations may be protected from negative events because of the buffer offered by additional identities when one identity is adversely affected" (Todd, et al 507).

In other words, the complexity of postmodern self-construction with its incessant mutability can work as a positive psychological and emotional coping mechanism. The instability of postmodern identity may be a possible solution to the tensions that arises from the bombardment of ever-conflicting images. But the downside of such adaptability is that no common frame of reference or stable standpoint remains for an individual's ethical agency. As a result in postmodern contexts, all ethical judgments become situational.

Ethics, in the greater scheme of postmodern living, is replaced by 'jouissance and greater tolerance of cultural and social situations. This raised level of tolerance, however, ultimately leads to indifference. As Jameson suggests in "Postmodernism and Consumer Society, "there is very little in either the form or the content of contemporary art that contemporary society finds intolerable and scandalous"(661). After all, this new ability to encompass contradictions and tolerate ambiguity should not be allowed to neutralize awareness of wrong doing and manipulation. In "Composing Postmodern Subjectivities in the Aporia between Identity and Difference" Bruce McComiskey urges the postmodern subject to be aware of the power structures manipulating and motivating him or her instead of being a bland receptor of continuous change. In his words, "Postmodern subjectivities must not disperse into a politically impotent multiplicity of different individuals" (353). His fear is that if that should happen, manipulation in the hands of "centralizing authorities" would occur, thereby coagulating differences into "politically impotent universalizing identities" (353). The term "politically impotent", as used by McComiskey suggests a draining of psychological awareness, a situation that leads to the creation of a non-thinking being.

The possibility of becoming easily manipulated and simultaneously unethically manipulative does not seem a far cry from what postmodern subjects are really becoming. In "Multiple Selves in Postmodern Theory: An Existential Integrative Critique" Louis Hoffman, cites a quotation from Rollo May's "The Cry for Myth" (1991) in which the author expresses her concern at the lapse in time and space occurring from the constant shift in perceived reality and construction of worldview, which eventually takes its toll on the American psyche. For May, "the addiction to change" and "chameleonic tendencies" of modern Americans which allow them with comparative ease to "play any role the

situation requires of them", could naturally result in "superficiality and psychological emptiness" (Hoffman 17). The loss of a true self leaves the postmodern self as often having a conviction of never having embodied a true sense of self.

Postmodern identity is, therefore, fixated on the moment. The obsession for change noticed in postmodern society is matched by a need for hyper-stimulation that is not sustainable in ordinary everyday life. As a result, the postmodern subject wavers between euphoria and boredom. Without change in identities, multiple subject positions cease to exist in the hyperventilated consciousness of the contemporary consumer. Life becomes unbearable without the power to purchase and create alternate realities regarding one's self and one's surroundings. Consumerism sustains this hyperventilated situation as it thrives on novelty and change, constantly creating a sense of need and deep dissatisfaction.
One finds that permanence and integrity have small parts to play within the self-narratives of the postmodern subject. What thrive are mini-narratives that quite powerfully rewrite the metanarratives of the past and influence the interpretation of those narratives in the present. Also, since narrative and identity are seen to be intricately linked, it is inevitable that the breakdown of meta-narratives should affect the concept of personal identity. As for the gender question, both masculinity and femininity are under scrutiny. With the emphasis on consumerism postmodernism has merged these identities into the single identity of the consumer.

On the whole, the postmodern world has brought on a breakdown in all fundamental belief systems and fixed worldviews thereby changing the way the world and the individual interact. Instead of a dialectic interaction, the relationship between the self and the world is a dialogic interaction. The self appears to be struggling with each and every element of society and culture in order to be born as an "I." Stripped of all sense of stability a self is an unsure amoebic entity which may at any time restructure itself into any system of thought, language, society or culture based on illusory needs of postmodern identity.

Thus, the postmodern subject, though seemingly free from all trappings and limitations, is actually bound, by its own dissatisfaction and uncertainty. The postmodern subject, in its search for unlimited freedom, finds itself helplessly in need of a sense of direction. With no foundation to stand on, the postmodern "I" therefore, struggles to be someone significant, at least, for the moment. It seems, therefore, that the postmodern promise of unlimited freedom for the postmodern "I" leads to a path of unlimited frustration and dissatisfaction where no subject position is satisfying enough to be retained.

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